

Experimental and Clinical Transplantation



Official Journal of the Middle East Society for Organ Transplantation

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EDITORIAL POLICY

MISSION

Experimental and Clinical Transplantation (ECT) is the official journal of the Middle East Society for Organ Transplantation (MESOT). The Society was originally founded in Turkey in 1987, and was subsequently incorporated at Bern, Switzerland, in 1988 as a non-profit, international, scientific organization comprising 20 countries of the Middle East, North Africa, Mid-Asia, and neighboring nations.

The aim of the journal is to provide a medium forum for where clinical scientists, basic scientists, ethicists, and public health professionals to communicate ideas and advances in the field of experimental and clinical organ and tissue transplantation, and to discuss related social and ethical issues. The topics will be of interest to transplant surgeons, clinicians in all major disciplines and subspecialties, basic science researchers, and other professionals involved with sociological aspects of experimental and clinical transplantation.

Experimental and Clinical Transplantation is a peer-reviewed international publication that accepts manuscripts of full-length original articles, case reports, letters to the editor, and invited reviews. It is published in English bimonthly (February, April, June, August, October, and December).

Our editorial team is committed to producing a journal of extremely high standards. The journal is fully indexed in EBSCO, Excerpta Medica, Index Medicus, Journal Citation Reports/ Science Edition, MEDLINE, Science Citation Index Expanded™, and Turkey Citation Index. Full-text articles are available on the Internet via PubMed or at the Journal's Web site, at <http://www.ectrx.org>. ECT is also available as hard-copy bound volumes by subscription, printed on acid-free paper.

SCOPE

The scope of the journal includes the following:

- Surgical techniques, innovations, and novelties
- Immunobiology and immunosuppression
- Clinical results
- Complications
- Infection
- Malignancies
- Organ donation
- Organ and tissue procurement and preservation
- Sociological and ethical issues
- Xenotransplantation

ETHICS

The Journal expects that all procedures and studies involving human subjects have been reviewed by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in **The Helsinki Declaration** as well as **The Declaration of Istanbul on Organ Trafficking and Transplant Tourism**. Manuscripts must contain a statement to this effect.

All authors are required to sign an ethical disclosure form stating that they have not been involved in commercial transactions or other unethical practices in obtaining donor organs, and that no organs or tissues from executed prisoners have been used in this research.

Experimental and Clinical Transplantation adheres to the ethical principles outlined by COPE (Committee on Publication Ethics).

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Single Issue: \$20.00

Annual Subscription: \$100.00

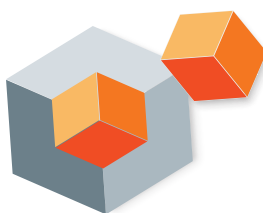
Non- MESOT Members

Single Issue: \$50.00

Annual Subscription: \$250.00

Institutions

Annual Subscription: \$1000.00



* These rates and terms are not applicable, if membership dues not paid for two consecutive years.

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17th Congress Of
The Middle East Society
for Organ Transplantation

MESOT 2021

September 3-5, 2021

Amman JORDAN

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Welcome Message

Dear Colleagues,

It is a great honor and privilege to welcome you to the 17th Congress of the Middle East Society for Organ Transplantation (MESOT) to be held on September 3-5, 2021.

In light of the ever-evolving COVID-19 pandemic since last year and serious health risks posed by the new variants, as MESOT leadership, we were unfortunately obliged to cancel our in person meeting that was scheduled to be held in Amman, Jordan on September 3-5, 2021. Nevertheless, we are equally excited at the prospect of bringing the 17th Virtual Congress of the MESOT through using Platform technology.

The 17th Congress of the MESOT will be an ideal opportunity to share and learn from each other. The scientific program will incorporate a wide range of topics designed to provide an innovative and comprehensive overview of the latest research developments in the field of experimental and clinical transplantation in the Middle East and the world.

We look forward to welcome all of you on September 3-5, 2021.

Yours sincerely

Mehmet Haberal, MD
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FASA (Hon), FIMSA (Hon),
Hon FRCS (Glasg)
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Antoine Barbari, MD
President, MESOT

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17th Congress Of The Middle East Society for Organ Transplantation

September 3-5, 2021
Amman JORDAN

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EDITORIAL POLICY FOR **LIVING DONOR TRANSPLANTATION**

Dear Colleagues,

Kindly be reminded of our Editorial Policy regarding **Living Donation** in transplantation.

As per our acceptance criteria, donor must be a relative (up to the 4th degree) or spouse of the recipient and over 18 years old. We would like to **remind** all of you that as per our Journal policy, we do not accept any papers that involve transplantation from **living unrelated donors**.

In the recent period (from January 2019 to present), 662 manuscripts have been submitted to our Journal from various countries throughout the world. Out of these 662 manuscripts, a decision has been made for 554 manuscripts and **377 (68%)** of them were **rejected**. Of these 377 rejected manuscripts, **55 (14.6%)** of them have been rejected as they involved transplantation from **unrelated living donors**.

We hope that an increase in such policies will help to underline the importance of the legal and ethical aspects of transplantation. Please feel free to contact us regarding any comments as our aim is to contribute to the transplantation field in the world.

Please keep safe and healthy during these times of Covid-19 pandemic.

Sincerely,

A handwritten signature in black ink, appearing to read 'M. Haberal', with a stylized, flowing script.

**Mehmet Haberal, MD, FACS (Hon), FICS (Hon),
FASA (Hon), FIMSA (Hon), Hon FRCS (Glasg)**
Editor-in-Chief
Experimental and Clinical Transplantation



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The Middle East Society for Organ Transplantation

MESOT welcomes professionals actively involved in all fields of transplantation.

The benefits of membership:

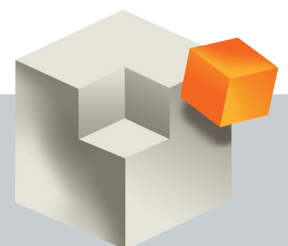
- The opportunity to be part of a regional network of physicians, surgeons and scientists involved in transplantation
- Free online access to the journal “Experimental and Clinical Transplantation”, the official journal of The Middle East Society for Organ Transplantation
- Substantially reduced rates for subscription to print copies of “Experimental and Clinical Transplantation”
- Entitlement to apply to take part in a fellowship program in one of several leading transplantation centers in the Middle East
- Reduced registration fee at the biennial international congresses which provide an innovative and comprehensive overview of the latest research developments in the field transplantation
- Free online access to the “Transplant Library”
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- Access to the online MESOT Member Directory

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MESOT Fellowship Program in Organ Transplantation

The Middle East Society for Organ Transplantation is pleased to announce the establishment of the MESOT Fellowship Program. The program, which will be 1-2 years in duration, has been created for physicians and surgeons from the Middle East region willing to acquire particular skills related to clinical and medical aspects of organ transplantation.

The objective of this program is to promote and advance organ transplantation in underserved areas of the region by helping physicians to establish new programs or improve already existing ones. In addition to liver, kidney, pancreas, heart and cornea transplant fellowships, training will be offered in various other departments to support the multidisciplinary nature of transplantation, including gastroenterology, nephrology, cardiology, immunology, radiology, pathology, infectious diseases and intensive care.

A limited number of grants will also be available, with recipients being determined by the Fellowship Program Committee.

Further information can be found online at <http://www.mesot-tx.org/home/fellowship.php>, where candidates may also apply online. The application deadline is the 30th of June of each year.

Inquiries may be directed to the Chairman of the MESOT Fellowship Program Committee:

Mustafa Al-Mousawi, MD, FRCS

Chairman, MESOT Fellowship Program Committee
P.O. Box 288, Safat 13003
Kuwait

Fax: +965 24848615

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**Abstract submission deadline extended until
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Important Dates

- Abstract Submission Deadline
- Abstract Acceptance Notice
- Registration Deadline

July 30 (Fri.), 2021

August 27 (Fri.), 2021

September 24 (Fri.), 2021

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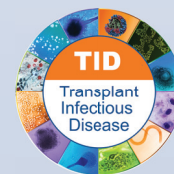
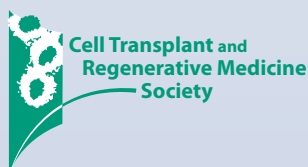
BENEFITS INCLUDE:

- The opportunity to be part of the leading global network of physicians, surgeons and basic scientists involved in transplantation, representing more than 105 countries around the world
- Free online access to the *Transplantation* journal and free educational material on the Society's website
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MESOT 2021
Scientific Program



17th Congress Of The Middle East Society for Organ Transplantation

September 3-5, 2021
Amman JORDAN

FRIDAY, SEPTEMBER 3

08:00-17:00 On-Site Registration

08:00-08:45 Opening Ceremony

His Majesty, King Abdullah II Ibn Al Hussein, *King of Jordan, The Hashemite Kingdom of Jordan*

Minister of Health, *The Hashemite Kingdom of Jordan Ministry of Health*

Mohammad Ghnaimat, *MESOT President-Elect*

Antoine Barbari, *MESOT President*

Mehmet Haberal, *MESOT Founder and Past-President*

Marcelo Cantarovich, *TTS President*

08:45-09:00 Coffee Break

09:00-11:10 Session 1

Chairpersons:

Antoine Barbari,
Mohammad Ghnaimat,
Refaat Kamel,
Mehmet Haberal

09:00 – 09:20 L1 Francis Delmonico (USA)
Expanding Controlled Donation After the Circulatory Determination of Death: Statement from an International Collaborative

09:20 – 09:40 L2 Mustafa Al Mousawi (Kuwait)
Family Approach for Organ Donation-Experience in the Middle East

09:40 – 10:00 L3 Gamal Saadi (Egypt)
Approach to Resolve the Transplantation Challenges in Egypt

10:00 – 10:20 L4 Stefan Tullius (USA)
Organ Allocation: Balancing Equity and Utility

10:20 – 10:40 L5 Marti Manyalich (Spain)
Developing Organ Donation and Transplantation Internationally

10:40 – 10:50 O1 Maria P. Gomez (Spain)
Organ Donation Innovative Strategies for South East Asia: ODISSeA

10:50 – 11:00 O2 Abdulrahman Al Omar (KSA)
Is the Allocation System for Liver Transplantation in Saudi Arabia Skewed Towards Serving Patients with Hepatocellular Carcinoma?

11:00 – 11:10 O3 Estephan Arredondo (Spain)
I-DTI: Second Opinion Platform for Health Care Professionals Related to Organ Donation and Transplantation

11:10-11:30 Coffee Break

11:30-13:40 Session 2

Chairpersons:

Jeremy Chapman,
Nadey Hakim,
Mustafa Al-Mousawi,
Dieter Broering

11:30 – 11:50 L6 S. Ali Malek-Hosseini (Iran)
Shifting the Tides and Ending Living Unrelated Donation Kidney Transplantations in the Middle East: The Shiraz Transplant Center Experience

11:50 – 12:10 L7 Aasim I. Padela (USA)
Promoting Deceased Organ Donation in Muslim Communities: A Critical Analysis of Fatwa-based Campaigns and Suggestions for a Better Educational Intervention Model

12:10 – 12:30 L8 Ali Al Obaidli (UAE)
Status of Organ Donation and Transplantation in the UAE

- 12:30 – 12:50 L9** Antoine Stephan (Lebanon)
The Dual Aspect of Deceased Organ Donation
- 12:50 – 13:10 L10** Anwar Naqvi (Pakistan)
The Challenges in Selecting Donors in an Intrafamilial Program in a Developing Country
- 13:10 – 13:20 O4** C. Burak Sayin (Turkey)
Long-Term Follow-up of Over 600 Living-Related Kidney Donors: Single Center Experience
- 13:20 – 13:30 O5** Bassam Saeed (Syria)
Deceased Organ Donation in Syria: Challenges and Solutions
- 13:30 – 13:40 O6** Danica Avsec (Slovenia)
Better Donor Detection and Referral in the Intensive Care Units in the Context of End-of-Life Care

13:40-14:30 Lunch

14:30-16:20 Session 3

Chairpersons: Faissal Shaheen,
Hany Hafez,
Hasan Yersiz,
Vivekanand Jha

- 14:30 – 14:50 L11** Jeremy Chapman (Australia)
The impact of Pancreas Transplantation on the Secondary Complications of Diabetes
- 14:50 – 15:10 L12** Nadey Hakim (UK)
One Waiting List for Pancreas and Islet Transplantation-The UK Experience
- 15:10 – 15:30 L13** Ignazio R. Marino (USA)
Immunosuppression and Compliance After Orthotopic Liver Transplantation: State of the Art
- 15:30 – 15:50 L14** Andrew Cameron (USA)
Early Versus Standard Liver Transplantation for Alcohol-Associated Liver Disease
- 15:50 – 16:00 O7** Bassam Saeed (Syria)
How Did the War Affect Organ Transplantation in Syria?

- 16:00 – 16:10 O8** Ebru H. Ayvazoglu Soy (Turkey)
Liver Transplant Survivors for More Than 10 Years
- 16:10 – 16:20 O9** Aasim I. Padela (USA)
Improving Living Organ Donation Knowledge and Behavior Among Muslim Americans

16:20-16:40 Coffee Break

16:40-18:20 Session 4

- Chairpersons:** Aziz El-Matri,
Abdalla Al-Bashir,
Nasser Simforoosh,
Caner Suesal
- 16:40 – 17:00 L15** Refaat Kamel (Egypt)
Living Donor Liver Transplantation in Egypt: A Twenty Years Experience
- 17:00 – 17:20 L16** Saman Nikeghbalian (Iran)
Pancreas and Intestinal Transplantations in Shiraz Transplant Center
- 17:20 – 17:30 O10** Pulat Sultanov (Uzbekistan)
Three-year Experience of Single Center Kidney Transplantation in Uzbekistan
- 17:30 – 17:40 O11** Beshar Al Attar (KSA)
Characteristics of Renal Replacement Therapy in Saudi Arabia 2019
- 17:40 – 17:50 O12** Aasim I. Padela (USA)
Motivating and Legislating Organ Donation: An Informed Choice, Islamic Bioethics Model
- 17:50 – 18:00 O13** Abdel Hadi Al Breizat (Jordan)
Organ Donation and Transplantation in Jordan: Is There A Gender Disparity?
- 18:00 – 18:10 O14** Aydincan Akdur (Turkey)
Clinical Outcomes of Liver Transplantation for Patients Over 60 Years Old: A Single Center Experience
- 18:10 – 18:20 O15** Guler Yavas (Turkey)
Stereotactic Ablative Body Radiotherapy as a Bridge to Liver Transplantation for Hepatocellular Carcinoma: Preliminary Results of Başkent University Experience

SATURDAY, SEPTEMBER 4

08:00-17:00 On-Site Registration

07:30-08:30 **Sunrise Symposium – TPM-DTI Foundation: Family Approach with Virtual reality simulations**

09:00-11:10 Session 5

Chairpersons: *Ali Malek-Hosseini,
Gamal Saadi,
Antoine Stephan,
Abdallah Abbadi*

- 09:00 – 09:20 L17** Bassam Saeed (Syria)
The Impact of Covid-19 Pandemic on The Management of Pediatric Kidney Transplant Recipients
- 09:20 – 09:40 L18** Vivek Kute (India)
Covid-19 Pandemic Research Opportunity in India: What the Pandemic Is Teaching Us About Transplantation
- 09:40 – 10:00 L19** Ihab El Madhoun (Qatar)
Covid-19 and Renal Transplantation in 2021; What is Yes? What is No?
- 10:00 – 10:20 L20** Aziz El Matri (Tunisia)
Organ Transplantation in Tunisia: Impact of Political Events (Arab Spring Revolution) and the Covid-19 Pandemic Era
- 10:20 – 10:40 L21** Marwan Masri (Lebanon)
Immunopathology of Covid-19 and Allograft Rejection
- 10:40 – 10:50 O16** Maria P. Gomez (Spain)
Deceased Organ Donation and Transplantation During Covid pandemic in Kerala State, South of India
- 10:50 – 11:00 O17** Emre Karakaya (Turkey)
Sixteen Successful Kidney and Liver Transplants at Baskent University Hospitals in Thirty Days During the Pandemic
- 11:00 – 11:10 O18** Beshar Al Attar (KSA)
Impact of Covid-19 Pandemic on Organ Donation and Transplantation in Saudi Arabia

11:10-11:30 Coffee Break

11:30-13:40 Session 6

Chairpersons: *Francis Delmonico,
Bassam Saeed,
Hassan Argani,
Aasim I. Padela*

- 11:30 – 11:50 L22** Faissal Shaheen (KSA)
Predictability and Risk Factors for Development of New Onset Type-2 Diabetes Mellitus After Transplantation
- 11:50 – 12:10 L23** Khalid Meshari (KSA)
Management of HLA and/or ABO Incompatible Patients in Kidney Transplantation: Role of Kidney Paired Donation
- 12:10 – 12:30 L24** Robert Najm (Lebanon)
Impact of Pre-Transplant Hemoglobin Blood Level on Kidney Transplantation Outcome at One Year: A Retrospective Study
- 12:30 – 12:50 L25** S. Adibul Hasan Rizvi (Pakistan)
Long Term Yearly Kidney Donor Follow-up: 20 Years and Beyond
- 12:50 – 13:10 L26** Marcelo Cantarovich (Canada)
The Use of High-Risk Donors to Increase Deceased Kidney Donation
- 13:10 – 13:20 O19** Osama Gheith (Kuwait)
Effect of Structured Diabetes Education on Diabetic Angiopathies Among Kidney Transplants with Post-Transplant Diabetes: Kuwait Experience
- 13:20 – 13:30 O20** M. Mongi Bacha (Tunisia)
Long Term Graft Survival After Kidney Transplantation: Predictive Factors
- 13:30 – 13:40 O21** Esra Baskin (Turkey)
Long Term Effects of Eplerenone Treatment in Children with Chronic Allograft Rejection

13:40-14:30 Lunch

14:30-16:20 Session 7

- Chairpersons:** Annika Tibell,
Riyad Said,
Riadh Fadhil,
Aydin Dalgic
- 14:30 – 14:50 L27** Habchi Khadidja (Algeria)
Utility of Protocol Biopsy at 3 Months Post Kidney Transplantation
- 14:50 – 15:10 L28** Kamal Okasha (Egypt)
Management of Chronic Renal Allograft Failure
- 15:10 – 15:30 L29** May Hassaballa (Egypt)
Dilemma of Managing Antibody-Mediated Rejection
- 15:30 – 15:50 L30** Caner Suesal (Germany)
Recent Data from the Collaborative Transplant Study
- 15:50 – 16:00 O22** Bassam Saeed (Syria)
Pediatric Organ Transplantation: Data From Middle East Countries
- 16:00 – 16:10 O23** Hatem Ali (UK)
Outcomes of Interleukine-2 Receptor Antagonist Induction Therapy in Standard-Risk Renal Transplant Recipients Maintained on Tacrolimus
- 16:10 – 16:20 O24** Esra Baskin (Turkey)
Primary Focal Segmental Glomerulosclerosis Recurrence After Pediatric Renal Transplantation

16:20 – 16:40 Coffee Break**16:40 – 17:50 Session 8**

- Chairpersons:** Hans Sollinger,
Marti Manyalich,
Sunil Bhandari,
Mohammad Al Ghonaim
- 16:40 – 16:50 O25** Cenk Simsek (Turkey)
Kidney Transplantation from Infected Donors with Particular Emphasis on Multidrug-Resistant Organisms
- 16:50 – 17:00 O26** Muhammad Rehan (Pakistan)
The Outcomes of Renal Transplantation During the Covid-19 Pandemic. Is it Worth Doing?
- 17:00 – 17:10 O27** Osama Gheith (Kuwait)
Fludrocortisone Among Renal Transplant Recipients with Persistent Hyperkalemia: Single Center Experience
- 17:10 – 17:20 O28** Farina M. Hanif (Pakistan)
Recurrence Rate of Early HCV Infection After Renal Transplantation Following Successful Treatment of Dialysis Patients with Direct Acting Antiviral Agents
- 17:20 – 17:30 O29** Samer Al Geizawi (Jordan)
Antegrade Laparoscopic Left Donor Nephrectomy: Single Surgeon Experience from Four Centers in Jordan and Bahrain
- 17:30 – 17:40 O30** Beshar Al Attar (KSA)
Features of Living and Deceased Liver Donation and Transplantation in the Kingdom of Saudi Arabia
- 17:40 – 17:50 O31** Sarp Beyazpınar (Turkey)
Is There Any Relation Between Right Ventricular Dysfunction and Left Ventricular Assist Device Thrombosis?

SUNDAY, SEPTEMBER 5

08:00-10:00 On-Site Registration

09:00-10:50 Session 9

Chairpersons: Ignazio R. Marino,
Andreas Tzakis,
Andrew Cameron,
Safaa Al Mukhtar

09:00 – 09:20 L31 Hasan Yersiz (USA)
Technical Variations of the Liver Procurement to Increase Liver Utilization

09:20 – 09:40 L32 Reda Elwakil (Egypt)
NAFLD: Key Considerations Before and After Liver Transplantation

09:40 – 10:00 L33 Ahmet Gurakar (USA)
Donor BMI and Living Donor Liver Transplantation Outcomes

10:00 – 10:20 L34 Andreas Tzakis (USA)
Everything Flows, Nothing Stands Still

10:20 – 10:30 O32 Bassam Saeed (Syria)
Organ Transplantation in Syria

10:30 – 10:40 O33 Fatih Boyvat (Turkey)
The Role of Interventional Radiology in the Management of Early Vascular Complications After Liver Transplantation

10:40 – 10:50 O34 Emre Karakaya (Turkey)
Accuracy Between Estimated Graft Volume and Actual Graft Weight in Living Donor Liver Transplant

10:50 – 11:10 Coffee Break

11:10 – 13:30 Session 10

Chairpersons: S. Adibul H. Rizvi,
Stefan Tullius,
Ahmet Gurakar,
Robert Najm

11:10 – 11:30 L35 Riadh Fadhil (Qatar)
Evolution of Kidney Transplantation. Beginnings, Contemporary Developments, & Future Challenge

11:30 – 11:50 L36 Nasser Simforoosh (Iran)
Bladder Reconstruction and Medical Therapy in Recipients with Neurogenic Bladder Dysfunction

11:50 – 12:10 L37 Tareq ElBaz (Egypt)
Senotherapy in Renal Transplantation

12:10 – 12:30 L38 Sunil Bhandari (UK)
Malignancy and Post-Transplant PTLTD 2021

12:30 – 12:50 L39 Annika Tibell (Sweden)
Improving Quality in the Live Kidney Donor Process

12:50 – 13:10 L40 Khalid Al Hasan (KSA)
The Challenges of Kidney Transplantation in Patients with Congenital Immune Insufficiency

13:10 – 13:20 O35 Bassam Saeed (Syria)
Pediatric Versus Adult Kidney Transplantation Activity in Arab Countries

13:20 – 13:30 O36 Azamat Alimov (Uzbekistan)
Erector Spine Plane Block for Postoperative Analgesia After Kidney Transplantation

13:30 – 14:30 Lunch

14:30 – 16:40 Session 11

Chairpersons: Marwan Masri,
Anwar Naqvi,
Issa Al Salmi,
Mona Al Rukhaimi

14:30 – 14:50 L41 Hans Sollinger (USA)
Gene Therapy for Diabetes: Recent Progress

14:50 – 15:10 L42 Vivekanand Jha (India)
Developing Transplant Programs Around the World – Importance of Health Systems Building Blocks

15:10 – 15:30 L43 Issa Al Salmi (Oman)
Transplant Tourism and Various Infection Risks

15:30 – 15:50 L44 Ali Al Saedi (Iraq)
Living Related Donors (LRD) in Iraq: Emotion & Promotion

- 15:50 – 16:10 L45** Aydin Dalgic (Turkey)
Surgical Treatment of Portal Hypertension
- 16:10 – 16:30 L46** Dieter Broering (KSA)
Minimal Invasive Donor Hepatectomy – Towards Standard of Care
- 16:30 – 16:40 O37** Mehdi Rabhia (Algeria)
Prevalence and Evaluation of the Different Profiles of Arterial Hypertension in Renal Transplantation Evaluated by Outpatient Measurement

16:40 – 17:00 Coffee Break

17:00 – 17:40 Session 12 – Young Professionals in Transplantation

Chairpersons:

*Vivek Kute,
May Hassaballa,
Gokhan Moray,
Khalid Meshari*

- 17:00 – 17:10 O38** Ala Ali (Iraq)
MESOT- Young Transplant Professionals: What We Are Looking For?
- 17:10 – 17:20 O39** Shaifali Sandal (Canada)
How to Embark Upon a Career as a Leader in Transplantation?
- 17:20 – 17:30 O40** Sevda Hassan (UK)
Young Professionals in Transplantation –
- 17:30 – 17:40 O41** Khadidja Habchi (Algeria)
Young Women in Middle East Transplantation

17:40-18:00 Closing Ceremony

L1

Expanding Controlled Donation After the Circulatory Determination of Death: Statement from an International Collaborative

Francis Delmonico, MD

Chief Medical Officer, New England Donor Services, 60
1st Ave, Waltham, MA 02451, USA

A decision to withdraw life-sustaining treatment (WLST) is derived by a conclusion that further treatment will not enable a patient to survive or will not produce a functional outcome with acceptable quality of life that the patient and the treating team regard as beneficial. Although many hospitalized patients die under such circumstances, controlled donation after the circulatory determination of death (cDCDD) programs have been developed only in a reduced number of countries. This International Collaborative Statement aims at expanding cDCDD in the world to help countries progress towards self-sufficiency in transplantation and offer more patients the opportunity of organ donation. The Statement addresses three fundamental aspects of the cDCDD pathway. First, it describes the process of determining a prognosis that justifies the WLST, a decision that should be prior to and independent of any consideration of organ donation and in which transplant professionals must not participate. Second, the Statement establishes the permanent cessation of circulation to the brain as the standard to determine death by circulatory criteria. Death may be declared after an elapsed observation period of 5 min without circulation to the brain, which confirms that the absence of circulation to the brain is permanent. Finally, the Statement highlights the value of perfusion repair for increasing the success of cDCDD organ transplantation. cDCDD protocols may utilize either in situ or ex situ perfusion consistent with the practice of each country. Methods to accomplish the in situ normothermic reperfusion of organs must preclude the restoration of brain perfusion to not invalidate the determination of death.

L2

Family Approach for Organ Donation-Experience in the Middle East

**Mustafa Al-Mousawi, FRCS, MB, BS(Lon),
LRCP, MRCS(Lon), FRCS(Glasg)**

President, Kuwait Transplant Society
Consultant Surgeon and Chairman, Organ Transplant
Center, Kuwait
Head, Kuwait Organ Procurement, Councilor (Middle
East and Africa), The Transplantation Society (TTS)
Kuwait

Majority of Middle East countries, if not all, lag behind in organ donation from deceased donors compared to Europe and N. America.

There are multiple reasons for this including organizational, legal, financial, cultural, religious and educational.

Several countries in the Middle East managed to establish viable and reasonably active deceased donor programs by addressing these issues.

Family approach for organ donation is the cornerstone for getting consent from family of deceased, especially when deceased did not register for organ donation.

Family approach is much more difficult in this region compared to western countries, due to cultural and religious issues and misconceptions. The population in many countries, especially in Gulf countries, is not homogenous with large expat communities from various parts of the world, different languages, religion and cultures. Organ procurement organizations (OPO) should be prepared when approaching families, who may be residing abroad.

Success in obtaining consent depends on several factors:

1. Talking with not more than 2-3 decision maker among family, in a comfortable room, face to face or through video-call.
2. Showing sympathy and passion towards grieving family.
3. Convincing family of death, when heart is beating and organs are working.
4. Gaining trust of family and addressing their concerns on medical management of deceased and brain death.
5. Explaining options available to family.
6. Direct them towards organ donation as a heroic, lifesaving act.

7. Give them time to think and fix another appointment within 24 hours.
8. Provide support for families in need.

Finally support of the ministry of health, budget for organ procurement and experience of person making the approach is of utmost importance in reaching a good deceased donor rate in any country.

L3

Approach to Resolve the Transplantation Challenges in Egypt

Gamal Saadi, MD

Professor of Internal Medicine and Nephrology, Cairo University
 Past President of Egyptian Soc. of Nephrology & Transpl.
 ESNT, ESNT Stem Cell Therapy Chapter Chair
 President of Egyptian Transplantation Society ETS
 Past President of International Federation of Kidney Foundations IFKF
 President of African Society of Organ Transplantation ASOT, Egypt

Since start of Kidney Transplantation in Egypt in 1976, living donation remains the only source of donation practiced. Cadaveric procurement was attempted in 1992 from 2 executed prisoners and was halted since then, in spite of issuance of a regulating law in 2010.

Cultural conflicts and religious extremism do not seem to be the main obstacles to accept the principle of Brain Death. Yet some medical staff inconsistency of adopting brain death diagnosis, community mistrust and ethical acceptance of deceasing organs represent crucial issues. Refraining from adoption of a Cadaveric organ procurement program seems pressing to avoid a social conflict and slippery slope.

Educational approaches and awareness programs give a glimpse of hope. Adoption of evaluation of Brain Death Diagnosis; avoiding procurement; seems to be a mandatory initial phase with leveraging health service equity. This should not disregard increasing the principles and expansion of altruistic living donation.

L4

Organ Allocation: Balancing Equity and Utility

Stefan G. Tullius, MD, PhD, FACS

Joseph E. Murray, MD Distinguished Chair in Transplantation Surgery
 Chief, Division of Transplant Surgery
 Director, Transplant Surgery Research Laboratory
 Brigham and Women's Hospital
 Professor of Surgery, Harvard Medical School
 USA

The success of organ transplantation is based surgical achievements, advancements in immunosuppression in addition to an optimized patient care.

The introduction of chemical immunosuppression, particularly Cyclosporin improved outcomes dramatically. Consequently, an increasing discrepancy between demand and supply developed that resulted into prolonged waiting times with high rates of morbidity and mortality. Clearly, organ allocation and distribution need to address the increasing demand, ideally work towards self-deficiency and preventing the buying and selling of organs.

In 1984 the National Organ Transplant Act (NOTA) has been established. UNOS received the federal contract to operate the Organ Procurement and Transplantation Network (OPTN) and the Scientific Registry of Transplant Recipients in 1986. Since then organ allocation and distribution has evolved utilizing advanced information technology, novel mathematical algorithms and electronic data communication and notifications.

NOTA had been charged to optimize organ procurement activities and to establish a task force on organ and to prohibit organ purchases. Pillars of those activities included to, i) facilitating organ matching through a computer system and a fully staffed, 24 hours operating Organ Center, ii) developing consensus-based policies, iii) establishing a scientific registry, iv) developing a secure Web-based computer system and v) providing professional and public education. The 'Final rule' in 2000 provided the legal framework for organ allocation.

Based on the pillars of justice and fairness, utility, respect for autonomy, efficiency organ allocation has adapted to a changing landscape and an increasing demand.

The kidney allocation system in the US has been

implemented in 2014 delineating organ characteristics through the Kidney Donor Profile Index (KDPI) and expected outcomes through an estimated post-transplant survival (EPTS) system. More recent changes have addressed geographic disparities of disease incidence and organ donation rates by distributing organs in concentric circles rather than in Donor Service Areas or UNOS regions.

Currently, organ allocation is on its way to implement a system of continuous distribution based on sets of attributed weights with relevance for all organs.

Thus, adhering to principles of organ allocation utilizing information technology and based on a continuous assessment of mandatory data in the scientific registry organ allocation has and continues to evolve aiming to optimally balance equity and utility.

L5

Developing Organ Donation and Transplantation Internationally

Marti Manyalich, MD

President, Donation and Transplantation Institute (DTI)
Barcelona, Spain

Organ donation and transplantation is a successful treatment of the chronic disease of many organs. The main problem is the lack of organs for transplantation. The world only performs today 10% of all the transplants needed and that is because of the lack of organs, and we need 10 times more. Nowadays, the leaders in organ donation are Spain, United States and some European countries which can achieve 20 to 40 donors per million people, which can perform 50 kidney transplants per million populations and around 20 livers per million population, where the new vital cycle of transplantation is well developed but donation not.

In our model to develop organ donation, we propose to create some hospital university organization, where teams of professionals dedicated are in charge of developing the problem. In Spain since 1991 until now we have increased the number of teams dedicated to donation and transplantation up to 189. The TPM, Transplant Procurement Management, mainly ICU doctors, full-time or part-time dedicated, are the responsible for that.

The training of these professionals has led to an increase of the donation in many countries like Croatia, Iran, Slovenia, Thailand, Brazil, China, etc. The main purpose is to do an early referral to increase the conversion rate and to create this structure. These professionals work in DBD, DCD as well in the living donation field, overseeing the education of other professionals, the quality assurance programs, doing research and calculating the cost and the resources needed for that. The conclusion is that the waiting list in many centers within European countries and United States are increasing compared with the number of transplants, while in Spain our waiting list still stable for the last 20 years, with less than one year waiting lists for organs such as heart, lung, liver, pancreas or kidney. As a conclusion, organ donation is a new hospital practice independent of the sociocultural environment.

L6

Shifting the Tides and Ending Living Unrelated Donation Kidney Transplantations in the Middle East: The Shiraz Transplant Center Experience

Seyed Ali Malek-Hosseini, MD, FACS (Hon)

President, Iranian Society for Organ Transplantation
Past President, Middle East Society for Organ Transplantation (MESOT)
Founder, Abo Ali Sina Charity Center
Iran

Background: The Middle East is a region with much controversy and limitations regarding deceased organ transplantations. It includes a population of 600 million plus individuals with a majority of Muslims and has a shortage of organs for transplantation. Unfortunately, this has created a pathway for the expansion of organ trafficking, selling and commercialism in many countries of the region.

In this report we describe our unique experience with the establishment of our deceased donor organ donation program for Central and Southern Iran.

Materials and Methods: In the past 20 years, many countries in the world including the Middle East have had an unethical practice in transplantation which included

organ selling and organ commercialism. The history of renal transplantation in Iran was a little different. During the initial phases in the 70s and 80s, only living related kidney transplantations were allowed. However, this policy was not continued and was expanded due to severe shortage of hemodialysis facilities and an urgent need to increase the number of kidney transplantations. Accordingly, some centers in Tehran started unrelated kidney transplantation with the support of the government that offered bonuses to persuade unrelated donors. It should be mentioned that, during this time, permission for deceased organ donation was not yet obtained in Iran. Unfortunately, they named this policy the Iranian Model, which included paid donations and has even continued after provision of dialysis facilities nationwide and the expansion of the deceased donor program.

The main focus of the Shiraz Transplant Center was to develop a deceased donation program from the beginning. During three decades this center was able to expand its deceased donation program to a degree that in 2008 it completely replaced all its unrelated kidney donations by deceased donations. Prior to 2008, most transplantations were related living and deceased donations, and only in cases where a patient was on the wait list for more than one year and a compatible donor was not found, they were only allowed to have living unrelated donations.

The deceased program in the STC has since expanded and has aimed to stop unrelated living donations to achieve some goals which include: to abide by ethical guidelines in organ donations/transplantation such as the declaration of Istanbul, and to finally change the dominant practice of unrelated living donations within the Middle East.

These efforts have resulted in an increase of deceased donations in Iran from 1.6 in 2004 to 14.34 per million population in 2019, and in some areas this has reached to as high as 50.

Results: Up to March 2021, in the STC, overall 5389 kidney transplantations have been performed. Figure 1 shows the trend in kidney transplantation in the STC.

Conclusion: Living unrelated donations are still an ongoing issue in the Middle East region. Our center, has implemented a wide deceased donor program and as a result has been able to completely stop unrelated living kidney transplantations. This is an important breakthrough, considering that the previous Iranian model for organ donation was not in accordance with ethical and international guidelines for the ongoing battle

against organ trafficking. The deceased donor organ donation program should further be expanded within Iran and other countries in the region and continuous campaigns should be held up against any type of unethical issues such as living unrelated transplantations to meet with international standards.

Keywords: Kidney; Transplantation; Middle East; Living donor; Deceased donor

L7

Promoting Deceased Organ Donation in Muslim Communities: A Critical Analysis of Fatwa-Based Campaigns and Suggestions for a Better Educational Intervention Model

Aasim I. Padela, MD, MSc, FACEP

Professor and Vice Chair of Research and Scholarship,
Department of Emergency Medicine
Professor of Bioethics and Medical Humanities,
Institute of Health & Equity The Medical College of
Wisconsin, USA

Critically analyze narratives around Muslim reticence for organ donation and the use of fatwa for behavior change. A growing body of international research demonstrates that Muslims rarely sign up to be organ donors and that a significant number hold negative attitudes towards organ transplantation. This “Muslim problem” with organ donation is of great interest to community leaders, public health officials, healthcare professionals and policymakers, and has proven challenging to address. A dominant narrative within critical discourses is that the less than ideal donation rates result from a lack of public awareness about the societal need and benefits of organ donation, and of Islamic juridical rulings that permit the practice. These suppositions undergird educational campaigns, policy actions, and fatwa-making, with the hope of changing Muslim organ donation attitudes and behaviors.

I will critically examine this narrative from social scientific and normative lenses. Beginning with the normative, I will highlight conceptual issues with the category of “deceased” donation paying particular attention to plurality among Islamic scholars, as well as leading

bioethicists, on the question of death determination for organ donation. I will next feature empirical data from Muslim communities to demonstrate that Muslims have normative concerns that are not addressed within fatwa.

I will then apply a social scientific lens by critically evaluating educational interventions through the theory of planned behavior. My analysis will demonstrate that extant fatwa are flawed behavior change tools.

The final part of the presentation will focus on more holistic, and arguably more ethical, approach to the “problem” that focuses on informed decision-making and community-based education.”

L8

Status of Organ Donation and Transplantation in the UAE

Ali Abdul Kareem Al Obaidli, MD MPH

Transplant Nephrologist

Chairman of UAE Organ Transplantation Committee

Group Chief Academic Affairs Officer

Corporate Academic Affairs

Abu Dhabi Health Services Company – SEHA

Abu Dhabi, UAE

The first living related kidney transplant in the UAE was performed since 1985, however Multi organ deceased organ donation started in UAE after the Federal Law No 5 of 2016 was passed as a result of Collaboration of Various Stakeholders working towards the common goal of enabling citizens and residents of the UAE access to transplantation services of the highest quality. At present UAE has one Multiorgan transplant center and 6 other centers performing kidney transplantation. Sharing of resources were key part of the success including tissue typing services and common logistical support system. Regional organ sharing agreement with SCOT that enabled the utilization of deceased donor grafts for potential recipients in neighboring countries were also activated. Since 2017 and as of May 2021, there have been a 42 brain dead donors in the UAE resulting in the transplantation of 152 organs including Heart (22), Lungs (17), liver (34), kidney (79) and pancreas (3), 120 of the organs were transplanted in UAE and 32 in Saudi Arabia. The Donors were from 10 different nationalities and recipients were from 18 nationalities. Noteworthy is the

fact that, although the overall organ donation rate PMP remains still low, the number of organs transplanted (3.6) per donor is one of the highest worldwide ratio which supports maximizing the impact of donation by national and regional collaborations and organ sharing and more lives saved per deceased donor.

L9

The Dual Aspect of Deceased Organ Donation

Antoine Stephan, MD

Past President, Middle East Society for Organ

Transplantation (MESOT)

Medical Director, National Organization for Organ and Tissue Donation and Transplantation (NOD-Lb)

Baabda, Lebanon

Improving the organ donation rate requires the participation of both the medical profession and the society as a whole.

The relative importance of each actor depends on the prevailing public attitude towards deceased donation and the level of training and experience acquired by the health professionals.

These aspects are particularly important in our region where the subject is relatively new. Both lines of action will have to be addressed concomitantly.

L10**The Challenges In Selecting Donors In An Intrafamilial Program In A Developing Country****Anwar Naqvi, MD, MBBS, MHPE¹****S. Adibul Hasan Rizvi, MD, FACS (Hon)²**¹Past President, Middle East Society for Organ Transplantation (MESOT)

Professor of Urology and Coordinator

Center of Biomedical Ethics and Culture, Sind Institute of Urology and Transplantation (SIUT)

²Renal Transplant Surgeon

Founder, Sindh Institute of Urology and Transplantation (SIUT)

Karachi, Pakistan

Before the COVID pandemic in 2019 SIUT carried out 433 kidney transplantation from intrafamilial donors.

In the same year 1161 patient were registered in the chronic dialysis program where 67% were male while of the 433 patient transplanted 56% of the donors were males. The largest number of donors were brothers 183 (42%) followed by 76 (17.5%) sisters and 68 (15%) were mothers.

In selecting 433 patients for transplants 2524 donors were evaluated where 795 (31%) were brothers, 808 (32%) were sisters, 407 (16%) were fathers and 338 (13%) were mothers.

Medical reasons for refusal to accept the prospective donors were 1600 (76.5%) of which hypertension 15.7% and diabetes mellitus 13.8% being commonest. Social reasons for refusal were seen in 493 (23.5%) prospective donors.

We will discuss the multiple and often competing challenges in donor selection in a programme which is free with dignity and compassion.

L11**The Impact of Pancreas Transplantation on the Secondary Complications of Diabetes****Jeremy Chapman, MD**Clinical Professor, The University of Sydney
Medicine, Westmead Clinical SchoolThe Westmead Institute for Medical Research
Sydney, Australia

Successful pancreas transplantation in diabetic patients with end stage renal failure can restore glycaemic control, but this occurs at a point in the progression of their diabetic complications that ensures they are simultaneously impacted by severe retinopathy, neuropathy and widespread vascular disease. Many patients who are severely sarcopaenic and those with severe cardiac disease are often excluded from transplantation because of high postoperative mortality rates.

The question that can never be answered by randomized controlled trial is: can secondary complications of diabetes be reversed and if so to what extent? In order to answer this question, the field has had to look to cohort analyses of post-Simultaneous Pancreas and Kidney transplant (SPK) recipients. The option of a comparison cohort has also been complex since the group most easily compared to are specifically biased – those with Diabetes and kidney failure selected not to receive an SPK transplant. Another option is to compare to those who receive a living donor kidney instead of an SPK transplant, but few centers have been able to follow sufficient patients for comparison. The burden of proof thus falls to longitudinal study of successful SPK recipients over long enough time periods to detect change in objective measures of retinopathy, neuropathy and vascular disease.

The data on survival are of course critical to any such analyses, since the competing risk of death obviates progression of complications. Analysis of the Australian data show that SPK recipients fare better than patients with Type I Diabetes Mellitus (DM-I) who receive a deceased donor kidney, especially beyond five years' post-transplant. The comparison with DM-I living donor recipients shows that there is no difference in survival outcomes to ten years. The cause of death in SPK recipients, like DM-I kidney only recipients, is predominantly cardiovascular with a substantial impact beyond 20 years post SPK.

Diabetic nephropathy does not recur in the kidney transplant of SPK patients with normal glycaemic control and there are case reports of reversal of diabetic nephropathy in kidneys transplanted from deceased donors with early stages of diabetic nephropathy.

Data on diabetic neuropathy, autonomic neuropathy, retinopathy, cataracts and the predominantly important problem of cardiovascular disease progression will be discussed in detail.

The conclusions from the data gleaned over the last thirty years is reassuring for those patients who have put their faith in SPK transplantation.

L12

One Waiting List for Pancreas and Islet Transplantation- The UK Experience

Nadey Hakim, MD, PhD, HonD Arts

President's Envoy, Imperial College

Vice President, British Red Cross

Imperial College London

London, United Kingdom

Pancreas and islet transplantation are fully funded by the health service in the UK. In 2010, a common waiting list and national pancreas offering scheme began to allow equitable access for both whole organ and islet transplant recipients to donor organs. UK centres follow a common listing and assessment policy and data are collected by NHSBT to monitor outcomes and govern the listing and organ offering process. Over the 10-year period, islet transplantation has become established in the UK with no detriment to whole organ transplantation with excellent outcomes for both services.

Simultaneous transplantation of the pancreas with a kidney from the same deceased donor (SPK) has been clearly shown to improve both survival and quality of life for insulin dependent diabetic patients, however a growing number of patients have access to live donor renal transplantation and may benefit from subsequent pancreas transplantation from a deceased donor (PAK). Historically, insulin dependent diabetic patients with poor glycaemic control and normal renal function were offered pancreas transplantation alone (PTA), however,

over the last 20 years' islet transplantation (ITA) has been shown to be effective in controlling specific complications of DM especially hypoglycaemic unawareness and improving glycaemic variability. Increasing experience with islet transplantation has encouraged clinical teams to consider islets after a successful kidney transplant (IAK) or simultaneously from the same deceased donor (SIK).

The UK Approach: Organ transplantation in the UK has been fully government funded for many years and organ donation is supported in such a way as to facilitate equitable and transparent access for recipients to donor organs. Pancreas transplantation for UK patients is delivered by 8 centres and islet transplantation by 7 centres supported by 3 isolation laboratories. Patients are referred to the regional centres where they are assessed and, if deemed appropriate, listed for transplantation with the national organization responsible for organ donation and offering of organs (NHSBT). In 2010 all the pancreas and islet centres in the UK agreed to a pancreas allocation process that accommodates both solid organ and islet transplant recipients. The UK pancreas offering scheme was further revised in 2019 and is designed to match the donor pancreas with the most appropriate recipient either whole organ or islets (NHSBT POL 199/9).

L13

Immunosuppression and Compliance After Orthotopic Liver Transplantation: State of the Art

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Introduction: The backbone of immunosuppression after orthotopic liver transplantation (OLTx) remains calcineurin inhibitors. The current rates of acute and chronic rejection are 10-40% and 5%, respectively. Medium and long rally characterized by the absence of acute and chronic rejection. In 1997, through a prospective

trial of complete drug weaning, it had been shown in Pittsburgh that withdrawal of immunosuppression (IS) after OLTx is possible and allows to achieve graft survival (with normal function and histology) in an IS-free recipient. In following trials from other Institutions, it had been shown that complete drug weaning could be safely accomplished in up to 20% of OLTx recipients and even in a handful of living-related kidney recipients who had been drug-free for as long as 30 years.

Conclusion: The gold standard of immunosuppression remains calcineurin inhibitors mostly, in the short-term, in association with steroids and or Mycophenolate mofetil or mTOR inhibitors (Everolimus, Rapamune). In 2004, we showed that Basiliximab, in a tacrolimus-based immunosuppressive regimen, effectively reduces acute cellular rejection (ACR) and increases ACR-free survival after OLTx. The occurrence of post-OLTx immunosuppression-related complications has led to new protocols aimed at protecting renal function and preventing de novo cancer and dysmetabolic syndrome. CNI-sparing protocols with induction therapy (ATG, Daclizumab, Rituximab, Basiliximab) are now well-established immunosuppressive approaches, minimizing CNI-doses and possibly avoiding steroids. Studies on once-daily “prolonged-release Tacrolimus” are encouraging with lower trough levels and dose assumption and better graft and patient survival than standard twice-daily tacrolimus dosage. The optimal long-term immunosuppressive therapy should be tailored and adjusted based on the diagnosis among liver recipients. Finally, induction therapy with CNI sparing protocols can avoid the side effects on renal dysfunction, de novo cancer, and cardiovascular syndrome.

L14

Early Versus Standard Liver Transplantation for Alcohol-Associated Liver Disease

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Background: Alcohol-associated liver disease (ALD) has surpassed all other causes of liver failure as the

leading indication for both waitlist additions and liver transplantation (LT) in the US. ALD exists on a spectrum ranging from steatosis to acute liver failure and cirrhosis. While alcohol-associated cirrhosis is a common indication for LT, patients with other forms of ALD are often denied access to LT. Largely due to pre-LT abstinence requirements, presentations such as severe alcoholic hepatitis (SAH) and alcohol-induced acute on chronic liver failure (ACLF) are contraindications to LT at many centers despite their extremely high mortality, exceeding 70% at six-months in some reports.

Recent alcohol use is a defining factor of SAH, and is a frequent precipitant of ACLF. Although abstinence from alcohol may result in full or partial recovery in mild cases, non-response to medical treatment portends a poor prognosis. Approximately 40% of SAH patients do not respond to steroids, and there are no proven alternative medical therapies. For these patients, LT is the only remaining treatment. Although longer periods of abstinence may be associated with lower rates of alcohol relapse, the association of a six-month cut-off with post-LT relapse in ALD patients is neither validated, nor applicable for patients who are unlikely to survive six-months without LT.

The survival benefit for LT in SAH and ACLF patients has been established. Most notably, work by Mathurin et al reported a six-month patient survival of 77% for SAH patients who underwent LT compared to just 23% in those who did not ($P < 0.001$). Preliminary results from the early liver transplantation (ELT) program at our center, which removes the six-month abstinence requirement for patients with decompensated ALD, demonstrate comparable outcomes between ELT and standard liver transplantation (SLT). Although rates of LT for SAH have risen in recent years, this practice remains limited, and concentrated at a minority of centers in the United States. Before ELT can be expanded, it is vital to understand long-term survival and factors associated with poor post-transplant outcomes.

Materials and Methods: Using the largest single-center cohort of patients undergoing ELT for ALD to date, this study sought to define patient, graft, and relapse-free survival. Using SLT as a comparison group, we investigated the relationship of ELT with these outcomes. We additionally identified relapse patterns and alternative factors associated with patient survival.

Results: Among 163 ALD patients, 88 (54%) underwent ELT and 75 (46%) SLT. ELT recipients were younger (49.7, interquartile range [IQR], 39.0-54.2 vs. 54.6, IQR 48.7-60.0, $P < .001$), and had higher MELD at listing (35.0, IQR

29.0-39.0 vs. 20.0, IQR 13.0-26.0 $P < .001$). ELT and SLT recipients had similar one-year patient survival (94.1% [95% CI, 86.3%-97.5%] vs. 95.9% [95% CI, 87.8%-98.7%]; $P = .60$), graft survival (92.7% [95% CI, 84.4%-96.7%] vs. 90.5% [95% CI, 81.0%-95.3%]; $P = .42$), relapse-free survival (80.4% [95% CI, 69.1%-88.0%] vs. 83.5% [95% CI, 72.2%-90.6%]; $P = .41$), and hazardous relapse-free survival (85.8% [95% CI, 75.1%-92.2%] vs. 89.6% [95% CI, 79.5%-94.9%]; $P = .41$).

Conclusion: In the largest single-center cohort of ELT for ALD, adherence to the six-month rule was not associated with superior patient survival, graft survival, or relapse-free survival among carefully selected patients with insight into drinking history and strong psychosocial support. ALD patients should not be categorically excluded from LT based on having less than six-months abstinence.

L15

Twenty Years Experience of LDLT: Lessons Learned

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The absence of a cadaveric liver transplantation program in Egypt has led us to start the first living donor liver transplantation (LDLT) program in Egypt in August 2001. Since then we have performed more than 1200 cases of LDLT in three transplant programs. This is mainly an adult program with only six paediatric cases and only three left lobe donations. the remaining cases were right lobe donations of which four were for retransplants.

Donor safety has been of primary concern in our programs. Donors were 18 to 45 years of age with a mean of 30 and ABO-compatible but not identical. Liver biopsy was done routinely in all donors and 30% revealed abnormal findings in spite of normal tests stressing the importance of routine liver biopsy in donors.

There were no donor mortalities and donor complications were classified using the Clavien grading system with all complications within grades I and II a & b. The residual

liver volume was always kept at or above 35.

The mean age for recipients was 44 years, MELD 21 and BMI 26 with HCV constituting 96% of the cases.

Associated Hepatocellular carcinoma (HCC) has been the indication in 23% of cases. Bridging and downstaging procedures were undertaken as appropriate.

Biliary complications have been an initial challenge being a cause of mortality in 0.5% and morbidity in > 10% of cases in the initial 130 cases analysed. Modification of the surgical techniques and selection criteria has eliminated the mortality from biliary complications in LDLT and reduced biliary complications to less than 15%.

Technical modifications have greatly improved the results with a 90% three months survival and 85% one year survival. We will present those technical modifications that have impacted survival remarkably.

These successes should not deter us from initiating a deceased organ donation program.

L16

Pancreas and Intestinal Transplantations in The Shiraz Transplant Center

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Background: The Middle East has a high rate of both prevalence and incidence of type 1 diabetes. One of the optimal surgical treatments for this condition is pancreas transplantation (PTx).

From another aspect, intestinal failure is among the most complicated conditions and intestinal transplantations (ITx) are among the most intricate transplantations which are performed in few centers in the world.

The Middle East is a region where reports on ITx and PTx are mainly lacking.

Inhere we report our results on pancreas and intestinal transplantations (ITxs) from the Shiraz Transplant Center

(STC) which is one of the largest organ transplantation centers in the world.

Materials and Methods: Up to March 2020 and prior to the COVID-19 pandemic, an annual median of 17.50 PTxs were performed in the STC, making up an overall 268 transplantations. Regarding ITx in the STC, it is divided in two eras expanding from 2006 to 2017 and 2017 onwards.

Results: Among those who had simultaneous pancreas-kidney transplantations (SPK), 38% developed complications and among these complications acute rejection (55.2%), post-operative bleeding (23.4%) and infections (6%), were the most common. One-, 5-, and 15-year patient survival was 87.9%, 83.9% and 82.7%, respectively and graft survival was .5%, 79.9% and 78.2%, respectively.

Among those who had pancreas transplantation alone (PTA), 37.8% developed complications, the most common of which were rejections (70.6%), bleeding (14.7%) and infections (14.7%). Furthermore, 1-, 5-, and 15-year patient survival was 88.8%, 84.4% and 82.2%, respectively and graft survival was 82.2%, 78.9% and 77.8%, respectively in this group.

Most common causes of death in the SPK and PTA groups were sepsis (63% and 48.6%, respectively) and graft rejection (22.2% and 35.7%, respectively).

Up to June 2021, overall 58 ITxs have been performed. These have included 25 isolated ITxs, 20 combined liver-intestine, 13 multi-visceral (6 modified multi-visceral transplantations). Mesenteric ischemia was the most common etiology for ITx. All the ITxs done in our center were among adults and were taken from deceased donors.

Conclusion: The STC performs among the highest PTxs outside the US. Considering that PTxs are mainly dependent on the availability of deceased donations, they are scarcely performed in the Middle East region.

To this day, in the Middle East, intestinal failure and the management of this condition is widely an unresolved issue. Various autologous gastrointestinal reconstruction techniques and developments in parenteral nutrition, can decrease number of patients on the ITx wait list among those with intestinal failure.

Keywords: Pancreas; Intestine; Transplantation; Iran

L17

The Impact of Covid-19 Pandemic on The Management of Pediatric Kidney Transplant Recipients

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Children appear to be less commonly and less severely affected by COVID-19 than adults, accounting for 1% to 5% of all COVID-19 cases. The COVID-19 pandemic has challenged pediatric kidney transplant programs to provide safe and consistent care during this difficult and unprecedented time. At the current time of this pandemic, the best practices being delivered to pediatric kidney transplant (PKT) patients are based on the available information from published literature, expert opinion. While data are still emerging, it is presumed that children with chronic kidney disease and/or those who take immunosuppressant may be at increased risk for complications from COVID-19 infection.

The key areas of pediatric kidney transplant care that may be affected by the COVID-19 pandemic are as follows: Transplant activity, Outpatient clinic activity, Monitoring, Multidisciplinary care, Medications (immunosuppression and others), Patient/family education/support, School and employment, and Management of pediatric kidney transplant patients who are COVID-19 positive. Currently available evidence suggests that the immunosuppressed children with kidney transplants population are not at increased risk of severe COVID-19 disease¹³. However, clinicians should be aware that there have been reports suggesting that transplant recipients may present with atypical symptoms. There are currently no evidence-based reports to support specific adjustments to immunosuppressive medications in relation to COVID-19. Therefore, decisions about reduction or discontinuation of Immunosuppression for kidney transplant recipients who are COVID-19 positive to be considered on a case by case basis.

Conclusion: There is a paucity of literature to support evidence-based management of PKT patients during the COVID-19 pandemic. Instead, expert opinion &

available knowledge and experience are subject to biases associated with this level of evidence

Keywords: pediatric kidney transplant, pediatric nephrology, pediatric, kidney transplantation

L18

Covid-19 Pandemic Research Opportunity in India: What the Pandemic is Teaching Us About Transplantation

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In India, as per the Global Observatory on Donation and Transplantation, a total of 61821 organ transplants were done in 2013-2019. India is having predominant living donor kidney transplant program (85%). India has performed 12,666 transplants in 2019, the second-largest volume by countries worldwide. We aimed to resolve the COVID-19 pandemic that is affecting a large sector of the population by diverting efforts from deceased-donor organ transplant. Transplant units conducted case by case evaluations when assessing the convenience of carrying out lifesaving organ transplantation and majority of the transplant program was on hold in India between March-June 2020(1). When transplants restarted, National Organ and Tissue Transplant Organization (NOTTO) guidelines for preparing donor and recipient for the transplant surgery suggested routine laboratory screening with COVID-19 reverse real-time polymerase chain reaction (RT-PCR) test and chest CT scan prior to surgery along with COVID FREE safe pathway and CONSENT accepting a potential risk of COVID-19 (2). Indian Multicenter (n=13) retrospective study including 250 kidney transplant recipients (KTR) with RT-PCR confirmed COVID-19 from March- September 2020 reported overall patient mortality of 11.6% , 14.5% in hospitalized patients, 47% in intensive care unit patients, and 96.7% in patients requiring ventilation (3).The largest single center retrospective study in public sector transplant hospital in India including 225 KTR with

RT-PCR confirmed COVID-19 from May 20 –April 21 reported higher mortality rates(7.1%) in KTR compared to those in non-immunosuppressed general population (1.2%) in India. (4). Convalescent plasma therapy is highly safe and clinically feasible and reduces mortality in 10 KTR with severe COVID-19 (5). Remdesivir therapy is safe and clinically feasible in 57 KTR with moderate to severe COVID-19 (6). Indian Multicenter (n=19) retrospective study of 31 KTR from living donors who recovered from RT-PCR confirmed COVID-19 from July-December 2020 supported safety of proceeding with living donation for asymptomatic individuals with comprehensive donor, recipients screening before surgery, using a combination of clinical, radiologic, and laboratory criteria (7). Indian Multicenter (n=22) retrospective study of 75 KTR who recovered from RT-PCR confirmed COVID-19 performed from July 2020 to January 2021 supported safety of proceeding for transplantation after comprehensive donor and recipient screening before surgery using a combination of clinical, radiologic, and laboratory criteria, careful pre-transplant evaluation, and individualized risk-benefit analysis (8).NOTTO COVID-19 vaccine guidelines suggest that transplant recipients and their household members should get vaccinated against any COVID-19 vaccine (9).Critical COVID-19 despite vaccination in our report is concerning and it emphasizes the fact that KTR are more prone for COVID-19 even after vaccination. Hence, safety measures to prevent disease transmission should be continued (10). Indian Multicenter (n=8) retrospective study of 13 KTR with recurrent COVID-19 reported the largest collection of KTR with reoccurring SARS-CoV2 infection and observed a 46% mortality (11,12).”Infodemic” and F virus(fear) was more pandemic than COVID Virus (13). The findings of this study would help us to prepare for future surge in COVID-19 with digital reforms in healthcare system and regular updates in healthcare policy (14). Indian society of Organ Transplantation, the Transplantation Society and NOTTO are working to improve the transplantation services, education and research in India.

L19

Covid-19 and Renal Transplantation in 2021; What is Yes? What is No?

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COVID 19 had a significant impact on nephrology in general and renal transplantation, specifically. In 2021, the knowledge about the management of COVID -1 9 infection and precautions has developed significantly compared with 2020.

In this talk will explain an up to date presentation of what is considered reasonable from COPVID 19 infection in relation to transplantation in 3 different levels:

- 1) Before renal transplantation: during transplant work up and being on the waiting list. This will include benefit/ risk of being on a waiting list for transplantation and any potential tools to improve patient care.

Will there be a different perception of renal transplantation in view of COVID -19?

- 2) At transplantation time; impact of COVID 19 and the needed precautions.

Brief description of the impact of COVID 19 on the rate of renal transplantation and contributing factors in the reduction of transplantation.

- 3) Post-transplant care and associated risks.

Description of common and important precautions in managing renal transplant patient with COVID 19 infection including medication adjustment.

This will be followed by future expectation of the progress in 2021 and after with summary and take-home message of the presentation.

L20

Organ Transplantation in Tunisia: Impact of Political Events (Arab Spring Revolution) and the Covid-19 Pandemic Era

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Background: The organ transplantation program started in Tunisia in 1986 by kidney then extended to other organs including heart, liver, pancreas and lung. After a steady and regular progression from 1986 to 2010, political changes (the Arab Spring Revolution) which took place in January 2011 then and the recent Covid-19 pandemic which started in 2019 induced a great impact on solid organ donation and transplant activity.

Aim: The aim of this study is to investigate the effect of the political changes and the COVID-19 pandemic on solid organ donation and transplantation in Tunisia

Materials and Methods: We referred to the data of the National Centre for Advancement of Organ Transplantation created in 1995. From 1998 to 2020, the number of transplantation units has increased from one to 13 throughout the country, and the yearly organ transplant number has progressively increased from 40 at the first year to 139 in 2010. Total kidney transplants were 2 031 including 20% from deceased kidney donors. The national waiting list counts 1644 patients out of a total of 11 000 dialysis patients. Heart transplant began in 1993 allowing to treat a total 16 patients. Liver transplant began in January 1998 allowing to treat 56 adult and 13 pediatric patients. Few lung transplants were performed in 2013 and 2014.

We compared the initial period 1998-2010 to 2011-2018 (political changes) then to 2019-2020 (Covid-19 era).

Results: The kidney transplant activity which was at a peak of 139 per year in 2010, decreased after the spring revolution to 80 in 2018 then dropped to 20 at the second year of the COVID-19 pandemic. The liver transplant activity which has been stagnating during the first decade at 5 cases per year, decreased in the period 2010-2018 then improved in 2019 to reach 8 cases per year then dropped in 2020.

Heart transplantation which has been stagnating since 2004 re-started in 2019 and allowed to perform 9 cases in the period 2019 -2021 during the corona epidemic

During the COVIC-19 pandemic era (2019-2020) there was a decrease of organ procurement from diseased donors as follow: -declared potential donors from 84 to 43/ year; -confirmed used organs from 50 to 28; -multi-organ procurement from 15 to 1 cases.

Conclusion: This study showed that main political events which began in Tunisia in 2011 and followed by Corona -19 pandemic had a negative impact on solid organ donation and transplantation.

L21

Immunopathology of Covid-19 and Allograft Rejection

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Immunopathology

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Both viral infection and allograft rejection are true representation of the specificity, complexity, sophistication and redundancy of an elegantly and meticulously designed immune system. Although the immune system that is activated in response to the insult by covid-19 is the same that is activated following an insult by a transplanted organ. However, the results are not the same. SARS-CoV-2 is primarily a respiratory tract infection, is associated with hypercoagulability, or increased tendency of the blood to clot. The virus infects type-II pneumocytes of both the upper and lower respiratory tract cells utilizing the spike protein to bind to the ACE2 receptor on the host cells to penetrate the cells. Following replication inside the cell the virus infects other healthy cells leading to an augmented immunological insult to the body. A rise in the number of virus cause damage or death to the host cell leading to release of damage-associated molecular patterns (DAMPs). DAMPs originate from different sources, including but not limited to, the nucleus histones and high mobility group box 1[HMGB1]), cytosol, cold-inducible RNA-binding protein [CIRBP]

and calprotectin [S100A8/A9]), extracellular matrix, mitochondria, formyl peptide and mitochondrial DNA [mtDNA]), granules, defensins and granulysin), and the plasma membrane (glypicans). These DAMPs can initiate and perpetuate a non-infectious inflammatory response by interacting with pattern recognition receptors (PRRs). The lung epithelial cells, endothelial cells, and alveolar macrophages, have receptors for the DAMPs which upon recognition causes the production by these cells of pro-inflammatory cytokines and chemokines which is responsible for many of the clinical events associated with the virus. On the positive side, the viral DAMPs, cause the release of type I interferon which acts as a feedback mechanism to inhibit virus replication. In at least 10 to 15 % of Covid infection there is a delayed IFN-I production which may lead to further recruitment of inflammatory cells such as monocytes, macrophages, and neutrophils which secrete pro-inflammatory cytokines causing what is known as cytokine storm that damage the lung alveoli leading to severe acute respiratory syndrome as well as multiple organ failure. Currently the serum inflammatory marker C-reactive protein and D-dimer, are utilized as biomarkers for the prognosis of Covid-19. The covid infection causes the T-cell associated markers, CD4, CD8 are downregulated which allows the infection to evade the immune system.

In transplantation, the first step leading to the initiation of the immune system cascade, leading to graft rejection, is recognition. Recognition is followed by the ligation of a series of adhesion molecules starting with an antigen to its specific T-cell receptor (TCR) cluster of differentiation (CD) complex, expressed on the surface of the T cell. In order for the activation to proceed additional costimulatory signals, such as ligation of the CD28/B7, CD4/HLA class II and CD/HLA class I antigens are required. During the activation process, the lymphocyte, begins to acquire new CD molecules such as CD25 (IL-2R), CD69, CD71 and HLA-DR. This is accompanied by an increase of cytokines production by the primed T cell. The cytokines are essential for the differentiation, proliferation and amplification of the T-cell. The most important of these cytokines is interleukin (IL)-2, which is essential for activated T-cell proliferation. As such both rejection and infection are dealt with by the same immunological parameters however, in infection they are downregulated and they are upregulated in rejection.

L22**Predictability and Risk Factors for Development of New Onset Type-2 Diabetes Mellitus After Transplantation****Faissal A.M. Shaheen, MD, Facharzt (Austria), FSM (Neph), FRCP (UK), FACP (USA)**

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 President, International Society for Organ Donation and Procurement (ISODP)
 Past President, Middle East Society for Organ Transplantation (MESOT)
 KSA

lecture

Post-transplant diabetes is observed after transplantation (Tx) of kidney, liver, heart, lung and other solid organs, as well as bone marrow and hematopoietic stem cell. This is a secondary type of diabetes mellitus. The overall incidence of post-transplant diabetes mellitus (PTDM), recently called New Onset Diabetes Mellitus after Transplantation (NODAT) is 4- 50% after kidney transplantation, 11-38% after heart Tx, 7-30% after liver Tx and 30-35% after lung Tx. NODAT has been reported to be associated with a higher risk of mortality, especially cardiovascular related as well as graft failure including failure due to diabetic nephropathy. Based on Medicare claims, the incidence of NODAT after 3 months of Tx is 9.2%, after 12 months 18% and after 36 months it was 24%.

Saudi Arabia ranks 2nd highest in the Middle East and 7th in the world for the incidence of Diabetes Mellitus. The significant variables associated with increased risk of NODAT in Saudi Arabia included age ($P < 0.001$), Hepatitis C Virus (HCV) infection ($P = 0.05$) and impaired fasting glucose ($P = 0.02$). Oral Glucose Tolerance Test (OGTT) is considered the gold standard for diagnosis of NODAT. Glycosylated hemoglobin (HbA1c) should not be used alone to screen NODAT. According to the International Consensus meeting on PTDM, the recommendations included the following: exclude transient post-Tx hyperglycemia from PTDM diagnosis; expand screening using post-prandial glucose monitoring and HbA1c, while OGTT remains the most important.

Early identification and management of NODAT is important. The KDIGO guidelines have recommended that all non-diabetic kidney transplant recipients should be screened with FBS, OGTT and/or Hb A1c at least

weekly for 4 weeks, 3 monthly for 1 year and annually thereafter.

In conclusion, kidney transplant recipients with NODAT exhibit similar complications as those seen in the general population with type-2 diabetes, but at an accelerated rate. They exhibit a higher risk of major cardiovascular events, graft failure, and death. Hyper-filtration is believed to negatively impact allograft survival. Patients with NODAT develop micro-vascular complications more rapidly than patients with non-transplant related diabetes. PTDM is a common, potentially preventable complication that has adverse effects on patient and graft survival. Screening and identification of at-risk population is important. All patients should be counselled regarding their risk of PTDM. Immunosuppressive drug adjustment should be considered on a case-by-case basis. Finally, adjustment of immunosuppression therapy aimed at improving glucose tolerance, must be weighed against the risk of acute rejection.

L23**Management of HLA and/or ABO Incompatible Patients in Kidney Transplantation: Role of Kidney Paired Donation****Khalid Meshari, MD**

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Kidney paired donation (KPD) provides a superior alternative to antibody removal and/or neutralization in patients with immunological incompatibilities with their living donors.

Those patients comprise approximately 1/3 of all potential living donor transplants. The incompatibility could either be due to an ABO incompatibility or due to the presence in the recipient of donor directed antibodies (HLA incompatibility)

The idea of KPD was first reported by Rapaport in 1986 and the first KPD transplant was carried out in 1991. Since then, KPD programs have been developed in many countries around the globe.

At King Faisal Specialist Hospital & Research Centre, the first KPD transplant was done in 2011. In 2016, a comprehensive single center KPD program was established. Our program has quickly grown over the ensuing years to become one of the largest single center KPD programs in the world.

The presentation will address our KPD strategies, policies and the outcome of patients who have received kidney transplantation through our program. Additionally, it will highlight our current efforts to establish a national KPD program for the Kingdom of Saudi Arabia.

L24

Impact of Pre-Transplant Hemoglobin Blood Level on Kidney Transplantation Outcome at One Year: A Retrospective Study

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Background: Kidney transplantation is the ultimate solution for patients with end stage renal disease. These patients suffer from chronic anemia, which is a major risk factor for post-operative complications. Do we have to correct pre-transplant hemoglobin level to prevent these problems? In the literature, there is a disparity of opinions in the medical community. Our aim is to determine the impact of the pre-transplant hemoglobin blood level on the outcome of kidney transplant. The optimal pre transplantation hemoglobin concentration associated with positive prognosis is controversial. Previous studies showed that patients with pre-transplant hemoglobin level less than 10 gm/dl experience comparable short-term outcome but poorer renal function. Since this level also represents the cutoff to define severe anemia, do we need to increase pre-transplant hemoglobin blood level above this value?

Materials and Methods: In a retrospective study, data was obtained from 363 patients who underwent kidney transplantation from December 1998 through January 2017. Patients were divided into two groups: low hemoglobin group (<10 gm/dl) and high hemoglobin group (≥10 gm/dl) and were followed up for 12 months after transplantation. We studied graft function, acute

rejection, patient survival, surgical complications, and infection rates at one year.

Results: There was no significant difference at 1 year between both groups concerning serum creatinine level (1.18 ± 0.49 vs 1.1 ± 0.44 ; p-value: 0.099), acute rejection (15.6% vs 17.7%; p-value 0.710), delayed graft function (3.3% vs 2%; p-value: 0.442), one-year graft survival (96.2% vs 96.1%; p-value 0.940) and one-year patient survival (97.2% vs 96.7%; p-value 0.807).

Conclusion: The pre-transplantation hemoglobin level has no effect on the major outcomes of kidney transplantation during a period of one year. In low risk kidney transplant patients, there is no need to increase pre-transplant hemoglobin level.

Keywords: Kidney transplantation, End stage renal disease, anemia, pre-transplant hemoglobin level

L25

Long Term Yearly Kidney Donor Follow-Up: 20 Years and Beyond

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In emerging economies living related donors provide majority of the kidneys for transplantation. Long term follow-up of donors is important to maximize donor safety and prevent adverse consequences of donation. Long term yearly follow-up and management of donors is undertaken at our institute in a specialized dedicated donor clinic to identify risks and to prevent adverse outcomes of donors.

In an observational cohort study 519 donors were followed up yearly 15-30 years after donation from 1990 to 2020. Of the 519 donors, 240 completed 15-20 years (Group 1), 178 (Group 2) 21 – 25 years and 101 had follow-up of 26-30 years (Group 3).

The mean ages were (Group 1) 51.6 ± 9.1 , (Group 2) 57.8 ± 10.4 and (Group 3) 60.5 ± 7.6 years. Donors > 65 were 6.7% in Group 1, 27.1% in Group 2 and 33.2% in Group 3. The mean creatinine clearance ml/min/1.73m²

was 84.7 in Group 1, 78.2 in Group 2 and 76.5 in Group 3. Mean protein excretion mg/24h was 85 (Range 45-154) in Group 1, 80 (Range 50 – 152) in Group 2 and 77 (Range 50 – 137) in Group 3.

New onset hypertension was 10% in Group 1, 3.9% in Group 2 and 2% in Group 3. New onset diabetes was 7.5% in Group 1, 3.9% in Group 2, and 2.9% in Group 3. Mean systolic and diastolic blood pressures mmHg was 127.9±16.9 and 82.0±10.8 in Group 1, 129.9±16.1 and 82.3±10.5 in Group 2 and 129.5±17.5 and 82.5±10.2 in Group 3.

Long term yearly follow-up identified risk factors and new onset diseases where timely intervention prevented adverse outcomes. Care of the donors is essential in low income countries to encourage living donation.

L26

The Use of High-Risk Donors to Increase Deceased Kidney Donation

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Introduction: As per the Global Organ Donation and Transplantation report, <10% of the global organ transplantation needs are fulfilled.

Materials and Methods: Literature review of relevant publications related to expanded criteria donors (ECD), kidney donor risk index (KDRI), kidney donor risk profile (KDPI), donors after circulatory declaration of death (DCD), donors with acute kidney injury (AKI), donors with diabetes mellitus (DM) and donors with disseminated intravascular coagulation (DIC).

Results: About 20% of the kidneys recovered in the United States are not transplanted. Over 40% of the kidneys recovered from donors >55 yrs are not transplanted. Similar picture for donors with DM, >30% of donors with HTN, >30% of donors with terminal serum creatinine >1.5 mg/dL, >30% of donors in whom a kidney biopsy was performed, and in 60%

of donors with KDPI >85%. The use of ECD kidneys results in an increased patient survival compared to remaining on the waiting list. When there is immediate graft function, there is no difference in death censored graft survival (DCGS) in recipients of ECD kidneys vs. standard criteria donor (SCD) kidneys. In the event of redo kidney transplant (KTx), the use of ECD donors results in similar patient survival vs. remaining on dialysis; however, quality of life and cost utility should be considered. The use of kidneys with KDRI >1.15 results in decreased graft survival. However, there is a labelling effect increasing the discard rate of kidneys with similar KKRI based on the SCD/ECD definition, in particular in biopsied and pumped kidneys. However there is similar DCGS and patient survival for SCD and ECD kidneys with similar KDRI. The use of high KDPI kidneys (>71%) results in patient survival benefit, for those >50 yrs and on renal replacement therapy >33 months. There is a minimal impact of the KDPI on the overall discard rate of deceased donor kidneys. There is a labelling effect that increased the discard rate of SCD kidneys with high KDPI. There is a difference in graft survival of ECD kidneys that were pumped, with biopsy showing glomerulosclerosis >20% compared to kidneys that were not biopsied. However, there is a statistically significant decrease in the creatinine clearance. A systematic review confirmed that the use of biopsies to determine whether or not a kidney should be used needs to be reexamined. The use of DCD kidneys results in similar graft survival compared to SCD kidneys. However, the use of ECD-DCD kidneys results in an increase in the risk of delayed graft function (53.3% vs. 21.3% for SCD) and primary non-function (PNF) (2.9% vs. 0.7% for SCD). The use of donors with AKI stage 3 results in an increase risk of PNF (9% vs. 4% in case of AKI stage 1). However, another study reported no difference graft failure vs. donors without AKI. The use of donors with DM results in a similar death censored graft survival in recipients with DM vs. those without DM. A more recent study suggests that the use of diabetic donor kidneys results in 9% survival advantage vs. remaining on the waiting list. Moreover, the survival advantage is observed if the KDPI is <85% and in candidates >40 yrs. The use of kidneys from donors with DIC results in similar graft survival and kidney function vs. donors without DIC.

Conclusion: The use of high-risk donors: ECD-DCD, AKI, DM and DIC results in good outcomes in selected recipients. This should be one of the strategies to contribute to increase access to KTx.

L27**Utility of Protocol Biopsy at 3 Months Post Kidney Transplantation****Khadidja Habchi, MD**

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Biopsy is the Gold Standard for the diagnostic of complications after transplantation; protocol biopsies are carried out systematically at specific timings and are currently tending to become widespread. Their main interest is to detect subclinical rejection, other complications can also be detected early and thus allow personalized treatment.

Materials and Methods: In our prospective study, we included 62 transplant patients whose renal function was stable, considered as patients without any problem in practice. They benefited from systematic screening with the hypothesis of finding subclinical abnormalities. They were followed for minimum 12 months. The Main objective was to calculate the incidence of subclinical rejection. The Secondary objectives was to Estimate the frequency of other complications detected during systematic screening (CNI toxicity, Recurrence of initial pathology, viral infections, etc.) and calculate the 01-year renal survival.

Results: We found that with a baseline stable creatinine, 30% of biopsies were pathological: 8% of subclinical rejection, 12.9% of CNI toxicity, 1.6% of recurrence of the initial nephropathy, and 7.5% of other lesions. We found a 100% overall graft survival at 12 months with an average creatinine which improved.

Discussion: In our population with a low to moderate immunological risk, on Tacrolimus based regimen, we found a non-negligible incidence of subclinical rejection. Additionally, we found that toxicity lesions can exist with tacrolimus levels within the target range. These unexpected lesions may attest to the usefulness of the biopsy. Finally; the improving creatinine average between 3 and 12 months may reflect the effectiveness of the screening strategy.

Conclusion: The protocol biopsy seems to be useful and safe; it can guide a personalized management of transplant patients.

L28**Management of Chronic Renal Allograft Failure****Kamal Okasha, MD**

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Renal allograft failure is one of the most common causes of end-stage renal disease (ESRD). The most common cause of graft failure after the first year is an incompletely understood clinico-pathological entity variously called chronic rejection, transplant nephropathy, chronic renal allograft dysfunction, transplant glomerulopathy (TG), chronic allograft injury, or chronic renal allograft nephropathy. The revised Banff 2005 classification system, which was reported in 2007, renamed chronic allograft nephropathy, “interstitial fibrosis and tubular atrophy (IF/TA), without evidence of any specific etiology”. The clinical diagnosis is usually suggested by: Gradual deterioration of graft function, as manifested by slowly rising plasma creatinine concentration, increasing proteinuria, worsening hypertension. The differential diagnosis of progressive loss of allograft function is fairly broad, although chronic allograft nephropathy is the most common cause. The prevention and management of chronic renal allograft rejection remains one of the major challenges facing transplant nephrologists. Changes in immunotherapy, CNIs minimization or withdrawal or conversion may be helpful. Non-immunologic interventions for chronic renal allograft rejection should be focused primarily on aggressive control of the blood pressure and hyperlipidemia.

Keywords: chronic allograft dysfunction, chronic allograft nephropathy, immunogenic and non-immunogenic mechanisms.

L29**Dilemma of Managing Antibody Mediated Rejection****May Hassaballah, MD**North Africa Representative, MESOT
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Antibody-mediated rejection (AMR) is now considered to be the major cause of compromised long-term graft survival; unfortunately, successful management continues to represent an important unmet need in solid organ transplantation. This presentation discusses the pathophysiology of AMR in kidney transplantation, the current strategy of treatment, and evolving new drugs; it also highlights drug-related limitations as well as study-related limitations. Prevention of AMR remains a cornerstone of prophylaxis both before and after transplantation as will be discussed.

L30**Recent Data from the Collaborative Transplant Study****Caner Suesal, MD**Professor of Immunology
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In a series of recent CTS analyses, we focused on different aspects of transplantation of kidneys from expanded criteria donors (ECDs) which show a continuous growth due to organ shortage (Süsal et al Front Immunol 2020). There was an impressive improvement of graft survival also in ECD kidneys; within only one further decade (1997–2006 vs. 2007–2016) survival of kidneys from ≥70-year-old donors improved to the level of kidneys from 60–69-year-old donors in the previous decade (Echterdiek et al, Front Immunol 2019). CTS data indicate that while incessant efforts to reduce CIT appear to be necessary to decrease the number of transplantations with prolonged ischemia beyond 18 hours, focusing primarily on CIT reduction by strictly favoring local allocation is unlikely to improve the outcome of ECDs; other allocation parameters including HLA matching should also be part of allocation algorithms in transplantation of kidneys from elderly donors (Echterdiek et al, Int J Immunogenet

2020). Namely, cold ischemia time, as long it was kept ≤18 hours, had no significant impact on survival of kidney transplants from ≥70-year-old ECDs. Beyond 18 hours, however, the negative impact of CIT on graft survival was more pronounced in kidney allografts, e.g. from ≥70- than <70-year-old ECDs (Echterdiek et al, Transplantation 2021). Delayed graft function (DGF) is currently observed in a growing proportion of recipients of deceased donor kidney transplants. Besides the known non-immunological factors, such as high donor age and prolonged ischemia time, the pretransplant presence of broad alloantibody reactivity was found to be a significant predictor of DGF in the recent era of transplantation during which sensitive antibody testing was practiced. Development of DGF itself doubled the risk of graft loss which, however, increased further if the patient had HLA or donor-specific HLA antibodies (DSA) before transplantation (Morath et al, Front Immunol 2020).

Under-immunosuppression plays an important role in de novo DSA development. CTS data indicate that besides a very low calcineurin inhibitor level, intra-patient variation of tacrolimus trough level is a strong risk factor for subsequent graft loss, not only in the early but also in the late post-transplant phase, especially in adolescents and young adults (Süsal et al, Am J Transplant 2019; Gold et al, Transplant Int 2020). Patients with high tacrolimus variability made up one third of the recipient population, which underlines the magnitude of the problem.

An analysis of more than 4,000 patients with pre-transplant cancer prior to kidney transplantation showed that post-transplant tumors often occurred in the same location as the primary tumor. Moreover, recipients with pre-transplant tumors had a tendency for less death-censored graft loss (Unterrainer et al, Transplantation 2019).

There is an ongoing debate whether HLA matching at the epitope level is superior to the traditional antigen matching. A recent CTS analysis suggested that epitope-based matching of donor-recipient pairs using the PIRCHE II algorithm could be included into kidney allocation algorithms in addition to HLA matching; however, it cannot fully replace traditional HLA matching (Unterrainer et al, Front Immunol 2021).

L31**Technical Variations of the Liver Procurement to Increase Liver Utilization****Hassan Yersiz, MD**

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Objective: To examine technical variations of the liver procurement to increase liver utilization

It took years to overcome the initial surgical techniques, critical care, and immunologic challenges that gave rise to the success in liver transplantation witnessed today. Despite these great successes, however, new obstacles have surfaced revolving mainly around issue of organ shortage. New and innovative ideas developed to overcome the new challenges, and the new subjects that make up the hot topics/trends in the liver transplantation today. An increasing number of countries have adopted policies that emphasize donation after cardiac death (DCD). The more aggressive use of split liver grafts remains a very viable and accepted option to make additional organs available. Liver perfusion machines have the potential to expand the donor pool by the utilization of organs that would normally be discarded.

Technique: The rapid liver procurement used for DCD cases, which takes much less time to cross-clamp and start flushing with preservation solution.

Split liver transplantation can be performed ex vivo or in situ using left-right or conventional (left lateral segment [LLS] and right trisegment [RTS]) splitting techniques. Each has its own set of advantages and disadvantages.

Ex vivo split: Ex vivo splitting requires decreased donor operating room time and results in acceptable patient and graft survival. However, it involves inadvertent graft re-warming, biliary complications, bleeding from the liver's cut surface, and poorer outcomes in critically ill patients.

In situ split: In situ splitting allows rapid identification of biliary and vascular structures, hemostasis during the parenchymal transection, and less warm and cold ischemia time. It also can facilitate graft sharing among transplant centers. Disadvantages include longer donor operating room time, the need for a stable donor, and the need for a skilled procurement team at the donor hospital.

The vessels should be tailored for the index patient, and the recipient should have minimal portal hypertension, if possible.

Ex-vivo liver machine perfusion is applied in different temperatures and either closed or open systems.

Current Status: An increasing number of countries have adopted policies that emphasize donation after cardiac death (DCD). Currently less than 2% of the cadaveric liver grafts are split grafts in the US, which is much higher in Europa. The trend towards in-situ splitting continues and the procedure of reduction of the liver decreased dramatically in recent years. A multi-center trial for normothermic machine perfusion was completed in the US.

Conclusion: Liver transplantation has achieved a great deal of success over the last half century, but new obstacles exist that must be overcome for the field to achieve its full potential

L32**NAFLD: Key Considerations Before and After Liver Transplantation****Reda Elwakil, MD**

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Non-alcoholic fatty liver disease (NAFLD), also known as metabolic associated fatty liver disease (MAFLD), is excessive fat accumulation in the liver without another clear cause while non-alcoholic steatohepatitis (NASH) is defined as presence of fat in the liver with inflammation and damage in the liver cells. NAFLD/NASH is the most common etiology of chronic liver disease in developed countries and is projected to become the leading indication for liver transplantation in the USA and much of the world. NAFLD/NASH-related cirrhosis has become the most common non-HCC indication for LT in patients age 65 or older.

Although the results of liver transplantation for NAFLD/NASH related cirrhosis showed excellent mid- and long-term patient and graft survival yet concerns regarding short-term morbidity and mortality continue to exist. Patients with NAFLD/NASH cirrhosis awaiting liver

transplant face unique challenges and increased risk for waiting list stagnation and dropout due to impact of comorbidities including obesity, diabetes, cardiovascular disease, and kidney disease. NAFLD occurs as both recurrent and de novo manifestation post-liver transplantation, each with unique outcomes. NAFLD in the donor population is of concern given the growing demand for liver transplantation and need to expand the donor pool.

This presentation addresses key issues surrounding NAFLD as an indication for transplantation, including its increasing prevalence, unique patient demographics, outcomes related to liver transplantation, development of post-liver transplantation NAFLD, and NAFLD in the liver donor population.

L33

Donor BMI and Living Donor Liver Transplantation Outcomes

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Introduction: Living liver donor obesity may have a relative contraindication for a living donation, due to risk of hepatic steatosis. We investigated the association between the donor BMI and the outcomes.

Materials and Methods: Living liver donors and their recipients, between 2013-2020, were divided into 3 donor BMI categories (<25, 25-29.9, and ≥30). All donors were examined for evidence of potential steatosis by MRI-PDFF. MRI Fat % less than 10 %, were considered to be acceptable for donation. Donor and Recipients outcomes examined from the perspective of length of stay (LOS). All data values were expressed as median (range) unless otherwise stated. Student's t-test was used to compare normally distributed variables. P value less than 0.05 was considered to be significant.

Results: There were total of 66 living liver donor and recipient pairs. No difference between donor and recipient characteristics were observed, based on donor BMI (Table

1, 2). There was no difference in donor LOS (p=0.058), across the BMI categories. There was no difference in recipient LOS (p=0.83) across the BMI categories.

Conclusion: MRI-PDFF Liver Fat % can be used as a screening tool among overweight and obese living liver donor candidates. If the Liver fat % is less than 10, the graft can be considered to be used for its intended recipient. In our series, among donors with BMI more than 30 (highest BMI was 33.4-Table 1), the donor and recipient outcomes in term of Length of Stay (LOS) were not statistically significant when compared to the other BMI categories. Recipient median MELD-Na was 13 in this group.

Table 1: Baseline Characteristics of Donor and Recipients undergoing LDLT

Donor Characteristics	Donors (n=66)
Age (years) [†]	37 (20-59)
Sex	
Male, No. (%)	34 (52%)
Female, No. (%)	32 (48%)
BMI (kg/m ²) [†]	26.2 (18.0-33.4)
Donor LOS (days) [†]	7 (4-12)
Total Number of ED visits <90 days	4
Total number of admissions <90 days	8
MRI fat (%) [‡] by MRI-PDFF	2% (0-8%)
Recipient Characteristics	Recipients (n=66)
Age (years) [†]	53 (18-73)
Sex	
Male, No. (%)	37 (56%)
Female, No. (%)	29 (44%)
Recipient LOS (days)	15 (5-134)
MELD at time of Liver Transplantation [‡]	13 (6-26)

[†]median and range reported

PDFF=Proton Density Fat Fractionation.

Table 2: Comparison of post-transplant outcomes following LDLT in donors and recipients by donor BMI

Variable	Donor BMI (<25)	Donor BMI (25-29.9)	Donor BMI (≥30)	P-value
Overall, No. Donors (%)	25 (39%)	30 (45%)	11 (16%)	--
Donor Age (years)	30	38	40	0.37
Donor Sex				0.21
Male, No. (%)	10 (40%)	19 (64%)	5 (45%)	
Female, No. (%)	15 (60%)	11 (36%)	6 (55%)	
Donor MRI fat (%) by MRI-PDFF	1.0%	1.5%	3.0%	0.75
Recipient MELD at time of Liver Transplantation	13	12.5	12	0.76
Donor Outcomes				
Donor LOS (days) [†]	7 (5-12)	7 (4-11)	6 (4-8)	0.058
Recipient Outcomes				
LOS (days) [†]	15 (6-100)	15 (6-134)	14 (5-36)	0.83

[†]median and range reported

L34**Everything Flows, Nothing Stands Still****Andreas Tzakis, MD, PhD, Dhc (mult)**Professor and Director, Liver and GI Transplantation
Unit MiamiDirector of Transplantation, Cleveland Clinic Florida
Director Emeritus, Transplantation Cleveland Clinic
Enterprise, USA

Heraclitus (600BC) observed that “everything flows” and nothing stays still! The only constant is change. This is certainly true in Medicine.

Intestinal and multivisceral transplants were developed in the last 30 years. They were designed to address the needs of babies and adults with intestinal failure. At that time, these patients had no other options.

These heroic procedures also sparked an interest in the development of alternative surgical and non-surgical treatments. In many cases these treatments have replaced the need for transplants.

Vascularized Composite Allografts were also developed at about the same time period. They are designed to treat conditions which, although not fatal, deeply affect the lives of many individuals. They are increasingly shown to restore their wellbeing.

We will elaborate on the current status of intestinal, multivisceral transplants and the latest VCA, the Uterus Transplant.

L35**Evolution of Kidney Transplantation. Beginnings, Contemporary Developments, & Future Challenges****Riadh A. S. Fadhil, MBChB, FRCS(G), FEBS**Professor of Urology & Transplant Surgery
Director of Qatar Organ Donation Center
Hamad Medical Corporation/ Weill Cornell College of
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Kidney transplantation remains the treatment of choice for patients with end-stage renal disease (ESRD). It provides the best quality of life, highest patient survival and the most cost-effective modality of treatment. Marked

improvements in graft and patient survival resulting from better selection and preparation of patients & donors, optimization of the technique, development of effective Immunosuppressants have led to proliferation of kidney transplantation programs all over the world.

Although the current standard surgical technique is similar to the first technique used by Küss 1951, Hamburger 1952 and Murray 1954, the introduction of contemporary minimal invasive techniques like laparoscopy and robot-assisted surgery have reduced the morbidity of open kidney transplantation. Robot-assisted kidney transplantation (RAKT) has added to the safety and precision of the procedure and helped to overcome many of the limitations of conventional laparoscopy. Similarly, the open nephrectomy technique with its unpleasant scar and lengthy recovery time has gradually lost its popularity to laparoscopic nephrectomy with all its evolving modifications like hand assisted laparoscopic donor nephrectomy and natural orifice transluminal endoscopic nephrectomy with all its merits of good cosmetic effect and quick recovery.

The popularity of kidney transplantation has widened the gap between supply and demand, deceased donation whether DCD or DBD have not been efficient in satisfying the need of ever-increasing waiting lists. Since the beginning of the century researchers have been looking for alternative sources. In the sixties a series of kidney transplants from non-human primates to humans but all ended with rejection within 20-40 days. Zoonosis, immunology and physiological challenges still represent the major obstacles for xenotransplantation. Stem cells researchers has managed to prompt stem cells in a petri dish to self-organize into a miniature kidney, although the work is promising, but it is unlikely that full-size lab-grown kidneys are happening in the short term.

L36**Bladder Reconstruction and Medical Therapy in Recipients with Neurogenic Bladder Dysfunction****Nasser Simforoosh, MD**Professor of Urology and Kidney transplantation
Shahid Labbafinejad Medical Center, Shahid Beheshti
University of Medical Sciences, Tehran, Iran

Kidney transplantation is the gold standard treatment for patients with end stage renal disease. One of the important causes of renal failure is advanced neurogenic bladder.

Many recipients will have voiding disturbances following a successful kidney transplantation while few of them will have deterioration of kidney function if underlying bladder dysfunction is not properly managed.

About 50% of recipients have a urine output less than 150cc in a day before transplantation and 30% of them are almost anuric. Following kidney transplantation, normal bladder function assumed to recover within 12 months. Recovery might be limited due to urinary infection, previous bladder surgery, thick bladder wall due to outlet problem(hypertonic sphincter),and finally due to long standing anuria (defunctionalized bladder).Renal transplant recipients void more than normal patients (>7voids per day).About two thirds of these recipients with early post-op symptoms will continue to have them later in their life(for 2-3 years or more).We will discuss reasons and possible management methods in recipients with difficulties in their voiding.

Normal function of lower urinary tract system is essential to maintain normal kidney function. Urinary bladder should have proper volume and good compliance providing normal reserving and emptying with low pressure.

Augmentation cystoplasty is an effective method in the treatment of advanced bladder neurogenic bladder when it does not respond to conservative management. One of the most important underlying diseases leading to ESRD is advanced neurogenic bladder. Between different kinds of neurogenic bladder types, hypertonic bladder with dyssynergic sphincter is the one mostly can lead to ESRD.

Bladder augmentation is growing popularity as a treatment modality for advanced neurogenic bladder in renal transplant patients. There is controversy about bladder augmentation to be done before or after kidney transplantation. In our experience the timing of augmentation cystoplasty has no apparent effect on the outcome of kidney transplantation and it could be performed as recipients' condition dictates. There are several methods in augmenting bladder including enterocystoplasty, ureterocystoplasty , continent pouch using appendix as catheterizing tract and rarely ileal conduit.

We will demonstrate our experience with different kinds of bladder augmentation in renal transplant patients.

L37

Senotherapy in Renal Transplantation

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Kidney transplants from aged donors are more vulnerable to ischemic injury, suffer more from delayed graft function and have a lower graft survival compared to kidneys from younger donors. On a cellular level, aging results in an increase in cells that are in a permanent cell cycle arrest, termed senescence, which secrete a range of pro-inflammatory cytokines and growth factors. On a cellular level, aging results in an increase in cells that are in a permanent cell cycle arrest, termed senescence, which secrete a range of pro-inflammatory cytokines and growth factors. With evidence mounting that senescent cells are responsible for the decrease in renal function during aging and a complicating factor in renal transplantation, the reduction of senescent cell levels and hopefully accompanying improvement in kidney function after transplantation should become subject of future research.

L38

Malignancy and Post-Transplant PTLD 2021

Sunil Bhandari, MD

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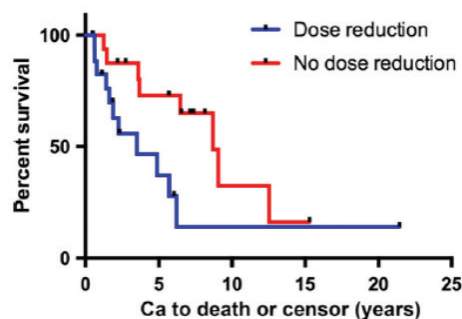
There is a paucity of studies describing malignancy-related mortality after kidney transplantation. UK data suggest that approximately 18.0% of deaths were due to malignancy and sites of malignancy-related death include lymphoma (18.4%), lung (17.6%) and renal (9.8%), with a further 14% being unspecified (table).

The risk of malignancy-related death increases with age, a pretransplant history of malignancy, exposure to viruses, level of and type of immunosuppression (such as T cell depleting therapy) and deceased-donor

kidney transplantation. Again, length of transplant has a significant impact with de novo malignancy developing in up to 37% of transplant recipients compared to cardiovascular disease in 27% after 20 years of graft function in one published series. There is also increasing evidence that solid organ transplant recipients have heightened risk for diffuse large B cell lymphoma and the related to susceptibility to Epstein Barr virus infection.

Treatment of post-transplant lymphoproliferative disorder is increasingly effective and will be discussed based on the current literature and in addition the management of cancer in general will be discussed. Once a diagnosis of cancer is confirmed there remains the dilemma in trying to balance eradicating completely the cancer to the point of “cure” versus the potential loss of the functioning kidney transplant from the cancer, the treatment used, the complications of the treatment or indeed adjustment of the immunosuppression. Data demonstrates that reducing immunosuppression maybe of limited value in treating cancer at the expense of graft loss and premature death (Figure)

Site	Incidence (17.6%)	Mortality (18.0%)
Renal	3.5%	9.8%
Upper GI	2.0%	7.2%
Lower GI	4.7%	8.0%
Lung	4.0%	17.6%
Lymphoma	8.8%	18.4%
Breast	2.6%	3.2%
GU (not including renal)	1.7%	2.7%
Prostate	2.5%	1.6%
Haematological	0.4%	2.7%
Skin	55.9%	3.2%
Pancreas	0.6%	4.0%
Liver	0.4%	2.7%
Female	1.4%	2.4%



Thus, malignancy as a cause of post-kidney transplantation death is common and requires heightened surveillance in all patients.

L39

Improving Quality in the Live Kidney Donor Process

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Live organ donation, removing e.g. a kidney from a healthy individual for the benefit of another human being, is a unique process in healthcare. The potential live kidney donor should undergo a thorough pre-operative investigation and be well informed and have capacity to understand and process the information. Finally, the decision to donate must be voluntary and without coercion. An ultimate goal is that no donor should regret their decision to donate.

Materials and Methods: To evaluate our process for live kidney donation and identify areas for improvement, a questionnaire was sent out to 208 live kidney donors at least one year after the donation. The questions covered the decision-making process, the pre-operative work-up, the time at hospital and the first year after the donation. Our data was analyzed in two ways. We analyzed the responses to the individual questions to find areas for improvement. We also analyzed if some responses during the earlier part of the process could be used as predictors for an unsatisfactory long-term out-come thereby identifying donors needing extra attention. An unsatisfactory long-term outcome was defined as a low overall satisfaction at one-year, long term fatigue, prolonged sick-leave and prolonged time for physical recovery.

Results: The views regarding the information was evaluated at 4 time points, before making the decision, during the evaluation process, pre-operatively and at discharge from the hospital. The majority, 64%, felt well informed through-out the process but 36 % lacked some information in one or more phases. More data on results for the individual questions will be provided during the presentation. The majority of donors had a high rating of their overall satisfaction with the process, 8.9 on a 10-graded scale.

A number of early predictors (red flags) for an unsatisfactory long-term outcome were identified. Donors that had felt a pressure to donate and donors

who had found the decision difficult had a lower over-all satisfaction. This was also the case for donors that were unexpectedly tired postoperatively during the hospital stay, donors that had had existential concerns that they had not discussed with anybody and donors that thought that the donation process was different from what they had expected. These three latter groups also had a greater risk for long-term fatigue and a prolonged period for physical recovery. Not surprisingly donors who's donated kidney had deteriorated in function also had a lower over-all satisfaction.

Conclusion: Evaluating previous donor's experience provides a tool to improve the live donation process. We also identified some factors identifiable already during the process that indicate that a donor is at higher risk for not having a satisfactory experience and that this donor may need extra attention. It is likely that such predictors can vary between different sites and cultures and that each center need to make their own analyses to improve their live donation process.

L40

The Challenges of Kidney Transplantation in Patients with Congenital Immune Insufficiency

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Abstract not available.

L41

Gene Therapy for Diabetes

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Despite the increasing success of vascularized pancreas transplantation, the overall number of pancreas transplants is limited due to the donor shortage, an obstacle which cannot be overcome. Twenty years ago

our laboratory decided to focus on gene therapy as a potential treatment for diabetes (both TDM1 and TDM2). Gene therapy will provide sufficient material to treat all potential diabetic candidates. There is no autoimmune response and a single intra-venous injection can last a lifetime. Data from our laboratory have shown that STZ-induced diabetic mice and rats can be cured with a single injection of our patented regulatory glucose sensitive gene administered via AAV 8/2. The effect is long-lasting and the animals have a near normal Glucose-Tolerance Test (GGT) indicating good glucose control and avoidance of hypoglycemia. In a next step large animals (naturally diabetic dogs) will be tested as these animals constitute a perfect preclinical model. At this point we have ascertained that gene therapy is well tolerated. Based on these data it is expected that definitive data about the efficacy of gene therapy in a preclinical large animal model will be available in the near future and constitute the next step towards Phase 1 trial in humans.

L42

Developing Transplant Programs Around the World - Importance of Health Systems Building Blocks

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The Global Observatory on Organ Donation and Transplantation reports that more than 150,000 solid organ transplants are performed annually worldwide. Still, estimates suggest that they meet the need of just about 10% of those who develop life-threatening organ failure. For those with kidney failure, there has been a disproportionate focus on dialysis despite overwhelming evidence that kidney transplantation is associated with lower mortality and improved quality of life when compared with chronic dialysis treatment. This gap is

particularly stark in the developing countries that are setting up dialysis programs to the detriment of the superior alternative.

The Global Kidney Health Atlas, a project of the International Society of Nephrology, has identified significant variations in kidney transplant activity and availability of services around the world. Lower income countries lack the pre-requisite of transplant facilities, waitlists, workforce, political will, and publicly funded health-care systems to facilitate increased access to transplantation, especially deceased donor and pre-emptive kidney transplantation. Health-care financing, including universal health coverage, health-care infrastructure, and system design are significant barriers to improving access to quality care, and improving access to transplantation is contingent on a multitude of financial, governmental, and societal factors. High income countries have challenges too and must address them - especially low public awareness and education and lack of access among geographically remote populations to ensure equitable access to quality kidney transplant care. Understanding how different challenges are faced by countries in different income strata will inform efforts to increase awareness and the adoption of practices that will ensure high quality transplant care is provided around the world. Hierarchical levels of capacity of organ donation and transplantation services are described in Table 2.

A system level approach is needed to set up sustainable transplant programs that integrate with local health systems. This requires consideration of the health systems building blocks, reflecting the integration of the workforce, service delivery, health information systems, medication, financing and leadership. The decision develops and craft the transplant activity should be supported by clear data on the country's burden of disease, loss to the community of productive members and other health obligations and available infrastructure. For greatest benefit, a country might start with a living donor kidney transplant for the young population in place of dialysis therapy or living donor liver transplant for liver cancer. Once the infrastructure is in place and the work force has been developed, services may be expanded to include other eligible population, widen indication, and expand donor pool by establishing deceased donor transplants.

L43

Transplant Tourism and Various Infection Risks

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Organ transplantation is a life-saving treatment for end-stage organ failure. The main challenge is organ shortage, due to an imbalance between the demand and supply, which prevents many patients from receiving the benefits of transplantation.

This situation may encourage people to seek alternatives sometimes outside of ethical and legal rules, as commercial transplantation, which can greatly increase the risk for both recipients and donors, including surgical complications, poor graft survival, increased mortality, infectious diseases, and donors who decline medical health after donation.

In 2008, the Istanbul Declaration stated that “travel for transplantation is the movement of organs, donors, recipients, or transplant professionals across jurisdictional borders for transplantation purposes. Travel for transplantation becomes transplant tourism if it involves organ trafficking and/or transplant commercialism or if the resources (organs, professionals, and transplant centers) devoted to providing transplants to patients from outside a country undermine the country's ability to provide transplant services for its own population”.

As globalization has facilitated “cross-border” healthcare, traveling to perform transplants in low-income countries has the advantage of cost saving. Likewise, it is worth mentioning that it is not easy to distinguish TT from traveling for transplantation. This occurs basically because TT is illegal (in most countries) and therefore patients and doctors usually don't inform properly. It should also be noted that, to obtain information about TT, it is advisable to disclose not only the reports related to TT but include the terms medical tourism, transplantation abroad and travel for transplantation.

Transplant procedures taking place in different settings come with different risks, including increase specific risks related to infectious diseases (ID). Transplant tourism

can impact the chance of infection in many ways. The lack or inappropriate screening of “donors” inconsistent with best practices. Most commercial living donors belong to medically and socioeconomically disadvantaged groups, with high risks of exposure to tuberculosis, HIV, and hepatitis B and C. Furthermore, poor hygiene and operative conditions is a problem. Some patients who seek transplantation abroad may be high risk candidates for transplantation (e.g. age and medical comorbidities). In these situations, transplant patients have greater risks of acute surgical complications, including infections with multidrug-resistant organisms or, developed diseases due to opportunistic pathogens resulting in unusual infectious syndromes.

Studies on outcomes in TT show a significantly increased risk of infection (45-50% versus 5%) if tourism and non-tourist group are compared. These infections often occur in the early post-transplant period. According to some recent reviews, infections in the setting of TT can be related to the procedure itself, other health-care nosocomial infections, a blood-borne or geographically restricted pathogen transmitted by the donor or acquired while staying in the endemicity area. The pathogens are diverse: viral, bacterial, fungal and parasitic, and certainly related to diseases that circulate and occur in the related area of the donor's abode or the institution where the transplant took place.

In this context, there is a need for clinical practice recommendations to guide the transplant staff caring for solid organ transplant (SOT) donors, candidates, and recipients who travel for transplantation and after returning home after transplantation abroad.

The scope of this review is to provide specific guidance and recommendations for risk evaluation, laboratory testing, management, and the prevention of infectious complications regarding healthcare-associated infections, opportunistic infections, and endemic diseases related to the geographical region in which TT usually occurs.

L44

Living Related Donors (LRD) in Iraq: Emotion & Promotion

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Introduction: Iraq was the pioneer in Kidney Transplantation, first kidney transplantation was performed in June 1972. Since that time a lot of transplantation is done.

Objectives: A follow up study for 2600 LRDs and recipients.

Materials and Methods: Patients follow up their LRDs from 1972 up to January 2021.

Results: Recipients survival and LRDs are shown: Excellent results in the era of less potent immunosuppressive medications in comparison to the new era.

Conclusion: Promoting LRDs, is an important and future plan to overcome the issue of lacking of organs by raising the morale for donors and praising their human acts to improve survival of recipients.

L45

Surgical Treatment of Portal Hypertension

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Surgical treatment usually become an option for treatment while endoscopic and medical treatment were inefficient especially in patients with previous variceal bleeding history in portal hypertension (PH).

Splenorenal shunt procedures result in a marked decrease in esophagogastric varices, bleeding, and hypersplenism. By preserving hepatopedal flow, the Warren's shunt also prevent encephalopathy. Maintenance of Portal pressure also heals portal gastropathy and biliopathy with better liver functions.

In this study, we present 79 patients (49 pediatrics and 30 adults) who underwent 90 surgical procedures because of complicated PH in between 2000 and 2021.

Thirty-four patients (19 Pediatric and 15 adult) underwent Warren's Shunt procedures. Thirty-nine patients (30 Pediatric and 9 adult) underwent Proximal Splenorenal Shunt procedure (PSRS). One of them was urgent, 2 adult patients underwent mesocaval shunt. Two adult patients underwent Splenectomy. One of them was urgent, two adult patients underwent splenectomy and paraesophagogastric devascularization.

Four adults and seven pediatric patients needed second intervention.

Two adult patients underwent splenectomy and paraesophagogastric devascularization. First Patient in urgent condition with major bleeding who had previous thrombosed mesocaval shunt procedure. The second one

who had previous thrombosed Warren's procedures in elective condition because of pancytopenia and minor bleeding.

Two adult patients underwent partially splenic artery embolization because of pancytopenia they both had previous patent Warren's procedure.

One pediatric patient with recurrent bleeding underwent paraesophagogastric devascularization who had previous thrombosed PSRS procedure.

Four pediatric patients developed severe hypersplenism after Warren's procedures. Out of 4, two patients were diagnosed with shunt thrombosis and pancytopenia was controlled with splenectomy. In other two patients, who had patent Warren's shunt, pancytopenia was controlled with partially splenic artery embolization.

Two pediatric patients required early reoperation because of bleeding and early shunt thrombosis, and both are treated uneventfully.

Results: There was no operative mortality. Three adult patients died. One of them in postoperative 4th day because of DIC and septic shock. This patient had mesocaval shunt procedure in urgent condition with bleeding varices and in postoperative 2nd day she also had splenectomy and paraesophagogastric devascularization with partial gastric resection again in urgent condition because of thrombosed shunt related major bleeding. Second patient died in postoperative 12nd day because of sepsis with uncontrolled chylothorax and ascites. Other patient died in postoperative 10th week because of bleeding in local center.

One pediatric patient died after cadaveric liver transplantation for Budd Chiari syndrome two years after her PSRS procedure. Five adult patients are noncompliance. Six patients readmitted and transfused for variceal rebleeding after operation. All shunts were occluded. Three patients had minor bleeding did not need transfusion.

Out of 79, seventy patients (48 pediatric 98% and 22 adults 73%) were doing well with two weeks to 132 months follow up.

Warren's Shunt patency rate was 89% and 86% respectively for pediatric and adult patients. PSRS patency rate was 80% and 77% respectively for pediatric and adult patients.

Surgical treatment with Splenorenal shunt in previously bleeding patients offers excellent results especially in noncirrhotic patients who previously treated with endoscopic interventions. Despite medical treatment has 90% bleeding control in first bleeding; recurrent bleeding rate is 60% with high mortality rate. Insist endoscopic interventions in recurrent bleeding episodes instead of

surgical treatment may cause high re bleeding, severe pancytopenia, portal hypertensive gastropathy and biliopathy and even mortality especially in patients who have difficulties to access advanced medical centers.

L46

Minimal Invasive Donor Hepatectomy – Towards Standard of Care

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Living donation in many countries is the main resource of organs. Healthy, volunteering individuals deserve the highest safety standards possible in addition to the least invasive technique to procure the organs. Since the introduction of living donor liver transplantation in the late 1980s, many efforts have been made to minimize the surgical trauma inherent to living donor surgery. The journey started with a large Mercedes incision and evolved to a reverse L-shaped and small upper midline incisions before the introduction of minimally invasive laparoscopic techniques originated, either as fully laparoscopic or laparoscopic assisted technique. The technical difficulties of the laparoscopic approach due to suboptimal instrumentation, challenging ergonomics, and the long learning curve limited the application of the fully laparoscopic approach to a few centers. The recent introduction of the robotic platform with its superb optical system and advanced instruments allows for the first time, a genuine emulation of open donor surgery in a closed abdomen, thus allowing all liver donors to benefit from minimally invasive surgery (better cosmetics, less pain and morbidity, better quality of life) without compromising donor safety. As a teaching medium, the robotic platform is akin to an automobile driving school thus facilitating rapid and safe technical maturation. This attribute in combination with the ubiquitous presence of the robot in major transplant centers, may well lead to the desired endpoint of this technology, namely, the widespread dissemination of minimally invasive donor surgery.

01

Organ Donation Innovative Strategies for South East Asia: ODISSeA

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Background: ODISSeA - Organ Donation Innovative Strategies for Southeast Asia is an Erasmus+ project funded by the European Commission. Postgraduate program on organ donation (OD) at 8 Southeast Asian (SeA) universities (Malaysia, Myanmar, Philippines and Thailand) from 3 European universities.

Materials and Methods: Training programs and OD self-assessment (SA) evaluation of clinical knowledge (A/n21) and of non-clinical competencies (B/n18). Train the Trainers (TxT) blended program for SeA trainers healthcare professionals (HCPs). Pre and post course evaluation results comparison. Multilevel blended Postgraduate Program in Organ Donation (PPOD) targeting HCPs combining academic training with bedside projects. Pre course evaluation results comparison among the SeA partner countries.

Results: HCPs trained in TxT (n41) pre and post testing shows knowledge increase of 15.14% with an overall average score of 6.67 ± 0.96 SD in pre-test vs 7.68 ± 0.66 in post-test.

PPOD pre-test overall average score was 4.59 ± 1.56 SD with Malaysia achieving the highest results (5.28 ± 1.32 SD) and Myanmar the lowest (4.38 ± 1.32 SD). PPOD post- test will be obtained when the project ends in July 2021.

Conclusion: The innovative approach of ODISSeA as a multilevel educational intervention revealed different results between trainers vs trainees on perception and attitude, clinical knowledge vs non-clinical competencies. Significant knowledge increase was reported upon completion of TxT.

02

Is the Allocation System for Liver Transplantation in Saudi Arabia Skewed Towards Serving Patients With Hepatocellular Carcinoma?

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Purpose: The Model for End-stage Liver Disease (MELD) score is internationally adopted to prioritize patients awaiting liver transplantation (LT). Since hepatocellular carcinoma (HCC) does not reflect on the MELD score, patients with HCC are given exception score to ensure fairness. In the United States, this practice has shown to result in overcorrection, hence measures were recently implemented to ensure fair distribution of organs. In Saudi Arabia, due to the higher percentage of living donor LT, it is unclear if the listing system suffers the same flaw in organ distribution.

Materials and Methods: We retrospectively reviewed the data of all 215 adult patients who were listed for LT from 01-2016 to 07-2020 at King Abdulaziz Medical City – Riyadh. Retrieved data included listing diagnosis, MELD score at listing and transplantation, waiting duration, and subsequent outcomes. Comparative analysis was performed to contrast patients with HCC with the rest of the cohort.

Results: The mean age was 55.2 ± 11.5 years with 1:1.6 female-to-male ratio. Outcomes were LT, drop-off, or continued waiting in 72% (n= 154/215), 22% (n= 47/215), and 6% (n= 14/215), respectively. Of the HCC group, 80% (n= 56/70) received LT compared to 68% (n= 98/145) of non-HCC patients (p=0.013). Patients with HCC constituted 33% (n= 70/215) of the waiting list, yet they received 43% of deceased organ offers (p=0.027). Nonetheless, there was no statistically significant difference in the drop-off rate (p=0.33), and the mean time to transplant was shorter for patients with non-HCC diagnosis, 98.5 versus 200.5 days (p<0.01).

Conclusion: Although this study suggests that the currently adopted liver allocation system in a major transplant center in Saudi Arabia tends to over-prioritize HCC patients to receive deceased donor LT, the impact is mitigated by the living donor LT practice. Adopting further corrective measures to improve equitability is arguably a sound strategy.

03

I-DTI: Second Opinion Platform for Health Care Professionals Related to Organ Donation and Transplantation

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Purpose: To establish and a second opinion platform related to organ donation and transplantation (ODT) topics to support health care professionals and consequently increase ODT rates especially in countries with no donation or transplantation programs established.

Materials and Methods: An online web-app called I-DTI, accessible via website www.i-dti.com and downloadable in digital stores for mobile devices.

With consultancy service as main function, I-DTI allows to share knowledge with international experts in multiple fields related to ODT.

I-DTI includes social network features such as messaging service, customisation profile and finder. All I-DTI communications and information are codified and stored in encrypted database.

Methods: Since mid-2020, I-DTI pilot phase started in different participant hospitals from India, Philippines, Sri Lanka and Trinidad and Tobago. Involving initially more than 60 professionals who have been trained in online sessions performed by the I-DTI team in collaboration with more than 30 distinguished experts.

Participants were asked to create network by communicating with each other or with the I-DTI experts available.

Results: During this period, an average of 5 consultancies

per week were received. All of them answered in less than 24 hours, considering urgency and field of study. All data gathered from these consultations was strictly anonymized and stored in library cases for academical purposes.

To study quality indexes like accessibility, applicability, contents and other parameters, satisfaction surveys were delivered to the participants. Receiving an average score of 9.3 out of 10.

At date more than 600 users from more than 15 countries have joined I-DTI.

Conclusions: I-DTI has proved great value for knowledge sharing, data compilation and international cooperation especially in developing countries during pandemic times.

The specialization of I-DTI in ODT topics opens a way to develop new contents and introduce technological solutions such as big data, artificial intelligence, and algorithm developments.

04

Long-Term Follow-up of Over 600 Living-Related Kidney Donors: Single Center Experience

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Objective: In our study, we aimed to determine the long-term results of living-related kidney donors that donated kidney at our center in the last 25 years.

Introduction: The number of deceased donors is inadequate to supply the increasing number of patients with end-stage renal disease; therefore, all over the world living kidney donations are increasing day by day. Since 2019, due to the COVID 19 pandemic, the living donor transplant rates has increased up to 80%. However, long term complications after donation are still unclear because

of the lack of optimum follow-up of donors after kidney transplant (KT). In our study, we aimed to determine the long-term results of living-related kidney donors that donated kidney at our center in the last 25 years.

Materials and Methods: Our team performed the first living-related kidney transplantation (LRKT) in Turkey on November 3, 1975, the first deceased-donor kidney transplantation (DDKT) in Turkey on October 10, 1978, the first local DDKT in Turkey on July 27, 1979. On May 16, 1992, our team performed combined liver-kidney transplantation from a living-related donor, which was the first operation of its kind anywhere in the world. Since 1986 we performed 2188 kidney transplant At Baskent University, and 1788 of them were LRKT. Before donation all donor candidates were evaluated according to the Baskent University donor evaluation criteria. (Our evaluation criteria's; furthest to 4th degree relatives, eGFR of higher than 100 mL/min, without co-existing morbidities). In this study, we could be reached 607 of 2188 donors. 236 of these donors were evaluated in the outpatient clinic and the rest were evaluated by teleconference method. A questionnaire was applied to all patients who could be reached, and clinical examination, blood tests and USG evaluations were performed to the patients who came to the outpatient clinic.

Results: We evaluated the long-term results of our 607 patients. 179(29.4%) of the patients were male and 428 (70.6%) of them were female. The mean age of the donors were 52.03 ± 11.54 years. Mean time after donation was 10.4 ± 3.2 years. The eGFR was 77 ± 16 mL/min in our donor population. None of our donors developed end-stage renal disease during follow up period. Twenty-four (3.9%) of the donors are diagnosed for diabetes, 21 (3.4%) diagnosed thyroid disease, 64 (10.5%) of the patients developed hypertension and 48 (8.8%) of the patients developed atherosclerotic cardiovascular disease. One hundred and seventy-four (28.6%) of the donors developed mild to moderate obesity with a body mass index higher than 25 kg/m^2 . Only 5 patients developed malignity and all of these donors were diagnosed for malignity at least 10 years after donation.

Conclusion: Definitive treatment of end-stage renal disease is KT. In order to increase the donor pool, LRKT is most preferred method all over the world. But our study showed that, 174 (28.6%) donors developed obesity that increased the risk of systemic disease and 162 (26.6%) donors developed systemic disease in the

long-term follow-up period. Also, we must keep in mind that the unrelated donors may be desperate if a family member needed donation in the future. Therefore, we recommend that DDKT should be first choice. If DDKT is not possible, LRKT should be preferred.

05

Deceased Organ Donation in Syria: Challenges and Solutions

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The first living-donor kidney transplant in Syria was performed 41 years ago; by 2019, 5407 renal transplants had been performed there. Three heart transplants from deceased donors were performed in the late 1980s; cardiac transplant activities have since discontinued. In 2003, a new, national Syrian legislation was enacted authorizing the use of organs from living unrelated donors and from deceased donors. This important law was preceded by another big stride in this regard: the acceptance by the higher Islamic religious authorities in Syria in 2001 of the principle of procurement of organs from deceased donors, provided that consent is given by a first- or second-degree relative. After the enactment of this law, kidney transplant rates increased from 7 per million populations in 2002 to 17 per million populations in 2007. Kidney transplants performed abroad for Syrian patients declined from 25% in 2002 to < 2% in 2007. Kidney transplants continued at comparable rates until 2010, before the beginning of the political crisis in 2011. Four decades after the first successful kidney transplant in Syria, however, patients needing an organ transplant must rely on living donors only. Moreover, 17 years after the law authorizing use of organs from deceased donors, a program is still not in place in Syria, and additional improvement of the legal framework is needed. The war, limited resources, and lack of public awareness about the importance of organ donation and transplant appear to be major factors inhibiting initiation of a deceased-donor program in Syria.

A concerted and ongoing education campaign is needed

to increase awareness of organ donation, change negative public attitudes, and gain societal acceptance. Every effort must be made to initiate a deceased-donor program to lessen the burden on living donors and to enable national self-sufficiency in organs for transplant.

06

Better Donor Detection and Referral in the Intensive Care Units in the Context of End-of-Life Care

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Introduction: For the last 20 years, the confirmation of brain death has been the dominant criterion for organ recovery in Slovenia. In the last decade, competent institution Slovenija-transplant optimized the national deceased donation program with different measures, most notably with comprehensive educational strategy, efficient organizational scheme with a clear division of professionals' tasks and responsibilities and with implementation of Quality Assurance Program (2011). In the last years, Slovenia has about 22 actual deceased donors pmp. Despite very good results, there is a need for additional actions for progress in the availability of the high quality organs for transplantation.

Purpose: Improved awareness on ethical standards related to end of life care and donation, and better assertiveness of professionals at prognostication of devastating brain injuries and other futile diagnosis is needed. Professional in intensive care units should clearly understand aims and standards of the procedures for potential donor detection and referral.

Materials and Methods: On-line questionnaire tackling experiences, personal distress and structural obstacles to make decisions in the context of end of life care (especially prognostication in cases of futile treatment) will be distributed among intensive care specialists and young doctors in Slovenia.

Results: Authors will focus on presenting key medical and ethical questions.

Conclusions: A short-term goal of Slovenija-transplant, the central national competent institution in transplant medicine, is to improve donor detection with knowledge

about Intensive care to facilitate organ donation in patients with futile treatment prognosis and donation after circulatory death. Understanding and screening of everyday obstacles, stands of professionals in practice is one of important complementary activities Slovenija-transplant is taking with aim for more targeted and quicker improvements in the deceased program. Experiences might be transferable to other countries facing similar situation and developing alike plans.

07

How Did the War Affect Organ Transplantation in Syria?

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Since 2011, the Syrian conflict has destroyed much of the country's infrastructure. The deteriorating humanitarian situation has involved health workers and facilities. In 2010, before the war, 385 kidney transplants were performed in Syria. This number declined to 154 in 2013 (60% less) before increasing to 251 transplants in 2018, which is still 35% less than the number of transplants performed before the war. In addition, the number of operational kidney transplant centers has decreased from 8 in 2010, distributed over 3 cities, to only 4 in 2013, all located in Damascus, which increased to 6 centers in 2019. Interestingly, with regard to type of living donor, the percentage of unrelated kidney donors has decreased by 20% for unclear reasons.

Another alarming statistic is that more than 50% of kidney transplant physicians and surgeons are no longer practicing transplant medicine in their centers, either because they have left the country or because their centers had become nonoperational. Since the war, free and timely provision of immunosuppressive drugs for all patients in all provinces has been a leading challenge for health authorities and transplant patients.

This difficulty has led to adverse medical consequences for patients. A project to initiate liver transplant came to a halt because of complex reasons but mainly because foreign trainers could not visit Syria. Although the

autologous bone marrow transplant program had slowed until recently, it has become more active, involving both autologous and allogeneic transplants.

The deceased-donor program is still not available in Syria; the war has just reinforced the many reasons that prevented the start of this program before the conflict. The commitment of transplant teams despite these large challenges continues to be extraordinary.

The Syrian conflict has affected all aspects of organ transplant, paralyzing new projects and negatively affecting existing programs.

08

Liver Transplant Survivors for More Than 10 Years

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Aim: Liver transplantation (LT) is the gold standard treatment of end stage liver failure. There have been reports about short and mid-term survey of liver transplants. However, few reports mentioned about long term survey. Here in this study, we aimed to report the outcomes of our long term LT survivors.

Materials and Methods: Our team performed the first successful deceased-donor LT of Turkey on December 8, 1988. On March 15, 1990 the first pediatric segmental living-related liver transplantation of Turkey, the Middle and Near East, and Europe was done by our team. One month later on April 24, 1990 our team performed the first adult segmental living-related liver transplantation in the World. On May 16, 1992 the first combined liver-kidney transplant from a living-related donor, the first of its kind in the world was done by our team. Since 1988, we performed 689 LT (365 adult LT, 324 pediatric LT) procedures at our centers. We evaluated the data of LT recipients surviving for more than 10 years with normal graft functions.

Results: We retrospectively evaluated the data of 208 long term survivors (LTS); 13 LTS survived for ≥ 20 years, 90

LTS survived for 15-19 years and 105 LTS survived for 10-14 years. Five patients had re-transplantation due to chronic graft rejection and 4 of them are alive with normal graft functions after second LT, surviving for 15, 23, 31, 32 years after the first LT. We lost one of them during the early period of the second LT and it was the 19th year of his first LT. The rest 208 LTS (181 adults, 27 pediatric; 45 deceased donor LT, 163 living donor LT) are alive with normal liver functions. Acute rejection episodes are seen in 76 of them (36%) and seven of them were steroid resistant. We had 35 (16,8%) drug induced complications; 12 diabetes mellitus, 19 neurological disorder, 4 nephrotoxicity. Ten de nova malignancy was also seen and managed; 5 lymphomas, 2 squamous cell carcinoma, 1 GIST, 1 thyroid papillary carcinoma, 1 multiple myeloma. There were also HCC patients in our LTS series. 31 LTS had HCC; before LT 13 LTS were beyond Milan, 6 LTS had incidental HCC and 12 LTS were within Milan.

Conclusion: Long term survey can be achieved by liver transplantation in experienced hands. Although few reports mentioned about long term survey, our long term LT survivors is one of the largest series of literature.

09

Improving Living Organ Donation Knowledge and Behavior Among Muslim Americans

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Introduction: American Muslims hold more negative attitudes towards organ donation than others, and one-sided interventions focused on promotion have yielded uneven results. We tested the effectiveness ethically-balanced and religiously-tailored educational intervention to improve Muslim knowledge, attitudes and intentions on donation.

Materials and Methods: A randomized, controlled, cross-over trial of held at mosques. Subjects were recruited at mosque events, and participated in 2 ½

day sessions consisting of didactics and peer educator-led discussions. Study outcomes included changes in biomedical and religious knowledge, as well as behavioral intent measured by stage of change, preparedness, and likelihood to donate. We compared knowledge outcomes between the arms with a between group ANOVA test, and behavioral outcomes using paired t-tests and regression modelling.

Results and Discussion: Participants (n=152) had a near equal numbers of males and females, and a mean age of 46 years. At baseline there were no significant differences between the two arms. The intervention significantly increased participant biomedical and religious knowledge ($p < .05$). Among behavioral intention measures, participant mean stage of change toward donation improved, as did preparedness to make a donation decision, and likelihood to donate a kidney (all $p < .0001$ respectively). Mean change in likelihood to encourage a loved one, a co-worker, or a mosque member with ESRD to seek a living donor also increased (all $p < .05$ respectively).

Conclusion: Delivering ethically-balanced education in mosques is feasible and effective in improving organ donation-related knowledge and intention

010

Three-year Experience of Single Center Kidney Transplantation in Uzbekistan

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Objective: Delayed graft function often develops with a long stay of the recipient on hemodialysis, as well as an increase in the time of warm ischemia, which is influenced by the number of vessels in the donor's kidney and is an important prognostic factor for the development of acute rejection.

Background: The advances achieved in the field of transplantation make it possible to make this type of therapy routine and define it as the "gold standard" in the treatment of patients with end-stage of chronic kidney disease with the best indicators in comparison with other

methods. At the present stage, transplant surgeons are faced with achieving 95% graft survival within 5 years. Currently, the graft survival rate in the first year has significantly increased to 93.4% from cadaveric and 97.2% from living donors. An improvement in this indicator is possible due to the enhancement of immunosuppression protocols and the prevention of surgical complications.

Materials and Methods: At the Republican Research Centre of Emergency Medicine, from March 2018 to January 2021, were performed 100 kidney transplants. 93 (93%) cases of CKD were the complication of chronic glomerulonephritis, 4 (4.0%) cases with polycystic kidney disease, 1 (1.0%) case was pyelonephritis of a single kidney, 1 (1.0%) case was a child with an abnormality of the urinary tract and 1 (1.0%) case - diabetes mellitus type 2. 72 (71%) patients were males and 28 (28%) - females. The age of the patients was from 13 to 59, Mean age - $31,87 \pm 9,65$. All of the kidney transplants were from living closely related donors. 48 (48%) donors were brothers and sisters, 43 (43%) - were parents, 3 (3%) - uncle and aunt, 4 (4%) - children, 1 (1%) - husband, and one (1%) - niece. The duration of CKD was from 2 months to 27 years, mean duration - 42,61 months (95% CI = 32,51 - 52,71). The hemodialysis duration of patients was from 2 weeks to 7 years, mean duration - 1,1 years (95% CI = 0,8 - 1,4). All of the patients performed traditional kidney transplantation. All kidney donor nephrectomies were performed by crescentic incision. Warm ischemia depended on the number of anastomoses and ranged from 28 to 184 minutes, the average - $59,99 \pm 28,55$ (95% CI = 54,14 - 65,84), the duration of cold ischemia ranged from 15 to 90 minutes, average - $32,99 \pm 14,94$ (95% CI = 29,92 - 36,04). Ureter vesical anastomosis with Double-J stent was performed in 92 (92%) cases of kidney transplants and without Double-J stent in 8 (8%) cases. All patients received a standard triple immunosuppressive therapy protocol consisting of calcineurin inhibitors (CIs), mycophenolate mofetil, and prednisolone

Results: Immediate graft function was noted in 84 (84%) cases, and delayed graft function - 16 (16%). Delayed graft function took place mainly in the presence of multiple vessels of the donor's kidney (35.5%) compared with a single renal artery and vein (12.1%), which was influenced by the average duration of warm ischemia - $80,26 \pm 38,35$ minutes with multiple arteries and $50,44 \pm 14,44$ with a single renal artery and vein ($p = 0.001$). In 3 (3%) cases, there was an acute cellular rejection of the graft, which was successfully treated with pulse therapy with methylprednisolone, in 1 (1%) - hyper acute rejection,

which resulted in the removal of the graft. Urological complications in the form of ureteral stenosis were observed in 2 (2%) cases and ureteral necrosis with anastomotic insufficiency - in 1 (1%). Urological complications were mainly observed with ureteral-vesical anastomosis without Double-J stent (50%) than with (4.5%), OR = 21.5 (95% CI = 3.84 - 117.57) (p,50.001). Graft artery thrombosis was revealed in 1 (1%) case, thrombosis of the transplanted kidney vein and the external iliac vein was detected in 1 (1%) case, bleeding was noted in 8 (8%) cases. In 13 (13%) recipients, purulent-infectious processes were observed, of which in 9 (9.3%) cases, wound infection developed. Two recipients (2%) underwent renal graft nephrectomy. In our short-term study, the one-year survival rate was 93% and the graft survival rate was 91%.

Conclusions: Delayed graft function often develops with a long stay of the recipient on hemodialysis, as well as an increase in the time of warm ischemia, which is influenced by the number of vessels in the donor's kidney and is an important prognostic factor for the development of acute rejection. The risk of developing urological complications is high in cases of ureter vesical anastomosis without Double-J stent. The loss of a kidney transplant may be a result of hyper acute rejection and erosive arterial bleeding due to the purulent infection. The cause of death in the first year is mainly: pulmonary embolism, infection, and sepsis as a result of immunosuppression, hypovolemic shock, and acute ischemic stroke.

011

Characteristics of Renal Replacement Therapy in Saudi Arabia 2019

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Purpose: Analyze the structure of RRT at a national level.

Materials: SCOT database on RRT 2019.

Methods: Cross-sectional study of annual questionnaires given to dialysis centers and submitted to SCOT and annual post-transplant follow up from accredited transplant centers in the Kingdom.

Result: RRT in 2019 was composed of hemodialysis (HD) 19,522 (69%), Renal Tx. followed up 7,188 (25%) and Peritoneal Dialysis (PD) 1,546 (6%) with a total of 28,256 patients. Prevalence and incidence of HD and PD were 631 per million population (pmp) and 142 pmp respectively. Mortality rate in RRT was 1,637 (7.2%) in HD and 100 (0.4%) in PD with a total of 1,737 (7.6%) from the total of 22,805 patients. A total of 1,121 (33.5 pmp) living and deceased kidneys were transplanted wherein 981 (88%) were from living and 140 (12%) were from deceased donors. Graft loss among living and deceased kidney donor were 0.7% and 2.9% while mortality rate was 0.2% and 2.1% respectively. Overall, having 3.6% graft loss and 2.3% mortality rate among all kidney transplants performed. These results were published in the International Registry on Organ Donation and Transplantation (IRODaT) and the Kingdom ranked 2nd in worldwide kidney transplantation from living donors at 29.37 pmp on their 2019 final numbers released last December 2020.

Conclusion: HD remains the most common modality of RRT in the Kingdom while PD remained underutilized. The Kingdom is one of the leading countries performing living kidney transplantation globally but still has room for improvement in increasing the deceased donor kidney transplantation. Mortality and graft loss among kidney transplantation is similar in comparison to international standards.

Reference: SCOT RRT database 2019.

012

Motivating and Legislating Organ Donation: An Informed Choice, Islamic Bioethics Model

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At the interface between Muslim attitudes, Islamic bioethics, and organ donation several facts are known: (i) Muslim populations across the globe are reticent to participate, and have ethical concerns about, organ donation, (ii) Islamic bioethical authorities are divided

over the moral status of organ donation and ancillary procedures, (iii) Existing Legislation and extant fatwas inadequately address the ethical and procedural aspects of donation. Given that many Middle Eastern countries have surging rates of kidney failure due to predisposing conditions and diseases in their populations, as well as robust organ transplantation programs, increasing public knowledge and improving public attitudes towards organ donation is a social imperative.

This presentation will address critical narratives and policy discourses around organization most Muslims by focusing on informed choice models for community-based education, public advertisements, and state-level legislation. I will argue that instead of focusing on intractable problems such as discovering the Islamic answer to organ donation and education that focuses on the positive aspects of the practice, embracing plurality is a more ethically-prudent and psychologically-compatible approach.

The presentation will draw upon my normative, empirical, and behavior change-related research experiences working on the “Muslim problem” with organ donation globally. I will describe the results of an RCT conducted in mosques within the US, critical analyses of organ donation fatwa as behavior change tools, and bioethical controversies related to brain death and donation after cardiac declaration of death to argue for the informed-choice models I present.

013

Organ Donation and Transplantation in Jordan: Is There A Gender Disparity?

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Most reports about organ donation and transplantation worldwide showing Gender Disparity with female gender being predominant in donating organs (donors) while male gender being predominant in receiving organs (recipients), in spite the fact that males are the predominant donors after Brain & Cardiac Death.

Jordan population is about 10 million inhabitants 48.6% Being female gender and 51.4% male gender, patients with end stage kidney disease in the year 2020 are 7001 with 61% male and 39% female. Total NO. Of registered donor cards in Jordan in the year 2015 is (1965) with male 54% and 46% female.

Total number of organ donation and transplantation in Jordan in the period of 8 years (2013-April/2021) is 1515 of them 1512 genetically living related donors where three donors after brain death, (Kidney 1422, Liver 91, and Heart 2). Total number of female donors is 606/1515(40%), total number of male donors is 909/1515(60%).

Total number of female recipient is 430/1512(28.5%), total number of male recipient is 1085/1512(71.5%). First degree genetically related living donors (parents, children's) is 570/1512(37.6%). Second degree genetically related living donors (sibling) is 668/1512(44.18%). Female donating to female (29%) male donating to female (30.25%).

In contrary to the well-known fact that female living donors are predominant worldwide, in Jordan male living donors are predominant (60% vs. 40%), in spite of the percentage of female recipient is less than male recipient.

014

Clinical Outcomes of Liver Transplantation for Patients Over 60 Years Old: A Single Center Experience

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Objective: Liver transplant should not be withheld from older recipients on the basis of age alone.

Introduction: Advanced age is not considered an absolute contraindication for liver transplant but transplant in the elderly patient with comorbid diseases still is a subject of debate because of the high risk of surgery. The aim of this study is to describe our experience in the recipient

evaluation process, and the outcomes of elderly patients with liver transplant.

Materials and Methods: Since 1988, we have performed 687 (476 living donor and 211 deceased donor) liver transplant at our hospital. 365 of the patients were adult recipients. 276 adult patient's data which were available were included in the study. Patients were divided into two groups according to their ages (Group 1: ≤ 59 years old, Group 2: ≥ 60 years old). In group 1, there were 247 recipients, and in group 2, 29 recipients.

Results: We evaluated 276 transplant patients' data. The mean age of the patients was 40 ± 12.3 years in group 1 and 63 ± 2.3 years in group 2. In group 1, 177 of the patients were male and 22 patients were male in group 2. 97 of the transplants were DD and 150 of them were LDLT in group 1. In group 2, most of the transplants were living related transplant ($n=19$). In both group; the most common indication for liver transplant was Hepatitis B ($n = 125$). One hundred and forty-three patients died during the follow-up periods. 132 of them were in group 1, and 11 of them were in group 2. There was no statistically significant difference between the two groups in terms of mortality rates. Overall mean survival time was 10.4 ± 0.6 years and 1 year, 5, 10 and 15 years patient survival rates were 67%, 54%, 48.4%, 40.4% respectively. In group 1; mean survival time was 10.2 ± 0.6 years, and 1 year, 5, 10 and 15 years patient survival rates were 65.5%, 53%, 46.3%, 40% respectively. In group 2; mean survival time was 10.6 ± 1.3 years, and 1 year, 5, 10 and 15 years patient survival rates were 75.9%, 68.6%, 61%, 48.8% respectively. There was no statistically significant difference in survival rates between the two groups.

Conclusion: In this study, LT recipients older than 60 years, had survival rates, acute rejection rates and, complications, equivalent to those of younger recipients. Liver transplant should not be withheld from older recipients on the basis of age alone.

015

Stereotactic Ablative Body Radiotherapy as a Bridge to Liver Transplantation for Hepatocellular Carcinoma: Preliminary Results of Başkent University Experience

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Objective: The safety and efficacy of SABR as another treatment option for bridging therapy.

Purpose: Hepatocellular carcinoma (HCC) is the most common primary liver tumor. The only curative treatment options remain to be liver transplantation and resection. However approximately 20–30% of the patients have substantial disease progression while still awaiting transplantation. Herein, we report our initial experience on stereotactic ablative body radiotherapy (SABR) as a bridge to liver transplantation for HCC.

Methods and Materials: Nine lesions of seven patients received SABR as a bridge treatment to transplantation. All the patients underwent radiofrequency ablation (RFA), trans catheter arterial chemoembolization (TACE) or hepatic resection prior to SABR. Radiographic response was based on magnetic resonance imaging (MRI) evaluation at one month after SABR.

Results: The median age of the patients was 65 years (range: 63–71 years). The median dose was 45 Gy (range: 45–54 Gy) in 3 fractions. The median diameter of the lesions was 18 mm (range: 16–30 mm). All the patients received SABR for single lesion except for two patients. No patient developed gastrointestinal toxicity or radiation-induced liver disease (RILD). Acute toxicity was minimal; all patients completed the full course. RILD was evaluated using liver enzyme, bilirubin, and albumin levels; no significant change supervened after the completion of SABR, and a month after SABR. A month after the SABR response rates were evaluated with MRI. In two lesions complete responses

obtained. There were two partial responses and two stable diseases.

Conclusions: Herein, we report initial results Başkent University's experience with the safety and efficacy of SABR as another treatment option for bridging therapy. SABR is an effective, safe and tolerable treatment option for bridging therapy. However, we obtained early response to SABR, the exact response rates will be encountered at least 3 months after SABR. Therefore, our finding should be clarified with further prospective studies with long-term follow-up period.

016

Deceased Organ Donation and Transplantation During Covid Pandemic in Kerala State, South of India

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Introduction: The Government of Kerala in association with Donation and Transplantation Institute (DTI Foundation) implemented transplant procurement management model (TPM model) in the state in the year 2019. KNOS (Kerala network for organ Sharing), a local networking organization under Government acts as a public, private provider interface, ensuring a transparent and equitable organ allocation

Methodology: Government medical colleges and private transplant centers appointed an in-hospital transplant procurement manager (TPM) to coordinate potential donors at intensive care units. The TPM became actively involved in the deceased organ donation (DDP) process. The cornerstone of the success was early and proactive identification of potential donors.

An educational and international cooperation approach

based on the implementation of a specialized program for healthcare professionals according to the DTI Foundation training model started in 2019. It includes on-site training, international internship, hospital visits and DTI's experts visiting Kerala hospitals to exchange best practices.

Results: Following the initiation of TPM in various hospitals across Kerala, when compared 2020 Vs 2019, a 60% increase was observed from 30 to 50 organs transplanted in the same period of time even against Covid pandemic effects worldwide.

Conclusion: The collaboration between local and international organization, the hospital-based organ procurement units headed by Transplant procurement managers (TPM) and the role of government-run networking organizations in improving the deceased donor transplantation played a key role for good outcomes of donation and transplant programs.

017

Sixteen Successful Kidney and Liver Transplants at Baskent University Hospitals in Thirty Days During the Pandemic

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Aim: During the Coronavirus disease 2019 (COVID-19) pandemic, so many transplant centers have postponed transplant surgeries. Therefore, the number of patients on the waiting list is gradually increasing and progression occurs in the existing diseases. At the beginning of March 2020, as Baskent University, we postponed transplant activities for 15 days. Then based on our early findings, we realized that neither hemodialysis nor transplant patients have got infected with Covid-19 pandemic higher than the normal population^{1, 2, 3, 4, 5} Therefore, we decided to continue our transplant activities in a controlled manner.

Materials and Methods: Between dates April 1-30, 2021, we performed 13 kidney transplants and 3 liver transplants in our 4 transplant centers located in different cities (Ankara, Istanbul, Adana and Konya) of Turkey. According to our donor selection criteria, all candidates were relatives (up to the fourth degree) or the spouse of the recipient and ≥ 18 years old.

One of the kidney transplants were from deceased donor and others were from living related donors. All liver transplants were performed from living related donors. According to our protocol, all recipients and donor candidates were screened for Covid-19 with Covid-19 polymerase chain reaction (PCR) test and thorax computed tomography (CT). Deceased donor candidate was also screened with Covid-19 polymerase chain reaction (PCR) test and thorax computed tomography (CT) before harvesting.

Results: In kidney group, two recipients were pediatrics and others were adults. 8 patients were male and 5 patients were female. The mean age of kidney recipient was 36.8 years (range 9-63). The average length of hospital stay was 7.8 days (range 6-14).

In liver transplant group, all patients were pediatric male patients. One of these recipients was performed liver transplant due to acute fulminant liver failure. The mean age was 2 years (range 1-3). The average weight of the recipients was 12 kg. The average length of ICU stay was 4 days (range 2-5).

All recipients were treated in transplant service after the transplant surgery and discharged with normal kidney and liver functions.

Conclusion: Our results showed that, kidney and liver transplants can be performed during pandemic safely with the exclusion of COVID disease and with careful precautions before the surgery.

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018

Impact of Covid-19 Pandemic on Organ Donation and Transplantation in Saudi Arabia

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Objective: Determine the impact of global pandemic on the organ donation and transplantation.

Materials: Saudi Center for Organ Transplantation (SCOT) Database 2019 to 2020.

Methods: Retrospective study of organ donation and transplantation activity using SCOT data during years 2019 vs 2020.

Result: The total possible donors decreased from 585 to 408, documented brain dead (BD) donors from 411 to 286, families approached from 354 to 231 and consents received for organ donation from 126 to 74; actual donors 114 to 65 and utilized donors 113 to 63. A decrease of 30-35% in possible to potential donors; 41% on consents for donation; 43% on actual donors; and 44% in utilized donors. Among the consented utilized donors in 2020, a total of 191 solid organs transplanted; 72 kidneys, 51 livers, 28 hearts, 35 lungs, 2 pancreases and 1 small bowel vs. 2019's 343 transplanted solid organs (44% decline in transplanted deceased organs). In living donation, out of 11 governmental transplant centers, 9 centers have stopped their transplant activity from March 15 until September 2020, with only 2 centers performing living transplant and only 1 center providing transplant in urgent cases. To date, all transplant centers have resumed their activity provided following the strict protocol recommended by SCOT.

Conclusion: The pandemic has greatly affected the organ donation activities in the Kingdom which significantly decreased the organ donation and transplantation activity.

References: Position statement on organ transplant and donation during coronavirus disease (COVID-19) pandemic, date: April 6, 2020, SCOT data 2020: SJKDT vol. 5 and 6, 2020.

019

Effect of Structured Diabetes Education on diabetic Angiopathies Among Kidney Transplants With Post-transplant Diabetes: Kuwait Experience

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Introduction: Diabetes knowledge among kidney transplant recipients with post-transplant diabetes (PTDM) is not assessed exhaustively.

Aim: We aimed to evaluate the impact of structured diabetes education on the development of diabetic micro- and macro-angiopathies in kidney transplant patients with post-transplant diabetes.

Patients and Methods: In this prospective randomized controlled study, 210 renal transplants with PTDM were categorized in 2:1 groups according to the type of diabetes education. Group 1 (n=140) received structured education while group 2 (n=70) received conventional education. Patients' data were collected through patient identification form, and metabolic control parameters form.

Results: Most patients in the two groups (1&2) were Kuwaiti (60.7 vs. 58.6%), men (57.9 vs. 68.6%), with high school education level (43.6vs.48.6%). The minority was smokers (12.9 vs.8.7%) but chronic glomerulonephritis was the original disease in 36.4 vs. 35.4% of cases. Most of the patients (72.8 vs. 78.6%) were hemodialyzed pre-transplant.

At the start of the study, the percentage of patients with diabetic neuropathy was comparable in both groups (32.4 vs. 27.6% in the two groups respectively) and after 24 months follow up EMG/NC did not show a significant difference between the studied groups($P>0.05$). Similarly, the number of patients with fundus imaging showing retinopathy was comparable in both groups at the start and the end of the study ($p>0.05$). Also, macroangiopathic events were higher in group 1 but did not rank to significance ($p>0.05$).

On the other hand, although the percentage of patients with nephropathy was comparable in both groups at the start of the study, the percentage decreased significantly in group 1 after 24 months of the study compared to group 2, and the basal value in the same group($p=0.016$).

Conclusion: Structured diabetes education is associated with the reduction of diabetic nephropathy but without significant impact on other micro- or macroangiopathy. It is highly recommended to be delivered to all diabetic kidney transplant recipients.

020

Long Term Graft Survival After Kidney Transplantation: Predictive Factors

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Introduction: Multiple factors, usually intricated, have been implicated in the long term graft survival after kidney transplantation. The purpose of our study is to determine predictive factors of long term kidney transplant survival.

Materials and Methods: We conducted a longitudinal retrospective study including recipients who have had kidney transplantation since 1986 in Charles Nicolle hospital of Tunis. A threshold of 10 years graft-survival was chosen to define a "long-term graft survival". During this period, 273 transplantations were accounted for and divided into two groups: Group A, including 154 recipients

with a long-term graft survival, which was compared to the group B with 119 recipients who lost their graft in less than 10 years after kidney transplantation. The relative risk of transplant loss at 10 years after transplantation was calculated for each parameter.

Results: In the first group, the absence of high blood pressure before transplantation and full donor/recipient HLA-DR compatibility were noticed. In this group, donors were significantly younger and mostly under 45 years old. The absence of obesity or overweight was associated with a good graft prognosis.

In the post-kidney transplantation period, Mycophenolate Mofetil was the only immunosuppressive significantly associated with an improved graft survival. The average of serum creatinine, estimated at 3 months, 1 year, 2 years, and 5 years after transplantation was predictive of the long term graft survival and was significantly lower in the first group. A serum creatinine level of less than 130 $\mu\text{mol/l}$ was established as a predictive factor of a better long term graft survival. On the other hand, early occurrence (less than 6 months after transplantation) of a proteinuria exceeding 0.3 g/24 h was significantly associated to a poor graft prognosis. Amongst the post-transplant complications, acute graft rejection and its repetition, high blood pressure, bacterial or cytomegalovirus infections and neoplastic complications (Kaposi's sarcoma or post-transplant lymphoproliferative disease) as well as development of a chronic graft dysfunction are also significantly associated with a poor graft survival. It's also worth noting that, in the second group, the frequency of death with a functioning kidney transplant was significantly more important.

In the multivariate analysis, the relative risk of graft loss at 10 years post transplantation was significantly higher in case of: hemodialysis, high serum creatinine level 5 years post transplantation, proteinuria exceeding 1 g/24h, early occurrence of proteinuria (less than 6 months after transplantation), cytomegalovirus infection and chronic allograft dysfunction.

Conclusion: A long term graft survival after kidney transplantation depends on various factors, mainly the recipient's condition, the donor's selection and his matching with the recipient, the postoperative care especially the immunosuppressive protocol, the post-transplant course and the occurrence of immunological, cardiovascular, infectious and neoplastic complications.

021

Long Term Effects of Eplerenone Treatment in Children with Chronic Allograft Rejection

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Introduction: Aldosterone is a mineralocorticoid hormone and its most important effect is reabsorption of water and potassium in the tubules. Among other important effects of the hormone, induction of pro-inflammatory activity leads to progressive fibrotic damage. Experimental and clinical data strongly suggest that mineralocorticoid receptor (MCR) antagonists inhibit aldosterone and reduce fibrosis in many target organs. They prevent proteinuria and progressive renal disease. However, there is little information about this approach in renal transplant patients. Eplerenone is a potent and high selective MCR antagonist. In this study we aimed to investigate the effect of long-term eplerenone administration in children with chronic allograft dysfunction.

Patients and Methods: Twenty-six of 184 renal transplant children with biopsy-proven chronic allograft dysfunction and GFR>40 ml/min per 1.73 m² were included in the study. All patients had significant proteinuria and who were under treatment with enalapril plus losartan. Ten patients received additional 25 mg/day eplerenone for 3 years (Group 1), 16 patients did not receive eplerenone (Group 2). Patients were examined in the renal transplant outpatient clinic every 2 week for the first month and once a month thereafter. At each visit, a complete clinical examination was performed and serum creatinine, electrolytes, ALT, AST, complete blood cell count, urinalysis, and spot urine protein- creatinine ratio were measured. The kidney biopsy samples were documented. The clinical and laboratory findings and course of the patients in group 1 and group 2 were compared.

Results: Of the 26 patients, 10(F/M:7/3) were in group 1 and 16 were in group 2. The mean age at the time of transplantation was 11.5 ± 4.2 years in group 1 and 12.8 ± 4.1 years in group 2 ($p > 0.05$). There were no differences in age, sex, type of immunosuppressant, donor type, follow-up time, and acute cellular rejection episode. Serum potassium levels were similar between groups, eplerenone did not alter them. At the beginning of the study, both groups displayed similar serum creatinine levels (1.46 ± 0.6 mg/dl in group 1, versus 1.17 ± 0.3 mg/dl in group 2, $P = 0.68$). At 36 months mean serum creatinine level had significantly higher in Group 2 than in the eplerenone group, (2.7 ± 0.6 mg/dl versus 1.98 ± 0.81 mg/dl respectively ($P = 0.04$)). The baseline eGFR was similar in both groups (59.7 ± 16.8 versus 69.7 ± 15.1 ml/min per 1.73 m^2 , $p > 0.05$). At 36 months eGFR stayed stable level in group 1, but significantly decreased in group 2 (56.1 ± 9.5 and 43.8 ± 14.4 ml/min per 1.73 m^2 respectively < 0.05). The spot urine protein-creatinine ratio decreased from 2.3 ± 0.3 to 1.2 ± 0.5 in group 1 at 36 months. In contrast this ratio increased significantly from 1.86 ± 1.1 to 3.8 ± 0.7 in group 2 ($p < 0.05$).

Conclusions: Our study showed that the long-term eplerenone administration decreased proteinuria without causing hyperpotassemia and attenuates the progression of chronic allograft dysfunction in selected pediatric transplant patients. Further studies are needed for determining the potential benefit of MCR antagonists in these patients.

022

Pediatric Organ Transplantation: Data from Middle East Countries

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Introduction: Although the Middle East population is around 600 million, one third is aged under 15 which means 210 million children, Epidemiological information from the Middle East on pediatric organ transplantation is very scant and primarily based on patients referred to tertiary medical centers

Aim: Collecting all valid epidemiological data on pediatric organ transplantation from the Middle East countries in an attempt to create a regional registry in close collaboration with the Middle East Society for Organ Transplantation (MESOT) community to be the place where all organ transplant data from this region including the pediatric data goes to on a regular basis.

Methods: All known pediatric organ transplant centers, national transplant societies, country representatives of MESOT from across the Middle East have been contacted to answer specified questions related to different aspects of pediatric organ transplant activities per organ such as the date started, volume of transplant, progression of transplant with time, adult and pediatric share, graft survival at 1-5-10 years, and source of organs.

Results: A total of 6960 kidney transplants have been performed in MESOT countries in 2008. Making the total kidney transplant rate 11.7 per million population (pmp)/year. Out of this, 411 transplants were for pediatric patients which makes the pediatric share of about 6.7% whereas the average pediatric kidney transplant share in Europe is 4.6%. However, the average pediatric kidney transplant rate was only 0.77 pmp/year as compared to 8 pmp/year in Europe. Deceased pediatric kidney transplant programs in MESOT countries are either not available or inactive except Turkey and Kingdom of Saudi Arabia (KSA), 10% of all pediatric kidney transplants were from deceased donors and were mainly performed in Turkey and KSA as compared to more than 60% in North America. The kidney graft survival in some Middle East centers who published their data was 88-92% at one year, 67-89% at five year, and 50-83% at 10 years post-transplant. Most of these figures are quite comparable to western data. 991 liver transplants were performed in 7 MESOT countries in 2008, 60% of them were in Turkey which makes the liver transplant rate ranging from 0.4-8.4 pmp/year in these countries but only in Turkey, Iran and KSA children were benefited from the liver transplant program where the pediatric share ranged from 17% in Turkey to 28% Shiraz center in Iran and 22% in KSA. We recognized that the living liver donors for pediatric patients accounted for a higher proportion than in adult recipients in KSA and Turkey accounting for 90% versus 38% and 76% versus 56% respectively. Other Transplantable Organs are not available for kids in the Middle East except for heart in Turkey where in 2008, 8 kids have received heart transplant.

Conclusion: Although pediatric Kidney transplantation

is active in many parts of the Middle East, it is still inactive in others and mostly relying on living donors. Liver transplant is far from meeting the needs. The lacking deceased programs in most Middle East countries is main issue to be addressed to adequately responding to the increasing demand for organs.

023

Outcomes of Interleukine-2 Receptor Antagonist Induction Therapy in Standard-Risk Renal Transplant Recipients Maintained on Tacrolimus

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Introduction: The additive benefit of interleukine-2 receptor antagonist induction in standard-risk kidney transplant recipients, while maintained on tacrolimus-based immunosuppressive therapy, is uncertain.

Materials and Methods: We divided the studies included in this meta-analysis into two groups: Group A (included studies that used same dose of tacrolimus in both arms of each study) and Group B (included studies that compared patients who received induction therapy and low dose tacrolimus versus those who received no induction therapy and high dose of tacrolimus).

Results: In group A, 11 studies were included (n=2886). IL2-RA induction therapy was not associated with significant differences in comparison to no induction therapy in terms of acute rejection rates at 6 months post-transplant (Risk Ratio=1.12, 95% CI range: 0.94 - 1.35) or graft survival at 1 year post-transplant (Risk Ratio=0.78, 95% CI range: 0.45 to 1.36). In group B, two studies were included (n=669). There was no difference between both arms in terms of acute rejection rates (Risk Ratio=0.62, with 95% CI range: 0.33 to 1.14) or graft survival (Risk Ratio=1, 95% CI range: 0.57 to 1.74).

Conclusion: IL2-RA induction therapy does not improve outcomes in patients maintained on tacrolimus-based immunotherapy in standard risk population.

024

Primary Focal Segmental Glomerulosclerosis Recurrence After Pediatric Renal Transplantation

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Introduction: Focal segmental glomerulosclerosis (FSGS) recurrence after renal transplantation is frequent in pediatric patients and associated with poor graft survival when they reach adulthood. We aimed to investigate recurrence rate, recurrence risk factors, management strategies, and long-term graft function in this study of pediatric renal transplant recipients with FSGS as primary disease.

Materials and Methods: We retrospectively evaluated the medical records of 34 pediatric primary-FSGS patients who had undergone renal transplantation between 2004 and 2019 at our center. FSGS recurrence was diagnosed with nephrotic range proteinuria after transplantation, and diagnoses were confirmed by graft biopsy. Preoperative prophylactic plasma exchange (PE) was administered to pediatric primary-FSGS renal recipients. PE was used for treatment of FSGS recurrence and rituximab (Rtx) added for the patient who did not respond to PE.

Results: All patients (male:female ratio 19:15) with primary FSGS underwent renal transplantation. Mean age of the patients at the time of the transplantation was 12.72±5.46 years. A total of 29 patients received living-related donor allografts (85.3%), and five of the donors were deceased (14.7%). We identified FSGS recurrence in five recipients (14.7%). Time from FSGS diagnosis to end-stage renal disease and duration of dialysis were shorter in the recurrence group than the non-recurrence group (48.4 (2-90) vs 65.1 (8-123) months and 1.41±0.82 vs 3.18±1.88 years, respectively; p<0.05). Donor type and transplant age were similar in both groups. Of those with recurrence who had received PE and Rtx, complete remission in three (75%) and partial remission in one (25%) was observed.

Conclusion: Prophylactic PE and the use of a PE–Rtx regimen for FSGS-recurrence treatment resulted in low recurrence and good remission rates.

025

Kidney Transplantation from Infected Donors with Particular Emphasis on Multidrug-Resistant Organisms

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Purpose: It is crucial to prevent sepsis-related organ dysfunction in septic donors. In this study, septic donors were followed-up based on donor- Sequential Organ Failure Assessment (d-SOFA) criteria.

Materials and Methods: Between January 2014 and 2020, twenty-nine primary kidney transplant recipients received organs from twenty septic donors. All donors received either pathogen-specific or broad-spectrum antibiotics at least 48 hours before procurement and all recipients received a similar treatment with an average of 7-14 days after transplantation. The eligibility of the donors is determined according to the sum of d-SOFA scores obtained from six parameters including: PaO₂/FIO₂ ratio, platelet count, serum bilirubin, creatinine and lactate level and presence of hypotension. The cut-off value for bacteremic donor acceptance was below 12 points.

Results: Fever ($\geq 38^{\circ}\text{C}$) persisted in six donors in the last 24 hours prior to organ removal. However, in these six donors, the mean d-SOFA score was 6.5 ± 1.1 , the mean arterial pressure (MAP) was > 70 mmHg and serum lactate levels were < 2 mmolL⁻¹ in five cases. Fourteen donors had a SIRS score ≤ 2 with a corresponding d-SOFA

score of 8.1 ± 1.2 and had no parameters with a score > 3 , indicating severe organ failure. In 28 recipients (97%), no donor-related infection was observed in the perioperative first month and afterwards.

Conclusion: Treatment of donor and recipient with a common protocol greatly reduces the risk of donor-induced infection transmission. In addition, the d-SOFA criteria is a helpful tool in predicting organ failure in infected donors.

026

The Outcomes of Renal Transplantation During the Covid-19 Pandemic. Is it Worth Doing?

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Introduction: The COVID-19 pandemic had profound effects on all aspects of health care including transplantation. The activity across the world was halted during the initial phase of the pandemic and later started under strict scrutiny. This had a huge impact on patients with end-organ disease such as end-stage renal disease. In this article, we share our experience and outcomes of renal transplantation at Sindh Institute of renal transplantation during the pandemic.

Materials and Methods: All patients who underwent renal transplantation during the pandemic were included in the study. The outcomes of surgery hospital stay, postoperative renal functions and complications were recorded.

Results: From September 2021 to March 2021, the hospital catered to more than 3000 covid positive patients including previously transplanted patients and 126 new living related renal transplantation surgeries were carried out. Patients were admitted 10 days prior to the surgery in a bio protective bubble and 3 covid PCR tests were performed 72 hours apart before surgery. The mean age of newly performed cases was 28.7 ± 8.6 years, with 100

males (79.4%) and 26 females (20.6%). Among all patients, two patients had a history of COVID-19 infection and four more developed it during the post-operative period. The hospital stays and renal functions were comparable to the pre-pandemic data from the same unit (Table 1). While the case fatality rate for previously transplanted patients with covid infection was 7.1%, none of the newly transplanted patients died because of the infection.

Conclusion: The outcomes of renal transplantation during the covid pandemic are comparable to pre-pandemic statistics.

Comparison of Renal Transplants Before and During COVID-19 Pandemic

	Before pandemic	During pandemic
Numbers/year	332 (2019)	87 (2020)
Ischemia time	1.7 ± 0.54	1.7 ± 3.8
Hospital stay	15.2 ± 2.3	17.7 ± 7.2
Creatinine day 1	2.65 ± 1.11	2.2 ± 1.09
Creatinine day 2	1.54 ± 0.96	1.38 ± 0.9
Creatinine day 3	1.43 ± 0.50	1.38 ± 0.9
Creatinine day 28	1.4 ± 0.44	1.27 ± 0.83

027

Fludrocortisone Among Renal Transplant Recipients With Persistent Hyperkalemia: Single Center Experience

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Introduction: Calcineurin inhibitors (CNI) are the cornerstone of immunosuppression following solid organ transplantation. However, it may cause hyperkalemia by multiple mechanisms affecting potassium in the distal tubule. Hyperkalemia is commonly observed in renal transplant recipients, and it is dose-dependent.

Aim: In our cohort study we evaluated the impact of fludrocortisone in the management of CNI-induced hyperkalemia after renal transplant.

Patients and Methods: In this small cohort study we evaluated the newly transplanted patient who developed

hyperkalemia or those attending the outpatient renal transplant clinic in Hamed Al-Essa Organ Transplant Center of Kuwait with hyperkalemia. Patients were evaluated clinically and by laboratory investigations during their follow-up visits. All follow-up parameters were collected before starting fludrocortisone (Basal) and then at 1,2,4,8 weeks. Drug history was assessed with special stress on possible drugs which induce hyperkalemia that was discontinued (as spironolactone) otherwise essential drugs like prophylactic agents (sulfamethoxazole-trimethoprim) were kept. Doses of oral anti-hyperkalemic agents (bicarbonate, resonium calcium, and fludrocortisone) were collected.

Results: Twenty-six patients were included in the study. Most of the cases were males, aged (45.8 ± 15 years). Bodyweight showed no significant change basal and after the introduction of fludrocortisone (73.3 ± 19, 72.8 ± 18.8, 71.1 ± 18, 69.4 ± 16, and 69.4 ± 16 Kilograms). Systolic and diastolic blood pressure also do the same (129.3 ± 18.6, 129.1 ± 15.3, 129.3 ± 20, 127.4 ± 18, and 127.2 ± 18), (76.3 ± 11, 75.8 ± 9.1, 76.5 ± 7.5, 73.8 ± 12, and 73.2 ± 12 mmHg). The steroid doses (prednisolone) were significantly reduced over one month (15.7 ± 12.4, 14.1 ± 10.19, 12.6 ± 8.7, 9.5 ± 5.2, and 9.5 ± 5.2 mg per day). Fludrocortisone doses did not show any significant change between starting and follow up doses (0.1211 ± 0.07, 0.1158 ± 0.07, 0.116 ± 0.07, 0.115 ± 0.08, and 0.115 ± 0.08). Serum potassium levels were significantly improving (5.18 ± 0.58, 4.9 ± 0.49, 4.8 ± 0.54, 4.8 ± 0.65, and 4.4 ± 0.72). Serum creatinine was significantly improving by the end of 8 weeks (129.3 ± 50, 129.5 ± 54, 116.7 ± 48, 114.5 ± 28, and 114.5 ± 28). Serum bicarbonate did not show any significant differences

Conclusion: Fludrocortisone was a safe and effective option in the management of CNI-induced hyperkalemia among renal transplant recipients.

O28

Recurrence Rate of Early HCV Infection After Renal Transplantation Following Successful Treatment of Dialysis Patients with Direct Acting Antiviral Agents

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Introduction: HCV recurrence after organ transplantation has dreadful complications. Excellent response of direct acting antiviral agents in transplant recipients has been reported in various studies. Although, sustained virological response is considered as the virological cure, but it requires patients to be further 3 months on dialysis before undergoing renal transplant. Thus, increasing risk of HCV re-infection and associated complications. We aim to determine HCV recurrence in renal transplant recipients who has achieved end of treatment response before transplant.

Materials and Methods: As per institutional protocol dialysis patients who failed to achieve rapid virological response (RVR) were treated with 6 months of DAAs. All patients who have achieved ETR were then referred for transplantation. Kidney transplant recipients who were treatment experience with DAAs and had a HCV PCR done 3 months after transplant was enrolled. Participant's demographic and clinical data was documented and statistical analysis was performed by SPSS 20.0

Result: In total 40 transplant recipients were included, majority were males (81.1%) with mean age of 28.7 ± 9.4 years. All patients had received sofosbuvir, daclatasavir and ribavirin combination prior to transplant. Majority of patients received treatment for 3 months (70%). Only 5 % of study population did not achieved RVR while all patients achieved ETR. Two patients also had treatment experience with interferon. Post-transplant HCV PCR was conducted at mean duration of 8.3 ± 3.3 months. Laboratory parameters showed Total Bilirubin 3.6 ± 17.5 mg/d, Alanine transaminase 51.5 ± 80.2 IU/L and gamma glutamyl transferase of 133.9 ± 220 IU/L. Post renal transplant HCV recurrence was documented in 2 (5%) recipients.

Conclusion: This is first study to document excellent response of DAAs in renal transplant recipients who has been referred early for transplant. Thus, dialysis patients can undergo transplant after achieving end of treatment response.

O29

Antegrade Laparoscopic Left Donor Nephrectomy: Single Surgeon Experience from Four Centers in Jordan and Bahrain

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Background: First laparoscopic donor nephrectomy was reported by Lloyd in 1995, since then the procedure was adopted by most transplant centers, the procedure replicated open technique using total laparoscopic or hand assisted technique.

In 2011 Tunc reported first direct upper pole kidney access in laparoscopic radical nephrectomy, with reverse method that start dissection from upper pole towards renal hilum, we elected to apply a modification of this new technique on laparoscopic donor surgery.

Methods: Retrospective analysis of 36 cases done in three hospitals by same surgeon over a period of 12 months, compared to previous 28 cases done using conventional laparoscopic technique was performed.

Results: Average operating time was faster in the antegrade technique (62 ± 11 minutes compared to 87 ± 13 min), warm ischemia time was similar between two groups (5 min vs 4.7 min), similar post-operative average s.creatinine 0.92 vs 1.04 mg/dl). One graft loss in the antegrade technique due to accelerated acute rejection after 8 hours of surgery, and one graft loss in the conventional technique due to recipient mortality with severe viral pneumonia. Average blood loss was minimal in both groups less than 50 cc with no transfusion requirement.

Conclusion: Antegrade laparoscopic donor nephrectomy is safe and faster method compared to conventional technique with similar outcome and complication rate

030

Features of Living and Deceased Liver Donation and Transplantation in the Kingdom of Saudi Arabia

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Objective: To evaluate and analyze the current features of liver transplantation in the Kingdom.

Purpose: To evaluate and analyze the current features of liver transplantation in the Kingdom.

Materials: SCOT database on organ donation and transplantation 2020.

Methods: Retrospective on the allocation, distribution of deceased livers year 2020.

Results: There were a total of 74 consented donors for organ donation and of which, 68 (92%) were recovered. Of the recovered donors, 51 livers were utilized and donor quality are as follows: age range: 6-62 years with mean of 38 years, cause of death were mainly due to non-traumatic causes 38 (81%) versus traumatic case 9 (19%). 7 (15%) were transplanted to pediatric recipients, 6 (13%) to urgent liver recipient, 2 combined kidney-liver transplant and in 4 (9%) cases, split liver transplantation was done. Living liver transplantation activity from 6 liver transplant centers showed 193 livers were transplanted including 168 (87%) living related and 25 (13%) unrelated transplants. Of the living transplantations performed, there were 77 (40%) pediatric recipients and 26 (13%) laparoscopic surgeries done. Internationally, in the 2020 IRODaT report, it is worth noting that the Kingdom ranked 3rd in the world wide living liver donation rate at 7.22 per million population (pmp) while deceased liver donation rate had 2.33 pmp.

Conclusion: The features of living and deceased liver transplantation in the Kingdom is up to date with the current standards internationally; more improvement should be done in optimizing donor qualities and organ donation process.

Reference: SCOT data base 2020, International Registry in Organ Donation and Transplantation (IRODaT) December 2020 Issue.

031

Is There Any Relation Between Right Ventricular Dysfunction and Left Ventricular Assist Device Thrombosis?

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Objective: Ventricular assist devices can replace heart transplantation in the scarcity of heart donors, however medical industry has to find a solution for complications.

Introduction: Heart failure is one of the most important health problems in the world. In the beginning stage of heart failure, medical treatment might be enough, but heart failure is a progressive disease. At the end stage of heart failure, medical therapy would not be enough to save the patient. Best solution for heart failure is cardiac transplantation. The main problem in heart transplantation is limited number of donors. In Turkey, approximately 100 heart transplants are performed each year but in the meantime, hundreds of new patients are added to the waiting list. Most of these patients do not have the chance to have a heart transplantation. Medical industries try to solve this problem and they developed mechanical circulatory support systems. For now, we are using these ventricular assist devices (VAD) as a bridge to transplantation, bridge to recovery and as the destination therapy. As the number of days on VAD increase, incidence of complications also increases. One of the most mortal complications of VAD is device thrombosis. Treatment options for VAD thrombosis are medical (thrombolytic), VAD exchange or emergency cardiac transplantation.

Right heart failure is characterized by congestion throughout the body. Liver dysfunction occurs due to liver congestion. Coagulation factors synthesized in the liver are also affected due to liver dysfunction.

Materials and Methods: Between April 2012 and January 2020, 80 VAD's were implanted in our clinic. We retrospectively evaluated all of them. All patients were on same anticoagulation regiment (warfarin sodium (INR3-3,5) and acetyl salicylic acid 100mg). Patients' preoperative echocardiogram, blood tests, cardiac catheterization parameters were recorded. All patients were followed weekly as well as VAD watts, flow and

revolution per minute (rpm). All operations are done by the same surgical team. After implanting a VAD, position of the inflow is checked by trans esophageal echocardiogram. The outflow graft was anastomosed to the ascending aorta in every case. If a patient reports an unexpected change in watt or flow, he is invited to hospital for a check. According to the TAPSE values in the echocardiogram performed to determine the preoperative right ventricular functions, the patients were divided into two groups as advanced (<16) and mild right ventricular failure (≥ 16). Early mortality (1 month) after VAD implantation was the exclusion criterion for the study.

Results: 19 patients had early mortality. One patient with Fontan circulation was also excluded. Twenty patients were excluded totally. Sixty patients were enrolled in study. Twenty-eight patients had mild right ventricular failure (MRVF) (TAPSE ≥ 16) (%46.7) and 32 patients (TAPSE <16) had advanced right ventricular failure (ARVF) (%53.3). In MRVF group 8 patients had thrombosis (%28.6) while in ARVF group 6 patients had thrombosis (%18.7).

Conclusions: Ventricular assist devices can replace heart transplantation in the scarcity of heart donors, however medical industry has to find a solution for complications.

032

Organ Transplantation in Syria

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The population of Syria stood at ~23.8 million inhabitants in 2011; the current population of Syria is 17.2 million based on the latest United Nations estimates in December 2019. The country has a long-standing transplant history with 8 transplant centers in the 3 largest cities (Figure 1).

The first living donor kidney transplant in Syria was performed 40 years ago (1979), and a total of 5132 renal transplants had been performed by 2018. Three cases of heart transplant from deceased donors were performed at Tishreen Military Hospital in Damascus over a short

period of time (mid 1989 to end of 1990); cardiac transplant activities have since discontinued. Recently (2017 and 2019), 2 liver transplants from living related donors have been performed at Al-Assad University Hospital in Damascus. Currently, kidney, bone marrow, and cornea are performed in Syria.¹ In 2006, the estimated incidence of end-stage renal disease in Syria was 100 per million population (pmp).² The prevalence of end-stage renal disease patients undergoing dialysis was 217 pmp in 2009.³ Peritoneal dialysis has not been embraced in the country thus far; in 2005, $<4\%$ of patients on dialysis were receiving continuous ambulatory peritoneal dialysis.⁴ Kidney transplant activities are solely focusing on living donor procedures at this time.

With the increasing demand for renal transplantation, a new national Syrian legislation, known as Law Number 30, has been enacted, authorizing the utilization of organs from living unrelated donors and from deceased donors.

To prevent transplant tourism, a national guidance on organ transplantation has been instituted demanding that organ donation must be based on motivations only involving solely Syrian nationals.

This legislation has been considered a landmark in the history of organ transplantation in Syria as it recognizes, for the first time, the concept of brain death and the authorization of retrieving organs from deceased donors as well as from living nonrelated donors under specific conditions.

⁴Since the enactment of this law, kidney transplant rates have increased remarkably from 7 kidney transplants pmp in 2002 to 17 pmp in 2007.⁵ At the same time, kidney transplants performed abroad for Syrian patients have declined from 25% in 2002 to $<2\%$ in 2007 (Figure 2).

Rates of kidney transplants continued at comparable rates until 2010 (385 transplants; 17 pmp), before the beginning of the political crisis in 2011.³ Unrelated renal transplants are relatively more frequent in private hospitals (approximate 2:1 ratio) that perform the majority (54%) of total transplants in the country.

Unrelated renal transplants permitted under the new Law number 30 have been the major contributor to the 9-fold increase in kidney transplant rates in private sector hospitals.

It is important to note that rates of living unrelated donors exceeded 92% in private hospitals compared with 50% in public hospitals, emphasizing the relevance

of strict ethical and legal practices. Notably, illegal and paid unrelated kidney donations that did not exist in 2002 increased to 71% in 2007. This practice is not only prohibited by law but is also under clear violation of the Istanbul Declaration.⁶ Consequently, in January 2008, the Syrian government limited kidney transplantation to the public sector with a new national regulatory oversight of transplantation practices.

⁵The Transplantation Society has commended the Government of Syria for this intervention of global impact, representing an important step on the way to fulfill the 2004 resolution of the World Health Assembly (WHO). Consequently, kidney transplant rates in public hospitals have increased substantially since 2008 (by 55%) while new public transplant centers opened in the 3 largest cities in Syria (Damascus, Aleppo, and Homs) (Figure 1). Although the practice of illegal living kidney donations was discontinued in private hospitals, paid unrelated kidney donation has continued in public hospitals on a non-organizational or institutional level. Although kidney transplantation in private hospitals has been prohibited, the practice of selling kidneys has continued albeit in a smaller number.

In 2009, Professor Francis Delmonico, former president of The Transplantation Society, visited Damascus and met with the Syrian Minister of Health. In a round table discussion with participation of the minister, Frank Delmonico, and representation of the WHO/ Eastern Mediterranean office, and key Syrian and Middle East transplant professionals, next steps for the implementation of the Declaration of Istanbul have been discussed (Figures 2 and 3). This meeting also concluded to initiate a deceased donor program in Syria, to form a National Transplant Committee and to scrutinize unrelated transplantation. Subsequently, The Ministry of Health issued an additional law to establish The Syrian National Center for Organ Transplantation representing, at least in theory, important step forward with logistical, organizational, and financial support by the government. Unfortunately, the Syrian National Center has remained inactive to this day. For a variety of reasons, the center has not performed any of the tasks assigned including coordinating efforts between transplant centers and health authority to help establishing the long awaited national deceased-donation program. Consequently, deceased donor transplants remain inactive in Syria as the role of the center has been to help initiate, supervise, and coordinate activities between donor hospitals and transplant centers. Additional roles of the National Center,

a nonprofit governmental agency, included, at least on paper, applying strategies to increase the awareness of the medical community and public at large for ethical organ donation.

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Figure 1. Kidney Transplant Centers in Prewar Syria

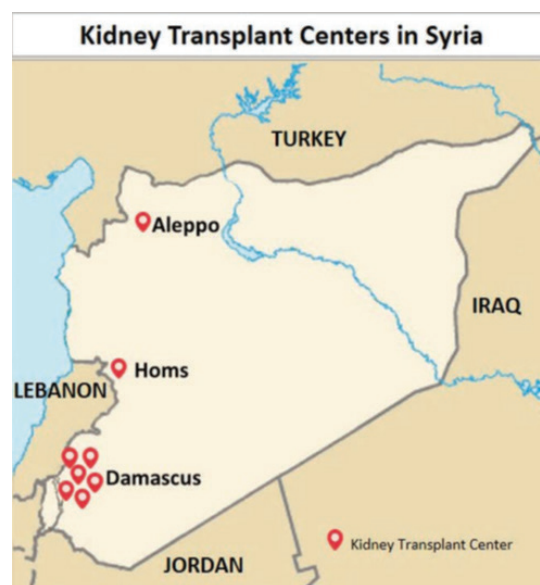


Figure 2. Kidney Transplant Activities in Syria and Transplants on Syrians Traveling Abroad (1990–2018).

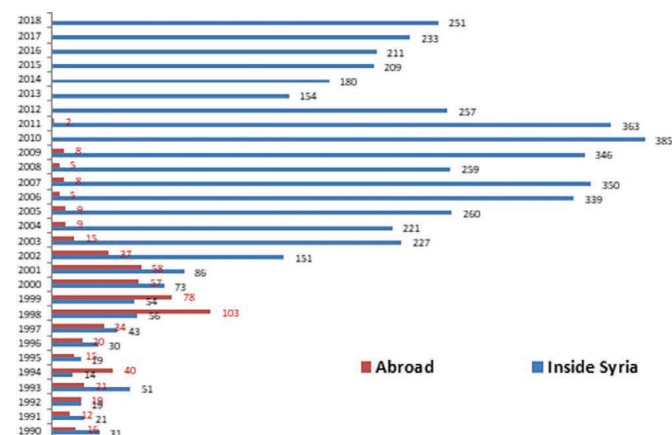


Figure 3. Organ Transplant Meeting Held in Damascus on November 20, 2009 in Collaboration with TTS, WHO, in addition to Syrian and Middle Eastern Transplant Experts. TTS, The Transplantation Society; WHO, World Health Assembly.



033

The Role of Interventional Radiology in the Management of Early Vascular Complications After Liver Transplantation

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Introduction: Hepatic vascular complications after liver transplantation (LT) is a serious condition, which often results in graft failure and can lead to patient deaths. Early diagnosis and treatment of vascular complications provide prolong graft survival, and prohibited further complications. This study presents our experience of using endovascular treatments during the first week after liver transplant.

Materials and Methods: 238 liver transplantations were performed in a single center between 2012 and 2021. In 59 patients out of 238 liver transplant patients (37 men; mean age 27 ± 2.9 years); early endovascular interventions were carried 1 to 7 days (mean $2.7 \text{ day} \pm 0.24$) after surgery.

Doppler ultrasound was used in all cases, and computed tomography angiography was used in needed cases. Patients with vascular complications were grouped by arterial, venous, portal, and bleeding complication. In addition, arterial complications were sub-grouped by occlusive (Hepatic artery thrombosis (HAT)) and non-occlusive (Hepatic artery stenosis (HS) / Splenic Artery Steal Syndrome (SAS)). The median follow-up period was 47 ± 4 month (range: 1 to 96 month).

Results: Seven patients had an arterial complication which was consisted of 5 HAT and 2 HAS. Five patients with hepatic artery thrombosis, intra-arterial thrombolysis was performed through the catheter. In two patients, continuous thrombolysis was performed to lyse the thrombus. The percutaneous transluminal angioplasty (PTA) was performed in all patients. Two of five HAT patients, stents were placed after the insufficient PTA. Two of these patients developed new stenosis and treated with repeat PTA.

Thirty-six patients diagnosis with SAS were treated by selective arterial embolization with coil devices. Angiographically, all SAS cases have demonstrated an increase in the hepatic arterial caliper and parenchymal perfusion after the treatment.

Five patients had been diagnosed with hepatic venous outflow obstruction. Two of the five patients were treated with balloon angioplasty, and three of them stents were used for insufficient flow after the balloon angioplasty.

In four patients, active bleeding was embolized by endovascular intervention with coils or glue. No rebleeding was observed on follow-up.

One patient with portal vein stenosis was observed after the LT and was treated with stent insertion. During the follow-up period, the patient survival rate was 76, 3% (45/59).

Conclusion: Early endovascular intervention is feasible and safe in hepatic vascular complications following liver transplantation and also achieves a high success rate with the advance in interventional radiology.

034

Accuracy Between Estimated Graft Volume and Actual Graft Weight in Living Donor Liver Transplant

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Objective: We aimed to determine the accuracy of pre-operative computed tomography (CT) graft measurements with actual graft weights in LDLTs in our centers.

Purpose of study: In the living donor liver transplant (LDLT) one of the preoperative evaluation stage is the calculation of graft-recipient-weight ratio (GRWR) and remnant liver volume. According to the Başkent criteria, the remnant volume should be at least 40% and the GRWR should be at least 1% in order to minimize postoperative complications and achieve the highest graft functions. We aimed to determine the accuracy of pre-operative computed tomography (CT) graft measurements with actual graft weights in LDLTs in our centers.

Materials and Methods: Since 1988, 687 liver transplants have been performed by our team. Of these 687 liver transplants, 476 were LDLTs. Preoperative CT images and intraoperative graft weights were analyzed retrospectively.

Results and Discussion: Two hundred sixty eight (56.3%) of 476 donors were female and 208 (43.7%) were male. The mean age of donors was 44 ± 8.5 years. The mean weights of donors was 76 ± 12.5 kg. Of the donor hepatectomies, 47.5% (n=226) were left hepatectomy, 31.7% (n=151) right hepatectomy and 20.8% (n=99) left lateral hepatectomy. The mean total liver volume of donors measured by CT was 1555.41 ± 235 cm³. The mean graft volume was 519.41 ± 250 cm³ and the mean graft weight was 507.37 ± 242 cm³. When we measured the graft weights during surgery, we found that its ratio to the volume measurements made radiologically was 1.03. Remnant liver volume in donors was $64.28 \pm 15.7\%$ of the total volume.

Conclusion: Preoperative radiological assessment of the donor's liver is very important to prevent postoperative

complications and to perform successfully living related liver transplant. Otherwise, small-for-size or large-for-size may occur in the recipient and liver failure in the donor.

035

Pediatric Versus Adult Kidney Transplantation Activity in Arab Countries

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Objective: To evaluate the current activity of pediatric versus adult renal transplantation activity in the Arab world

Patients and Methods: A questionnaire was mailed to all kidney transplant centers in Arab countries to collect their data on kidney transplant activity for both adult and children performed in a recent year at a center and national level.

Results: Kidney transplantation is available in 17 Arab countries. A total of 3309 kidney transplants were performed for both adult and pediatric recipients in one year with a transplant rate of 9.5 per million populations (pmp) per year. Of this, 298 kidney transplants were performed for children with a pediatric kidney transplant (PKT) rate of 0.87 pmp per year for a pediatric Arab population counting 122 million with Jordan being the most active country (3.1 PKT pmp per year) followed by KSA (1.6) and Egypt. This rate of PKT pmp (0.87) in Arab countries is much lower than that of developed countries where it mostly ranges from 5 to 10. The pediatric share of all transplants is 9% which is twice as high as that of European children. However, the higher proportion of pediatric population and the higher presumed incidence of inherited kidney disease in Arab countries may account for a higher need for pediatric kidney transplants in Arab countries compared to Europe. Kidney transplant programs in most Arab countries rely exclusively on living donors as there is severe shortage of deceased donors. Access to transplantation often

depends on familial resources because of absence of national health care. 93.5% of all transplants combined adult and pediatric were from living donors. The problem of insufficient access to kidney transplant is even wider in children with ESRD than in adults for multiple reasons; economical, medical, and sometimes cultural. Deceased transplant activity in Arab countries is either nonexistent or in the best case underdeveloped and far from self-sufficiency as advocated by WHO and accounts for 14-31% of all transplants in the most active three countries with deceased donor programs as compared to an average of 80% in Europe. This is even worse for deceased PKT activity in Arab countries. Out of a total of 212 adult and pediatric transplants that were performed from deceased donors in 8 countries; only 29 cases were for pediatric recipients. Deceased PKT is available in 3 countries: Kingdom of Saudi Arabia (KSA), Tunisia, and Kuwait. Surprisingly, the PKT share wasn't any better in the countries with higher overall kidney transplant rate and or in those where deceased transplant was available.

Conclusion: Although PKT is somehow active in few Arab countries, it is still inactive in many others and mostly relying on living donors. The lacking of well-developed deceased programs is the main issue to be addressed to enhance pediatric organ transplantation.

036

Erector Spine Plane Block for Postoperative Analgesia After Kidney Transplantation

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Introduction: Adequate postoperative analgesia in kidney recipients is a difficult task due to: potential nephrotoxicity of NSAIDs, reduced elimination of morphine metabolites. Regional analgesia is useful option. Epidural anesthesia is associated with undesirable effects (hypotension, epidural hematomas due to uremic coagulopathy) and currently, interfascicular truncular blocks (transversus abdominis plain block, erector spinae plane block) are being used successfully in various fields of surgery, as well as transplantology. We studied

the efficiency of erector spinae plane block (ESPb) after kidney transplantation.

Materials and Methods: 28 male patients who underwent the elective heterotopic living donor kidney transplantation were included to study. Retrospectively included control group patients (n=14) and study group patients (n=14) had received the standard postoperative analgesia with metamizole and acetaminophen. Additionally, in study group patients ultrasound guided ESP catheterization at the T12 was performed prior to induction. Initially 20ml 0.25%, then 20ml of 0.125% bupivacaine administered via ESP catheter every 6 hours postoperatively during 24 hours. Dexamethasone and metoclopramide were administered to all patients for prevention of postoperative nausea and vomiting (PONV). Study endpoints were pain intensity at rest and during movement on numeric rating scale (NRS), morphine consumption per patient, the incidence of PONV during first postoperative day. Pain intensity was evaluated 6, 12, 18 and 24 hours after surgery. Patients received morphine as "rescue analgesia".

Results: In the control group, on the first postoperative day, the pain intensity at rest and movement were 3.3 ± 1.17 and 5.2 ± 2.15 points of NRS respectively. In the study group pain intensity at rest and during movement were 2.1 ± 1.09 and 3.8 ± 1.18 ($p=0.009$ and 0.042 , compared to control group). Morphine consumption per patient for the first 24 hours was 15.9 ± 7.1 and 4.7 ± 6.2 mg in the control study groups respectively ($p=0.0001$). 8 patients (57%) of control group complained of nausea and 3 of them (21%) had vomiting on first postoperative day. 2 patients from study group (14%) developed nausea and one of them (7%) experienced vomiting.

Conclusions: Continuous ESPb in combination with non-opioid analgetics provides an adequate pain control, significantly reduces the postoperative opioid consumption and the risk of PONV after kidney transplantation.

037

Prevalence and Evaluation of the Different Profiles of Arterial Hypertension in Renal Transplantation Evaluated by Outpatient Measurement

M. Rabhia, R. Khelifa, Y.F. Baghdali, D. Khemri, F. Haddoum

Place du 1er Mai, Alger, Algeria

Introduction: High blood pressure (hypertension) is common in kidney transplantation (RT) and is associated with increased cardiovascular risk. However, the prevalence of different hypertension profiles in RT assessed by ambulatory blood pressure measurement (ABPM) as well as the factors associated with them have not been sufficiently studied. The objective of our study is to describe the level of arterial pressure (BP) in a kidney transplant population as well as to distinguish the different profiles of hypertension and the factors which are independently associated with them.

Patients / Materials and Methods: In this prospective study evaluated on the first year of transplant, all the prevalent renal transplant patients were offered an exploration of BP including ABPM, a consultation BP measurement (by oscillometric method, performed by a nurse after 5 minutes of rest).

BP targets were defined by BP <130 / 80mm Hg. We defined resistant hypertension (HTAR) as BP> 130/80 despite the use of at least 3 antihypertensive treatments including a diuretic.

Observation / Results: We collected 116 renal transplant patients (mean age 36 years, 66% men, all patients are treated with anticalcineurins, 54% of which are on Tacrolimus, with a duration of pre-transplant dialysis ranging from 2 to 144 months), we note 14 pre-emptive transplants.

56% of these patients were receiving antihypertensive treatment (average use of 1.8 treatments, 82% being calcium channel blockers). The mean ABPM value was 132 / 76mmHg and 137/78 for the consultation BP.

The prevalence of HTAR is around 4.3% regardless of the BP measurement technique used. The prevalence of white coat hypertension and masked hypertension were 15% and 18% of the population, respectively.

Conclusion: Our results suggest that ABPM confers a significant advantage on the protocolized BP measurement to determine the different hypertension profiles (white coat hypertension and masked hypertension and especially nocturnal hypertension)

While the prevalence of HTAR appears to be lower than in the general population as well as in the CKD population on native kidneys.

038

MESOT- Young Transplant Professionals: What we are looking for?

Ala A. Ali

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TTS-ECMC member

Baghdad-Iraq

Abstract: The power of youth represents the versatility of the Middle East with the largest number of youths among other World regions. When addressing the future of organ transplantation in this region, the perspectives of young transplant professionals would be invaluable.

Organ donation and transplantation in the Middle East face many challenges. These would be transferred to young professionals pursuing a career in transplantation. The challenges are related to transplant education, training, and the health system itself.

We are looking for a platform that will bring the wisdom of leaders and youth's energy together. The plan would focus on increasing recruitment and engagement of young physicians and surgeons and compact the hurdles mentioned above. A team of young professionals from MESOT countries will bring their different perspectives into fruitful actions.

Online education, career development, basic science research, and others are potential goals to be tackled. Achieving this would not be possible without mutual collaboration with young colleague teams of other transplantation societies. Indeed, this will improve transplantation science and services globally and in the MESOT region.

039

How to Embark Upon a Career As a Leader in Transplantation?

Shaifali Sandal

TTS-ECMC Chair
Toronto, Canada

Objectives:

- What are the different pathways to being a leader?
- How do I choose from these pathways?
- What should I do to make sure I am successful?

Transplantation is a state-of-the-art medicine, it demands a full-time commitment, this can be one of the reasons that inhibit some mentors to promote young women from the Middle East. In The 21st century, women are emancipated and ambitious; they can be as engaged as men. Some examples of female leaders from North Africa and the Middle East deserve a sincere tribute for their remarkable career, they can stimulate early career for young ladies.

Our presentation aims to determine the gender-based career barriers for Arab women in transplantation, to propose solutions and finally to gratitude some female leader in our region. We conduct a small survey to have the leader's point of view.

040

Young Professionals in Transplantation – European (ESOT) Experience

Sevda Hassan

ESOT-YPT Chair
London, UK

Here, we will present:

- Aims of the ESOT-YPT.
- Introducing the new board.
- How do we fit within the wider ESOT community?
- Opportunities available through the YPT.
- How can we learn and benefit from each other?

oral

041

Young Women in Middle East Transplantation

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Beni Messous University Hospital
MESOT North Africa Representative
Algeria

Women's integration in medical professions has highly increased. However, the field of transplantation is disproportionately man dominated especially in the Arab and the Middle East region. Women are underrepresented in leadership roles and senior positions.

P1

Kidney Transplantation and Covid-19 Infection: Early Presentation of Covid-19 in Kidney Transplantation in Iran (KTI)

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University of Medical Sciences, Tehran, Iran

The coronavirus disease is spreading rapidly throughout the world and nearly every country has thus far, documented this infection. The aim of this study was to evaluate the risk factors for increased mortality in kidney transplant patients with COVID-19.

Materials and Methods: This was a prospective study in a single center. During the 6 month ongoing COVID-19 pandemic in Iran, 33 kidney transplant recipients returned to our center with suspected COVID-19 symptoms. 29 of these patients were COVID-19 positive, thus a therapeutic regimen was commenced for these patients. The data in this study was analyzed by using SPSS Version 16.

Results: Majority of the patients were male (75%), with a median age of 52 years. Among these patients, 72% had hypertension, and 38% were diabetic. Nevertheless, with a mortality rate of 27%, eight of our patients died due to COVID-19. 75% of the deceased patients had high blood pressure. There was a significant relationship between mortality and the patients' blood type in addition to flu vaccination status.

Conclusions: The kidney transplant recipients with confirmed COVID-19 experienced less fever as an initial symptom. Moreover, COVID-19 patients having an underlying disease were associated with a higher mortality, severity of infection, and progression of disease. In conclusion, appropriate management of the recipients' renal complications and flu vaccinations may help lead to more favorable outcomes.

Keywords: Kidney transplantation, COVID-19, Blood type, Flu vaccine.

P2

Morbid Obese and Kidney Transplantation

Amina Al Houssari
Beirut

Background: The recent guidelines of the American Society of Transplantation published that morbidly obese (BMI greater or equal to 35) have worse outcomes and don't benefit from kidney transplantation. But, morbidly obese patients who achieve kidney transplantation still able to survive more than patients on dialysis. In this study, we are reviewing the experience of morbid obese patients with kidney transplantation for 3 years follow up and comparing them with non morbid obese population having kidney transplantation too.

Methods: Comparison done between 23 morbidly obese (BMI 35, [37-56]) with kidney transplantation done between January 1995 and February 2000 plus nonobese (BMI 25) with kidney transplantation during the same period.

Results: Patient and graft survivals were similar between both groups. Although 3-year graft survival for morbidly obese recipients of cadaver organs was 75% compared with 90% for the nonobese group, this finding was not statistically significant, and 3-year graft survival was 100% for morbidly obese recipients of living donor organs compared with 91% for nonobese recipients. Morbidly obese recipients had significantly longer hospital stays, higher readmission rates, and a higher wound infection rate than nonobese recipients.

Conclusions: We found that morbidly obese persons have 3-year graft and patient survivals similar to non-obese persons. Although they also have greater complications and greater numbers of days in the hospital, we believe these reasons are not sufficient to deny morbidly obese persons the survival and quality-of-life advantages of kidney transplantation.

P3

The Key Challenges in Kidney Transplantation During The Crisis Years In Syria

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The first kidney transplantation in Syria was performed in 1979 from a living related donor. Since while, many legislations and laws have been enacted to organize the process and expand donor pool, crowned by the law 30 in 2003 which authorized the use of organs from deceased donors and from altruistic living nonrelated donors.

After the enactment of this law, the rate of kidney transplantation increased dramatically from 7 per million populations in 2002 to 17 per million populations in 2007 and stabilized till 2010 the year precede the commence of Syrian crisis. Notable decline of kidney transplants performed abroad for Syrian patients from 25% in 2002 to less than 2% in 2007 was also recognized.

After the start of conflict in Mars 2011, Syrians have suffered under the consequences of war related violence, threats to health and lack of access to all health services including organ transplantation.

The conflict has also affected all aspects of organ transplantation, paralyzed new projects and negatively affected existing programs. Kidney transplants performed in the country declined from 385 in 2010 to 154 in 2013 (60% less). The number of transplantation centers has decreased from 8 distributed on the three principal cities of Syria, to only 4 centers in 2013 all localized in Damascus.

Nevertheless, the commitment of the remaining transplant teams despite the huge challenges was outstanding and the kidney transplantation rate has ameliorated to 16 per million populations by 2019. Yet many steps in the country reconstruction phase to band organ trafficking, optimizing organs transplantation programs and increasing both the medical community and the public awareness of organ donation, are to be taken.

P4

Graft Rejection After Kidney Transplantation: Case-Control Study

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¹Department of Internal Medicine "A" (M8); ²Laboratory of Research in Immunology of Renal Transplantation and Immunopathology (LR03SP01); Charles Nicolle Hospital, Tunis, Tunisia

Background: Acute rejection (AR) is a redoubtable immunological complication after kidney transplantation (KT). The aim of our study was to determine the epidemiological, clinical, diagnostic, therapeutic and evolutionary aspects of AR in Tunisian kidney transplant recipients.

Methods: We have conducted in 2020 a longitudinal, retrospective, analytical study, including 620 KT performed in 615 patients at Charles Nicolle hospital between 1986 and 2018. Our population was divided in 2 groups: group A (129 KT complicated by at least one episode of AR; 20,8%) which was compared according to different parameters to group B (491 KT not complicated by AR; 79,2%).

Results: The overall incidence of AR was 2,43/100 patients/year with a continuing decrease over time of the proportion of KT complicated by AR. Compared to patients in group B, those in group A were significantly younger, had a higher proportion of older donors than recipients, more history of transfusion(s), greater immunization in pre and post-KT, shorter time in dialysis, lower proportion of more than 3 HLA miss-matches (MM), more frequent positive cross-match (CM) for B lymphocytes (LB), more frequent short cold ischemia time, more frequent prolonged hot ischemia time, less frequent use of anti-LT and anti-CD25 for induction immunosuppressive therapy, less use of Tacrolimus and Mycophenolate Mofetil for maintenance immunosuppressive therapy, more frequent chronic kidney dysfunction and Cytomegalovirus (CMV) infection.

From the 149 episodes of AR that occurred in 129 patients (20 patients corresponding to 16,3% of group A presented a second AR episode): 70,5% were early and only 29,5% were histologically confirmed (including 10,5% borderline, 26,4% cellular AR, 52,6% humoral AR and 10,5% mixed AR). In most cases, AR was treated by corticosteroids and anti-LT: 86,1% of early AR and 71,4% of late AR had a

complete functional recovery.

The independent risk factors of AR after multivariate study were: Recipient aged less than 45 years (RR=3,226 if aged between 30 and 45 years, and RR= 4,04 if aged between 16 and 30 years), 2 HLA MM in B locus (RR=2,633), 1 or 2 MM in DR locus (respectively RR=1,809 and 2,716), positive cross-match for LB (RR=3,084), the absence of use of calcineurin inhibitors (CI) or the use of Cyclosporin A as CI precociously after KT (RR=2,587 and RR=2,479), the use of Azathioprine as anti-metabolite in first intention (RR=11,827) and CMV infection after KT (RR=2,275).

Graft survival was better in the absence of AR than with an episode and even better than with a recurrence of AR. No difference in graft survival was noted according to the time of onset of AR, its histological type and grade.

Conclusion: Improving graft survival after KT requires imperatively an efficacious management of AR through prevention, early diagnosis and appropriate treatment.

P5

Using Artificial Intelligence to Predict Long-term Graft Survival After Kidney Transplantation

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¹Department of Internal Medicine "A" (M8); ²Laboratory of Research in Immunology of Renal Transplantation and Immunopathology (LR03SP01); Charles Nicolle Hospital, Tunis, Tunisia

Introduction: Prediction of graft survival after kidney transplantation (KT) is difficult due to the diversity and complexity of the factors involved. Artificial intelligence (AI) is playing an increasingly important role in prediction tasks. Machine learning (ML) is a subset of AI that consists in using and developing computer systems able to learn from large and complex datasets in order to develop robust predictive models. The purpose of this study was to use and evaluate the effectiveness of these techniques in predicting long-term graft survival.

Material and Methods: Our study was retrospective, performed over a period of 33 years (1986-2019). It was car-

ried out on 407 KT performed in Charles Nicolle Hospital of Tunis. The threshold of 5 years was chosen to define long-term survival. We performed a preliminary statistical analysis in order to understand our data by comparing the 2 groups of patients (group A including KT with a long-term graft survival and group B with recipients who lost their graft in less than 5 years). Developing the predictive model consisted of two steps: feature selection which consisted of using to select the most important predictive factors, and model training which consisted of the development of the predictive model using the selected variables. We tried 7 algorithms for feature selection and 5 algorithms for training, we finally obtained 35 models. We evaluated these models using 5 performance measures: Sensitivity (Se), Specificity (Sp), Accuracy, F1 score and Area Under the Curve (AUC). We finally considered the model with the highest AUC as the best model.

Results: Our preliminary statistical analysis results have shown a negative impact of hypertension before KT on long-term graft survival. In Group A, donors were significantly younger. Mycophenolate Mofetil (MMF) was the only immunosuppressive drug significantly associated with an improved graft survival. The average estimated glomerular filtration rate (eGFR) at the 3rd months post KT was significantly higher in group A. The number of hospital readmissions during the 1st year post KT was predictive of the long term graft survival and was significantly higher in group B. Regarding early post KT complications, delayed graft function (DGF), acute rejection (AR) were significantly associated with poor graft survival. Among 35 developed models, the best model had a highest AUC of 89.7% (Se:91.9%; Sp:87.5%), it was trained using Extreme Gradient Boosting (XGB) algorithm. It was based on ten variables selected by Random Forest (RF) algorithm which are in decreasing order of importance: Hypertension, history of red-blood cell transfusion, early acute kidney injury post KT, early acute rejection, Cytomegalovirus (CMV) infection, the length of the 1st hospitalization, MMF therapy, donor's age, 3-month eGFR, and the duration on dialysis before KT.

Conclusion: The use of ML provided us a strong model enabling fast and precise prediction of 5-years graft survival using early and easily collectable variables. Our model can be used as a decision support tool to early detect graft status, which helps in developing safer recommendations.

P6**Etiologies Associated with Elevated Liver Enzymes Recipients in Post Renal Transplant**

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Introduction: One of the most important cause of morbidity and mortality in kidney transplant recipients (KTRs) is liver disease. Liver dysfunction accounts for 7% - 67% in KTRs, with associated mortality up to 28%. Recipients are prone to liver injury due to immunosuppression, antimicrobials agents, infections and sepsis. Hence we aim to stratify different etiological factors responsible for elevated liver enzymes in KTRs.

Material and Methods: The clinical records of KTRs who presented with deranged (LFTs) were reviewed from January 2015 to December 2016. Recipients with positive hepatitis B or C serology prior to transplantation were excluded. Statistical analysis was performed using SPSS.

Results: Out of 432 recipients, seventy-four (17.1%) patients were found to have deranged liver enzymes. Majority were male (77%). Forty-one (55.4%) patients developed deranged LFTs before 4 years of transplantation. The baseline characteristics showed mean total bilirubin of 2 ± 1.6 mg/dl, Direct Bilirubin of 1.2 ± 1.3 mg/dl, ALT of 111.9 ± 107.9 IU/ml, AST of 99.5 ± 88 IU/ml, alkaline phosphatase of 157.8 ± 111.2 IU/ml and GGT of 196.08 ± 227.37 IU/ml. For evaluation, liver parenchymal biopsy was performed in 17 (23%) recipients. The most common cause was sepsis in 21(28.4%) followed CMV hepatitis in 7 (9.5%) and HCV hepatitis in 6 (8.1%) patients. Anti-tuberculosis drug induced liver injury, autoimmune hepatitis, sinusoidal obstruction syndrome and non-alcoholic steatohepatitis was observed in 4 (5.4%) patients each respectively.

Conclusion: Septicemia followed by viral hepatitis is amongst common causes of deranged liver function tests in live related renal transplant recipients.

P7**Light Chain Deposition Disease (LCDD) Recurrence As a Rare Cause for Graft Failure**

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32-year-old female underwent 2 live related kidney transplantations; her primary disease was FSGS. Her baseline creatinine was fluctuant at 105-115 μ /L with acute rise to 123 μ /L for which she had a kidney biopsy that showed CNI toxicity & diffuse acute tubular injury but no rejection. Immunohistochemistry staining was negative. Serum & urine protein electrophoresis (SPEP & UPEP) & free light chain (FLC) were all normal.

She lost her first graft due to severe ischemic injury due to arteriovenous fistula post biopsy and was back on hemodialysis after 1 year of transplantation.

She had second live related renal transplantation. The patient continued to have rising creatinine with initial urine protein creatinine ratio of 0.25 g/g but normal SPEP. All serological markers were negative. She had renal graft biopsy showed "possible recurrence of primary original disease and allograft IF suggestive of light chain deposition disease with nodular sclerosing glomerulopathy ultrastructure features of monoclonal immunoglobulin deposition disease, diffuse tubular injury, picture consistent with kappa predominant light chain deposition disease (LCDD). UPEP showed a dense bound Kappa Light chain band & a faint free kappa light chain observed. Protein-creatinine ratio at 2.6 g/g. FLC showed kappa-lambda ratio of 50 reem. Her bone marrow biopsy revealed cellular marrow with increased kappa-monotypic plasma cells (5-10% of total cells by IHC). She had heart failure with ejection fraction of 40%.

The patient was followed by hematology team and planned to start chemotherapy; she is currently on HD.

The biopsy finding highlights the possibility of recurrence of primary disease in form of LCDD which was not seen in first renal transplantation biopsy, in fact the patient had mild proteinuria and negative serum and urine electrophoresis & negative kidney biopsy immunohistochemistry in the first graft biopsy which did not go with LCDD.

P8

Libyan Experience in Managing Kidney Transplantation During Covid-19

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Libyan National General Authority for Organ, Tissues and Cell Transplantation LNGAOTCT

Libyan Representative to African Transplantation Society

Past General Secretary of Arab Society of Nephrology and Transplantation

Past North Africa Representative to MESOT

The first case of COVID-19 was identified in Libya on 24/3/2020, and about 2 months later, the number of reported COVID-19 cases started to increase notably. The outbreak was first prominent in the southern region (Sabha) and then spread to the western and eastern parts of Libya. By 24/12/2020, the reported total number of deaths from COVID-19 reached 1415.

We estimated that 14–20% of the Libyan population have been exposed to the COVID-19 pandemic. Thus, the risk of spread of COVID-19 infections during the upcoming months is high, and a considerable number of Libyans, particularly the elderly and people with chronic diseases, should be protected against COVID-19 infection.

Coronavirus disease 2019 (COVID-19) emerged as a pandemic in December 2019. Infection has spread quickly and renal transplant recipients receiving chronic immunosuppression have been considered a population at high risk of infection, complications and infection-related death.

The transplantation program was put on hold for few months in order to follow the international guidelines and find the best Libyan protocol that suits our capabilities which involve care of staff and optimum preparation of donor and recipient.

Kidney transplantation resumed again and first kidney transplantation was done on late 2020 and continued from there.

During the period from late 2020 up to May 2021 there was 17 cases reported and confirmed to be Covid 19 PCR positive (2,1% from total transplanted patients 817 registered patients) while 13 cases (1.6%) cured with normal kidney function and 4 cases (0.5%) died secondary to Covid 19 complications.

P9

A Case Report and A Review of Literature: Blue Toe Syndrome in a Kidney Transplant Patient

A Saii^{1,2}, B. Fendri^{1,2}, H. Abid^{1,2}, S. Toumi^{1,2}, I. Agrebi^{1,2}, N. Dammak^{1,2}, H. Chaker^{1,2}, M. Masmoudi^{1,2}, Kh. Kamoun^{1,2}, S. Yaich^{1,2}, M. Ben Hamida^{1,2}

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Purpose: A case of a kidney transplant patient who has a blue toe syndrome.

Materials and Methods: A kidney transplant patient who is regularly monitored in our kidney transplant unit

Results: We describe the case of a 68-year-old man with a history of hypertension, a kidney transplant in 2009 from an unrelated living donor with a good outcome of renal function.

In February 2021, he was admitted at our department for a left blue toe without secondary necrosis nor foot pulse abolition. he complains from paresthesia of the left foot without loss of motricity. He underwent a cardiovascular assessment (electrocardiogram and echocardiography were normal). Doppler ultrasound and CT angiography of lower limbs were normal (no vascular calcifications nor embolism). An ophthalmologic examination and an eye fundus excluded cholesterol embolism. Thus, the diagnosis of big blue toe syndrome was admitted.

Medical treatment with unfractionated heparin, Naftidrofuryl (praxilene), Pentoxifylline (torental), acetylsalicylic acid (Aspégic) and sulodexide (Vessel) was started promptly. His local condition improved with pain relief and disappearance of paraesthesia.

Conclusion: Blue toe syndrome is a very rare entity. it is important to differentiate this syndrome from other severe diagnosis. In fact, treatment, and prognosis are different.

P10

A Case Report and a Review Of Literature: Thrombotic Microangiopathy (Tma) Post Covid-19 Infection in Transplant Patient

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¹ Nephrology Dialysis and Kidney Transplantation Department, Hedi Chaker Hospital, ²Renal Pathology Laboratory Lr19es11, Faculty of Medicine of Sfax, Sfax, Tunisia

Purpose: We report the case of a transplant patient with thrombotic microangiopathy post covid-19 infection.

Materials and Methods: A kidney transplant patient who is regularly followed in our kidney transplant unit

Results: A 20-year-old female patient was suffering from end stage kidney disease secondary to Alport syndrome. She received a kidney allograft at the age of 15 from a related donor.

Her immunosuppressive medication included tacrolimus, mycophenolate mofetil (MMF) and corticoids.

The postoperative period was marked by the onset of graft hematoma complicated by hemorrhagic shock. Surgical hemostasis was performed with improved graft function at a serum creatinine level of 112 µmol/l.

In February 2021, the patient presented with symptoms suggesting a covid infection and PCR was positive.

Laboratory tests showed a deterioration of graft function (creatinine at 593 µmol/l) needing emergency hemodialysis sessions. Further testing showed TMA: hemolytic anemia: Hemoglobin= 4.5 g/dl, VGM: 85.7, haptoglobin: 0, LDH: 313 UI/ml with evidence of schistocytes in the blood (4%), thrombocytopenia: platelet level: 281000. A renal graft biopsy was performed showing TMA lesions with anticalcineurin toxicity. Tacrolimus was switched to ciclosporin. The patient underwent plasma exchange sessions and intra venous corticoids with no improvement of graft function. Therefore, the treatment was stopped, and she returned to hemodialysis indefinitely.

Conclusion: Thrombotic microangiopathies are rare but

severe complications in covid-19 infection. Early diagnosis and active treatment should be enhanced to prevent graft failure.

P11

Prevalence and Evaluation of the Different Profiles of Arterial Hypertension in Renal Transplantation Evaluated by Outpatient Measurement

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Place du 1er Mai, Alger, Algeria

Introduction: High blood pressure (hypertension) is common in kidney transplantation (RT) and is associated with increased cardiovascular risk. However, the prevalence of different hypertension profiles in RT assessed by ambulatory blood pressure measurement (ABPM) as well as the factors associated with them have not been sufficiently studied. The objective of our study is to describe the level of arterial pressure (BP) in a kidney transplant population as well as to distinguish the different profiles of hypertension and the factors which are independently associated with them.

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Conclusion: Our results suggest that ABPM confers a significant advantage on the protocolized BP measurement to determine the different hypertension profiles (white coat hypertension and masked hypertension and especially nocturnal hypertension)

While the prevalence of HTAR appears to be lower than in the general population as well as in the CKD population on native kidneys.

P12

Kidney Transplantation in Patients with CAKUT and Non- CAKUT Causes of Chronic Kidney Disease: Do They Have the Same Outcomes?

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Introduction: Congenital abnormalities of the kidney and urinary tract (CAKUT) represent the main cause of pediatric end-stage renal disease. However, its contribution to adult chronic kidney disease (CKD) is less well characterized. We here report our experience on adult with CAKUT who underwent kidney transplantation. We compared the adverse outcomes between CAKUT and non-CAKUT patients after KTx.

Methods: We retrospectively reviewed all patients who underwent kidney transplantation (KT) in our center between December 2007 and December 2020 (258 patients). Patients were divided into those with CAKUT and those with non-CAKUT as the cause of CKD. Our aim was to compare delayed graft function (DGF) rate, acute rejection, complication's rates, and graft loss between groups.

Results: All KTx performed between 2008 and 2019 were

included (n =272). The cause of CKD was CAKUT in 62 patients (22,8%) KTx and non-CAKUT in 210 (77,2%). There was no difference in age between the groups, with a mean age of $32,1 \pm 13,9$ years in the CAKUT group and $33,2 \pm 13$ years in the non-CAKUT group ($p=0,594$).

The most common CAKUT-related cause of CKD was primary vesicoureteral reflux (80,6%). In non-CAKUT patients, chronic interstitial nephropathy was the underlying cause of CKD in 34,7%.

Recipients non CAKUT showed male preponderance ($p=0,027$), were more likely to be seropositive for both CMV and EBV. However, recipients with CAKUT have greater access to a pre-emptive transplant.

For both groups, living donor was more frequent (96,4% vs 94,5%, $p=0,976$), and there was no difference in cytotoxic PRA (21% vs 19%, $p=0,695$) or number of compatibilities (2,86 vs 2,98 , $p=0,693$).

The post transplant hypertension was significantly higher in CAKUT recipients than in those with non-CAKUT ($p=0,002$).

Patients with CAKUT had more Vesicoureteral reflux after kidney transplantation compared to the non-CAKUT group ($p=0,021$). Compared to non CAKUT-group, CAKUT patients had more urinary tract infection ($p=0,013$).

There was no difference in DGF (10,9% vs 19,6%, $p=0,278$), Acute rejection (16,4% vs 17,8%, $p=0,493$) or graft loss (6% vs 6,8%, $p=0,571$).

Conclusion: Graft survival in CAKUT is favourable; however, recipients with CAKUT had an increased risk of urinary tract infection.

P13**Transplant Vasculopathy: Clinical and Histological Associated Factors**

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Materials and Methods: Retrospective analysis of biopsies between 2016-2107 with or without CV. In CV group were categorized as early(EV) or late(LV) (< 6 months > posttransplant) Donor, recipient, and transplant variables were analyzed

Statistical Analysis: Chi square test or Fisher's to compare categorical variables and T test for continuous. Logistic regression to determine the association factors with vasculopathy. A $p < 0.05$ was considered significant.

Results: 343 biopsies on 105 kidney transplant recipients. Recipient age 48.6 years, female 39.1%. Donor age 48.1years, Deceased donor 56.5%, marginal 78.3%.

EV and LV were diagnosed in 41.8% and 79.7% of graft biopsies respectively. In the bivariate analysis, EV was associated with donor age: 54.4 vs 47.4 years $p < 0.003$, SCr at one year (mg %) 2.55 vs 1.83 $p < 0.04$; microcirculation injury (MI) 78.8 vs 56.5 % $p < 0.04$, and LV with donor age: 51 vs 38.7 years. $p < 0.002$, MI 87.3 vs 62.5% $P < 0.003$; IFTA 88.9 vs 46.7 $p < 0.001$. Multivariate analysis EV was associated with donor age 1.8 (1.02-3.04) $p < 0.04$ and DGF 6.2 (1.1-33.5) $p < 0.04$. and LV with marginal donor 27.7 $p < 0.02$, donor age 3.7 (1.6-9) $p < 0.003$, and IFTA 6 (1.1-31.2) $p < 0.03$.

Conclusion: In this study, chronic vasculopathy was associated with donor age, marginal donor, 1-year post-transplant SCr, delayed graft function, MI, and IFTA.

P14**Sodium Glucose Co Transporter 2 Inhibitors Short Term Outcome in Diabetic Kidney Transplant Recipients**

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Background: The emergence of positive data on the use of sodium glucose co-transporter inhibitors (SGLT2i) in the last several years, begged the question of whether their positive outcomes can be seen in kidney transplant recipients, as they have the same and even more pronounced cardiovascular risk factors than the general population and in addition, we got better in improving graft and patients survival in the short term, but we lack the tools to improve long term patients and graft survival where so many patients die from cardiovascular disease with a functioning graft or lose their graft from chronic changes and chronic antibody mediated rejection with difficult to control blood pressure and proteinuria

For these reasons we need more powerful tools, like the SGLT2i bearing in mind the unique side effects that might be amplified in kidney transplant recipients receiving immunosuppression like urinary tract infection, and the dip in serum creatinine.

Patients and Methods: We collected data retrospectively from transplant records of patients with type II diabetes mellitus (T2D) or post-transplant diabetes mellitus (PTDM) (n=79) who were receiving SGLT2i agents plus standard of care [SOC] management and compared them to similar diabetic patients who were only on SOC management (n=56), with no statistical significance between the two groups in terms of Age ($P = 0.9$), Sex ($P = 0.1047$), post-transplant duration in months ($p = 0.24$), type of donor -living vs deceased - ($P = 0.513$). Variables that were compared include the change in HbA1c, blood pressure changes in the presence of ACEi/ARB's or not, the eGFR and urinary ACR, BMI difference, uric acid and the adverse events including cardiovascular events, rejection and urinary/genital tract infection.

Results: The two groups were comparable regarding age, sex, type of donor, type of diabetes (T2D PTDM), post-transplant period, induction immunosuppression and use of CNl. Though improvement of HbA1c was not significantly different between the two groups ($p=$, patients on SGLT2i showed better drop in HbA1c compared to the SOC group (0.7% versus 0.5% respectively). Reduction of BMI was equal between the two groups (-1.1%) and there was no significant difference in the number of blood pressure medications (average 2 drugs per patient). Kidney function was assessed by the eGFR using CKD-EPI equation and by urine albumin/creatinine ratio (ACR). The eGFR was calculated at start then at 1,3,6 and 12 months. In SGLT2i group, eGFR showed a dip at 3 months (from 66 to 63.35 ml/min) then started to improve gradually toward the end of the year and maintained at a level close to baseline (65.44 ml/min). The SOC group showed gradual drop in eGFR over the year from 65.76 to 63.19 ml/min. Urine ACR reduced in the SGLT2i group from 48.79 to 23.79 mg/mmol creatinine and increased from 42.84 to 63.16 mg/mmol creatinine in the SOC group. The incidences of graft rejection, urinary tract infection, genital infection, myocardial infarction, heart failure or cerebrovascular stroke were not different between the groups.

Conclusion: Use of SGLT2i in managing diabetic patients post kidney transplantation is safe and has better short-term outcomes on renal function with comparable safety compared to standard of care therapy.

P15

Kidney Transplant in Mentally Challenged Patients: Single Centre Experience

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Introduction: A kidney transplant is the best choice of treatment for patients with end-stage kidney disease (ESKD). The psychological and mental status of the recipient may pose ethical and legal questions for kidney allocation. Patients with severe neurological disabilities may also create an ethical dilemma on whether or not to allocate them a deceased donor kidney transplant. On the

other hand, knowing their decreased quality of life compared with their peers will add an ethical obligation to provide them with the best of care.

Aim of the Study: To evaluate the outcome of kidney transplantation in mentally challenged patients in Kuwait.

Materials and Methods: We retrospectively studied mentally challenged patients who were transplanted irrespective of donor type in the Hamed Al-Essa organ transplant center of Kuwait during the period between 1996 and 2019. Their demographic data were collected in addition to their follow-up variables. Graft and patient outcomes were also reported. Moreover, we briefly interviewed the families during their scheduled outpatient visit asking questions about the change in quality of life, mainly social and emotional well-being.

Results: Ten patients who fulfilled the above criteria were followed for up to 23 years (the oldest surviving transplant in this group in our center). Their median age at transplant time was 10 (range: 4-45 years). They were seven males and three females. Four patients received the kidney from a live related donor, two from live unrelated donors, and four from deceased donors. Most of the patients had urological developmental abnormalities as the cause of (ESKD). Half of them did not have a labeled neurological diagnosis (global developmental delay) two with cerebral palsy, one with Jeune syndrome with mild cognition dysfunction (received a combined deceased donor liver and kidney transplant) one with Laurence-moon- Biedl syndrome, and one with Down syndrome.

We did not report any rejection episodes or prolonged hospitalization except for mild infections (UTIs, chest infections). The mean serum creatinine was 135 $\mu\text{mol/l}$ upon the last follow-up.

Patients' families were interviewed to discuss the impact of kidney transplants on their life. They unanimously assured a positive impact on the family's quality of life after transplantation as it relieved the family from the burden of hemodialysis or peritoneal dialysis and improved the patients' quality of life.

The general misconception about the inability to follow complex medication regimens and nonadherence in this group of mentally retarded patients is highly challenged in this cohort. There was good support from the caregiver (family member or a housemaid) that insured timely given medications on top of good support from our center with follow-up and medical education.

Conclusion: Mentally challenged individuals should not be denied a chance for kidney transplants based only on their mental status. Issues of nonadherence can be overcome with stable family support even in patients with devastating neurological disorders. It gives the families a better quality of life and relief the ethical issues surrounding depriving this group of the best care while ensuring no waste of precious organs

P16

Impact of Donor-Recipient HLA Mismatch Degree on Urinary Tract Infections in Renal Transplant Patients

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Introduction: We conducted a single-center retrospective study of 435 kidney transplants which occurred at our hospital from January 1, 2014 to December 30, 2018. All patients with at least one follow-up and available HLA-A, -B, and -DR donor and recipient typing were included. We grouped subjects first by status of post-transplant UTI (negative vs. positive), and then by number of HLA mismatches observed (0-3 vs. 4-6). Statistical analysis employed Fisher's Exact Test.

Results: Of 435 patients, 165 (37.9%) experienced at least one episode of UTI, with *E. coli*, *K. pneumoniae*, and *E. faecalis* as the most common causative organisms. A majority of our patients were HLA mismatched with their donor (92.9%); received deceased donor transplants (81.6%); had DJ stents (86.4%) removed after 28 days (79.8%); and cold ischemia time (CIT) under 24 hours (62.8%). While acute rejection and graft failure rates were similar between UTI+ and UTI- groups, patients in the UTI+ group were more likely to experience delayed graft function (41.2% vs. 31.5%, $p=.049$), as were patients with higher degree of HLA mismatch (39.4% 4-6MM vs. 24.4% 0-3MM, $p=.0036$). Patients with more mismatches tended to experience more acute rejection (26.3% vs. 17.9%, $p=.08$, however the degree of HLA mismatch

did not seem to impact post-transplant UTI rates (35% 0-3MM vs. 39.1% 4-6MM, $p=.44$).

Conclusion: Higher degree of donor-recipient HLA mismatch did not increase the rate of urinary tract infection, but was associated with higher likelihood of graft rejection in our cohort of transplant recipients. Both UTI and HLA mismatch were associated with delayed graft function. Therefore, efforts to combat post-transplant infections may benefit from increased focus on contributors to delayed graft function.

P17

Kidney Transplantation from Elderly Donors: Single-Center Experience

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Background: The shortage of deceased donor kidneys for transplantation has forced the re-evaluation of the limits on donor age acceptability. Thus, marginal donors such as elderly donors have been progressively increasing in recent years for organ transplantation around the world.

Materials and Methods: In this retrospective cohort study, prospectively recorded data of patients who underwent kidney transplantation between January 1996 and January 2020 were evaluated.

Results: Of the total 392 kidney transplantation, 64 donors met the study criteria. The mean age of the donors was 59 ± 3.86 (SD) years (median 59 years, range 55-69 years). Of these 64 donors, 32 (50%) were female and 32 (50%) were male. The living donors were 40 (87.5%) and the deceased donors were 24 (12.5%). When the relationship between living donors of the recipients was evaluated, 35 (87.5%) donors were first-degree family members of the recipients (mother, father, sibling), 3 (7.5%) donors were second-degree family members of the recipients (aunt, uncle, grandparent) and 2 (5%) donors were spouse, respectively. In living donors, 16 (40%) of the donor nephrectomies performed open, 8 (20%) were lapa-

roscopic, and 16 (40%) were robotic surgery. Twenty-one (87.5%) out of 24 deceased donors and 1 (2.5%) living related recipients presented DGF. There was no mortality in the living donors.

There was no follow-up data in 12 (18.8%) donors. Therefore, survey analysis was performed with 52 donors. Overall patient and graft survival for 1, 5, 10 years for this study 84%, 84%, 84% and 90%, 88%, 80% and for living donor 96%, 96%, 96% and 90%, 88%, 80%, for deceased donor 81%, 74%, 74% and 78%, 74%, 67%, respectively.

Conclusion: Transplantation from the donors with age 55 and up, might be related to decreased kidney function and graft survival, compared to the transplantations from the standard donors. However, when the long term graft survival and patient survival is observed, the group of elderly donors cannot be subject to exclusion.

P18

Delayed Graft Function; Does It Really Burden for Deceased Donor Kidney Transplants?

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Background: The frequency of DGF varies from 5 to 50% in deceased donor kidney transplants. DGF increases morbidity after transplantation, prolongs hospitalization and may lead to premature graft failure. We aimed to assess outcome of DGF in deceased donor kidney transplantation Methods: Totally 92 deceased donor kidney transplantations were performed since Jan 2006 in Gazi University Transplantation Center, Ankara/Turkey. Data retrospectively collected from patients who have received first deceased donor kidney transplants' charts and hospital files. All patients received calcineurine based triple immunosuppression protocol. As induction therapy all received IL-2r blockers.

ATG was given in case of DGF from dose of 2-3mg/kg/IV infusion until the serum creatinine(Cr) decreased spontaneously 50% or Cr < 3mg/dL.

Results: DGF has detected in 79 (86%) deceased donor kidney transplants. There were 40 female and 39 male recipients. In patients with DGF, mean cold ischemic time was found as 21±6.1 hours. Mean mismatch was 3±2.1. Mean donor age was 41±19 years. The duration of ATG administration was 9.4±4 days (median 10 days, 8-15 days). The mean length of follow-up was 98±59 months (range, 6-173 weeks; median of 113 months). Totally 8(10%) acute rejection(ARx) episodes were seen during follow-up. Three out of 8 were antibody mediated rejections(AMRx). All ARx treated successfully with pulse steroids. AMRx episodes were treated successfully by plasmapheresis and IVIg. Totally 5 viral infections (3 BK, 1 CMV, 1 parvo) were detected during follow-up. Totally 22 grafts were lost during median 113 months of follow-up; 12 chronic allograft nephropathy, 3 BKV, 2 HUS, 2 sepsis, 1 dual kidney, 1 CMV, 1 unknown reason. We have not seen any PDL or malignancies during follow-up. Twelve out of 79 patients (15%) were lost due to sepsis 7, aorta dissection 1, and traffic accident during follow-up. Patient and death-censored graft survivals for 1, 5 and 10 years are 100%, 97%, 91% and 89%, 86%, 79% respectively.

Conclusion: Renal populations continue to be negatively impacted by DGF. Patients with DGF seem similar patient and death censored graft survival compared with literature. However, they experienced increased viral infections during the first year after transplantation.

P19

Renal Transplantation and Minimally Invasive Surgery: Experience from Pakistan

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The advantages of minimally invasive surgery are unquestioned in the current era. The limits of this form of surgery have expanded quickly with increasing indications across all surgical specialties. The advent of 3D laparoscopy and robotic surgery has made MIS the default choice of surgery in the coming future.

Transplantation surgery has embraced MIS since the end of the last century. The first laparoscopic donor nephrectomy was performed in the year 2000, six years after the first radical nephrectomy performed through laparoscopy. Soon Laparoscopic donor nephrectomy became the method of choice for donor kidney surgery.

In Pakistan, the evolution of MIS has been slow but steady. The first donor nephrectomy was performed at SIUT in the year 2014 as part of the MIS program. Since then it has increased substantially in number and only hampered recently by the COVID-19 pandemic that has affected all form of health care.

The thirst to acquire cutting edge technology forced the largest institute in the country to acquire a Robotic platform in the year 2017. Since then, an increasing number of surgeries are being performed with this technology to ensure that our patients receive the latest technological care in this part of the world. The institute is well set to perform Robotic assisted renal transplantation in morbidly obese patients who were previously denied this treatment option because of the high morbidity of open surgery.

= 423

Meanwhile, the benefits of 3D laparoscopic surgery have been tested as well. The institute acquired this technology in the year 2020. The advanced vision offered by this form of laparoscopy has translated into better Intracorporeal suturing that has always been a challenge for surgeons.

The future of minimally invasive surgery in the future of surgery. It is impossible now to shy away from it and survive in the era of fast-growing technology. For growing economies like Pakistan, the cost of such technology will always be an issue however the right of our patients to enjoy the fruits of the latest available technology cannot be denied for long.

P20

Living Donor Nephrectomy to Overcome Organ Shortage in The Middle East, A Single Center Experience

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Purpose: Laparoscopic Living Donor Nephrectomy (LLDN) has become the gold standard procedure for both adult and pediatric recipients. This study consists in an analysis of the outcomes of a pure laparoscopic standardized donor nephrectomy technique.

Materials and Methods: One hundred twenty living donors were included in the study. A reproducible LLDN was performed on all subjects. Demographic data (age, gender, obesity and nephrectomy side), operative data (operative time and warm ischemia time), biologic parameters (variation in serum creatinine and hemoglobin), duration of hospital stay, and post-operative complications were analyzed.

Results: Of the 120 only 4 donors were not related to the recipients. The majority of nephrectomies interested the left kidney (86%). Mean operative time was 146 minutes and mean warm ischemia time was 4 minutes. Postoperative hemoglobin and creatinine showed a mean absolute variation of 0.09 ± 0.06 g/dL and 0.51 ± 0.15 micromoles/L respectively. Overall complication rate was of 3% and no Clavien-Dindo III-V complications were recorded.

Conclusion: The strict adherence to the reproducible pure LLDN technique has allowed to maintain a good operative performance with low postoperative complications and morbidity.

P21

Robotic Donor Nephrectomy: A Minimally Invasive Approach to Living Kidney Donation

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Materials and Methods: This is a retrospective study analyzing the results of 71 consecutive live donor nephrectomies performed from May 2016 to October 2020, consisting of 33 laparoscopic and 38 robotic procedures. The two surgical approaches were compared by collecting information on operative length, intraoperative blood loss, intraoperative fluid administered, PRN opioids administered in hospital, length of stay, GFR and creatinine at discharge, and creatinine at 3, 6, and 12-month intervals.

Results: In the RDN and LDN groups, operations were performed on patients with similar gender distribution (71% vs. 67% female, $p=0.69$), BMI (26.6 vs. 27.3, $p=0.41$), and age (42.3 vs 47.9, $p=0.08$). Left nephrectomies were dominant in both groups (71% vs. 52%, $p=0.10$). Robotic and Laparoscopic operative techniques were found to have different operative length times (297min vs 263min, $p=0.03$) and different blood loss (83mL vs 155mL, $p=0.025$). RDN required significantly less intraoperative fluid replacement than their LDN counterparts (3.18L vs 4.41L $p=0.00007$). RDN patients also had a significantly increased GFR on day 1 post-operatively (64.5 vs 57.2, $p=0.013$) and on day of discharge (68.7 vs 60.2, $p=0.023$) but not at 1-month follow-up (64.9 vs 59.3, $p=0.12$). There was no statistical difference in creatinine at discharge (1.11 vs 1.38 $p=0.22$), 3 months post-op (1.17 vs 1.21 $p=0.73$), 6 months post-op (1.15 vs 1.12, $p=0.79$), or 12 months post-op (1.15 vs 1.13, $p=0.60$). RDN patients experienced a non-significant 20% decrease in average length of stay (2.73 vs. 3.42 days $p=0.78$) but also a non-significant increase in Morphine milligram equivalents administered during their stay (1530 vs. 1470 $p=0.88$).

Conclusion: This study has shown that RDN is a safe and effective alternative surgical approach when compared to LDN. The decreases in blood loss and fluid administra-

tion and increased day 1 GFR may reflect the decreased tissue manipulation allowed for by robotic assistance. However, the novelty and learning curve of the technique may have contributed to the longer operative times seen in patients undergoing RDN.

P22

Surgical Complications After Deceased-Donors Renal Transplants: Single Center Experience

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Background: Renal transplantation from deceased donor is widely accepted treatment method for end stage renal disease patients. We retrospectively analyzed urologic and surgical complications and their outcomes in our series.

Materials and Methods: Totally 92 deceased donor renal transplantations were performed among 263 renal transplantations at Gazi University Transplantation Center, Ankara since 2006.

We retrospectively analyzed outcome of 92 deceased donors from our data base.

There were 45 women, 47 male recipients. Twenty out of 92 recipients are in pediatric age group. Mean recipients and donors' ages are 36 ± 14 and 38 ± 18 years old, respectively. The immunosuppression therapy consists of steroids, mikofenolat and calcsineurin inhibitors. As induction therapy recipients received Simulect 20 mg on day 0 and 4. Anti-thymocyte Globulin (ATG, 2 mg/kg) was used in steroid resistant acute rejection cases.

Results: Totally 13 (14.1%) surgical complications occurred after deceased donor renal transplantation among 92 consecutive procedures. Four out of 13 classified as miscellaneous surgical complications. Four out of 9 were early, and the rest were countered as late complication. Postoperative early complications are as follows: bleeding ($n=2$), urine leak ($n=1$), renal artery thrombosis ($n=1$), respectively.

Lymphocele (n=4) and urine leak (n=1) occurred as a late complication. Postoperative median follow-up is 78 months. Totally 11 (%12) grafts were lost during median 78 months. Totally seven (7.6%) patients were died due to sepsis (n=4), myocardial infarction, aortic dissection, and fungal pneumonia during median 78 months. None of the patients were lost because of any surgical complications. One, 5 and 10 years of patients and graft survival rates are 98%, 94%, 94% and 97%, 94%, 88%, respectively.

Conclusion: The leading the problem is the limited cadaver organ numbers even if our surgical technique is advanced. Deceased donor renal transplantation has been carried out in our center successfully in accordance with the developed centers in the world.

P23

Liver Transplant Experiences for The Budd-Chiari Syndrome at Baskent University Transplant Centers

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Introduction: Budd Chiari syndrome (BCS) is a disease, presented with occlusion of hepatic vein in any localization and can progress to chronic liver failure. The last step treatment of this disease is liver transplantation. We evaluated clinical results of liver transplants performed on patients diagnosed with BCS.

Materials and Methods: Between December 1988 and May 2021, 144 patients were diagnosed with BCS and we performed 16 Liver transplant (LT) in 12 patients. Transplantation age, sex, CHILD-PUGH score, model for end-stage liver disease score, histopathologic findings, interventional treatments, graft type, hepatic vein anastomosis, post-transplant complications and mortality were recorded.

Results: We performed 16 LT in 12 patients due to BCS. Six of 12 recipients were female. Mean age of patient was 26.9 (range 9-50). We had liver transplantation once for 9 patients, twice for 2 patients and three times in 1 patient with BCS diagnosis. The median follow-up was 83 months (range, 9-126). The survival rates at 1, 5 and 10 years were 90%, 80% and 30% respectively. Only two patients died postoperatively after second LT.

Conclusion: LT can be performed safely in patients with BCS where chronic liver failure develops and other treatment methods fail.

P24

Liver Transplantation for Primary Sclerosing Cholangitis

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Introduction: Advanced age is not considered an absolute contraindication for liver transplant but transplant in the elderly patient with comorbid diseases still is a subject of debate because of the high risk of surgery. The aim of this study is to describe our experience in the recipient evaluation process, and the outcomes of elderly patients with liver transplant.

Materials and Methods: Since 1988, we have performed 687 (476 living donor and 211 deceased donor) liver transplant at our hospital. 365 of the patients were adult recipients. 276 adult patient's data which were available were included in the study. Patients were divided into two groups according to their ages (Group 1: ≤ 59 years old, Group 2: ≥ 60 years old). In group 1, there were 247 recipients, and in group 2, 29 recipients.

Results: We evaluated 276 transplant patients' data. The mean age of the patients was 40 ± 12.3 years in group 1 and 63 ± 2.3 years in group 2. In group 1, 177 of the patients were male and 22 patients were female in group 2. 97 of the transplants were DD and 150 of them were LDLT in group 1. In group 2, most of the transplants were living related transplant ($n=19$). In both groups; the most common indication for liver transplant was Hepatitis B ($n=125$). One hundred and forty-three patients died during the follow-up periods. 132 of them were in group 1, and 11 of them were in group 2. There was no statistically significant difference between the two groups in terms of mortality rates. Overall mean survival time was 10.4 ± 0.6 years and 1 year, 5, 10 and 15 years patient survival rates were 67%, 54%, 48.4%, 40.4% respectively. In group 1; mean survival time was 10.2 ± 0.6 years, and 1 year, 5, 10 and 15 years patient survival rates were 65.5%, 53%, 46.3%, 40% respectively. In group 2; mean survival time was 10.6 ± 1.3 years, and 1 year, 5, 10 and 15 years patient survival rates were 75.9%, 68.6%, 61%, 48.8% respectively. There was no statistically significant difference in survival rates between the two groups.

Conclusion: In this study, LT recipients older than 60 years, had survival rates, acute rejection rates and, complications, equivalent to those of younger recipients. Liver transplant should not be withheld from older recipients on the basis of age alone.

P25

Factors Associated with Delisting of Liver Transplantation Related to Living Related Liver Donor

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Introduction: The ultimate treatment of end stage liver disease is liver transplantation. However, in countries with negligible cadaveric donors transplantation is performed from living organ donation. The need to supply ratio of organs is further affected by donor's issues. Thus, donor pool is further reduced due to multiple issues

which ranges from un-willingness of donor to low liver volume. We aimed to determine the factors associated with delisting of liver organ donors in our institute.

Materials and Methods: Individuals selected as a liver organ donor were enrolled. Participants underwent first and second line investigations to be included in donor list. First line investigation includes baseline investigation, viral serology and blood group. CT volumetry and liver biopsy was included in second line investigations. Demographics, clinical and laboratory data were documented in predesigned proforma.

Results: Amongst 150, 95 individuals were delisted during the period of 3 years. Majority were males (73.7%) with mean age of 32.29 ± 8.91 years. Twenty-one participants were delisted after first line investigations. The most common cause of delisting from donor list was low remnant liver volume in 25 (26.3%), fatty liver on ultrasound in 17 (17.9%) and incompatible blood group in 16 (16.8%) individuals. Nine (9.5%) were delisted due to social issues, 7 (7.4%) were un-willing while 5 (5.3%) donors came out to be hepatitis C positive. Other causes of delisting included micro steatosis on liver biopsy in 3, BMI > 30 in 2, variations in biliary anatomy in 2 and chronic kidney disease in 2 donors.

Conclusion: The availability of liver donor is scarce and the most common cause in our population that led to delisting of donor from liver transplant list was insufficient liver volume.

P26

Management of Post Liver Transplantation Tacrolimus Induced Toxicity-With Normal Serum Levels

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Purpose: Drug induced liver injury post liver transplantation occurs in 1.7% of the patients. Tacrolimus being an effective immunosuppressant is used to treat acute rejection. However, it rarely can cause toxicity which is demonstrated by cholestatic liver injury. We hereby present

the case of a young male, who was a diagnosed case of Wilson's disease, on pencillamine chelating therapy and underwent living related liver transplantation

Case: Within a month post transplantation he developed deranged, predominantly cholestatic pattern liver function tests. Laboratory parameters showed Total bilirubin 1.12mg/dl, ALT 553 IU/L Gamma-glutamyl transferase 624 IU/L and Tacrolimus level of 10.2ng/ml. After thorough evaluation liver biopsy was performed. Liver biopsy documented hepatocellular necrosis with centrilobular cholestasis without any evidence of graft rejection. Although with normal level of Tacrolimus, biopsy was suggestive of drug induced liver injury. Thus, Tacrolimus dose was reduced, which resulted in improvement of his LFTs and was later discharged.

Discussion: Tacrolimus is an effective post liver transplantation immunosuppressant and has the ability to treat early acute rejection. Liver biopsy documented hepatocellular necrosis with centrilobular cholestasis without any evidence of graft rejection. Cholestatic liver injury after tacrolimus usually resolves after dose reduction or by switching to another agent.

Conclusion: We have demonstrated tacrolimus induced toxicity in liver transplant recipients, despite normal serum levels. Thus, transplant physicians should keep high index of suspicion regarding toxicity in post-transplant setting.

P27

Evaluating Organ Donation and Transplantation During Covid-19 Outbreak

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Organ transplants have become very restricted in many clinical centers following the outbreak of SARS-CoV-2 virus. One reason is restrictions implemented to protect donors, recipients, their families and the medical staff. Accordingly, elucidating a comprehensive protocol and guideline for organ transplantation during COVID-19 outbreak is essential. Three protocols were devised by

COVID-19 Donation & Transplant Committee of Transplant and Disease Treatment Center affiliated to the Iranian Ministry of Health. The protocol edited on March 11, 2020 and April 21, 2020 includes the followings:

1. Organ transplant in cities strongly hit by SARS-CoV-2 viruses forbidden. If an eligible case of brain death is located in a city with high prevalence of COVID-19, the patient would either be transferred to a city with a lower prevalence rate or would undergo the procedure in a hospital exclusively assigned for organ transplantation. Also, all potential organ donors and recipient are being tested for SARS-CoV-2 virus.
2. Non-specific tests including CBC and CRP as well as specific tests like PCR, lung CT Scan and consultation for infectious diseases would be conducted for eligible brain death patients to find out if they have already developed SARS-CoV-2 virus or if they are transmitters. All tests should be conducted 72 hours prior to organ donation and if it gets longer, the tests would be repeated. Moreover, prospective donors with SPO₂ < 93% suspicious radiographies would not be included as eligible donors.
3. All suspicious and confirmed cases of COVID-19 will be omitted from the donors' list.
4. Travel history and communications of donors should be examined during the past two weeks. In case of having had contact with a suspicious or confirmed case of COVID-19, the donor would be omitted from the list. Brain death donors with positive history of contacting a suspicious or confirmed case of COVID-19 during the past two weeks would be considered borderline and placed on the list for emergency transplants.
5. Pancreatic, intestinal and lung transplantations are forbidden during COVID-19 outbreak. Moreover, kidney transplants from living donors will not be allowed temporarily. (Currently, the prohibitions are removed but healthcare protocols should be observed). Only liver transplants in acute liver cases and patients with MELD > 20 and life-threatening complications are permissible. Heart transplant can also be conducted for patients with Intermex 1,2.

P28**Impacts of Covid-19 On Organ Donation and Transplantation Activities in Iran**

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Background: COVID-19 outbreak has had a great impact on reducing organ transplantation activities. The aim of this study was to determine the donation and transplantation activities before and after COVID-19 era in Iran.

Materials and Methods: This was a retrospective study which compares two specific 9 month periods from March-December 2019-2018 and March-December 2020. The questionnaire included the number of brain death confirmation, number of family consent, number of organ recovery, number of transplanted solid organs, and cause of brain death. Questionnaire was sent by email to the chief executive of the organ procurement unit.

Results: A total of 15 organ procurement units responded to the survey. The largest reduction was seen in tissue transplantation (62.5%) during two time intervals. Brain death due to head trauma was decreased significantly in two time intervals and suicide increased by 14.44% during the COVID-19 pandemic compared to 2018-2019 period time. Significant changes between median of donation ($P = .0187$), median of potential donor ($P = 0.005$), median of family consent ($P = .002$), and median of eligible donor ($P = .009$) during two time periods were observed.

Discussion: In COVID-19 era significant reduction was shown in organ donation and transplantation. Working on protocols and establishing new strategies for evaluation of organ donation to ensure the safety of recipients and medical staff is necessary.

Keywords: COVID- 19, Brain death, Deceased Donor, Transplantation.

P29**Decision Making on Organ Donation: The Reason of Refusing for Donation in Non-Donor Families**

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Introduction: Regarding the important role that families play in organ donation, the purpose of this study was to determine the factors influencing the relatives' decisions for refusal to consent for organ donation in brain dead donors.

Materials and Methods: This cross-sectional study was performed during the year 2019 at the Organ Procurement Unit (OPU) of Sina Hospital, Tehran, Iran. From 166 brain dead potential donors, 139 families accepted organ donation (group A), while 27 families refused the donation requests (group B. (The data was collected by using a reliable and valid questionnaire via telephone or face-to-face. All the participants completed the questionnaires and the relevant data was extracted according to the abovementioned method. Descriptive statistics were performed using t-test, Chi square test and Fisher exact test. The data was analyzed by using SPSS 16 software.

Results: The mean age of brain-dead cases were 38.6 ± 17.86 years (range 2-72). There was a significant difference between groups A and B in regards to employment ($P=0.001$), prior discussion of organ donation with family and friends ($P = 0.001$) and the level of the family's education ($p=0.003$).

The most common causes affecting the relatives' refusal for organ donation included the expectation of a miracle and the unfamiliar concept of brain death.

Discussion: Based on our results pertaining to the family's refusal for organ donation, the expectation of a miracle and the lack of awareness about organ donation demonstrates that brain death is not widely accepted and understood by the deceased's family. Therefore, appropri-

ate training techniques in approaching potential donor families is essential for the healthcare staff. Thus, short- and long-term planning is crucial to implement change.

Keywords: organ donation/ transplantation, brain death, family refusal, family consent.

P30

Organ Donation and Transplantation Rate in Iran: Challenges of Covid-19

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Background: COVID-19 pandemic has a great impact on reducing organ donation and transplantation activities. The aim of this study was to determine the impact of Covid-19 on organ donation and transplantation rate in Iran.

Materials and Methods: This was a retrospective study which monitored organ donation rate during COVID pandemic in Iran.

Results: A total of 56 organ procurement unit and recognition centers participated in the survey. According to the report of the Ministry of Health, organ donations and transplantation were dramatically decreased after COVID-19 pandemic. The largest reduction was seen in lung transplants (58%), during 2019-2020. Similar decreases of various magnitudes were seen in liver (36.9%), Kidney (living donors) (44%), Kidney (brain death donor) (40%), heart (47%), Intestine (33.33%), pancreas (20%) transplants in two time intervals.

Table. Number of transplanted and recovered organs from beginning Up to 2020

Topic	2002	2003	2004	2005	2006	2007
2008	2009	2010	2011	2012	2013	2014
2015	2016	2017	2018	2019	2020	
Kidney (LD)	1619	1527	1733	1680	1599	1546
1567	1669	1726	1529	1547	1551	1203
1204	1078	931	1018	747	420	
Kidney (DBD)	85	188	180	215	237	265
349	396	590	763	911	1171	1122
1374	1399	1351	1345	1354	820	
Liver	23	49	61	63	105	134
188	209	299	404	484	594	605
712	802	820	809	961	606	

Heart	15	21	20	15	24	35
53	40	82	85	77	91	82
103	119	144	131	126	67	
Lung	5	2	3	3	7	3
11	7	13	19	13	14	14
16	7	14	6	7	3	
Pancreas	0	0	0	0	18	28
10	18	10	25	33	24	31
15	30	19	30	29	23	
Intestine	0	0	0	0	2	0
0	0	3	10	11	12	7
4	3	2	0	9	6	

Discussion: The impact of the COVID-19 pandemic on donation and transplantation is unprecedented. Updated protocols and establishing new strategies for evaluation of organ donation is necessary.

Keywords: Organ donation rate, COVID 19, Organ transplantation.

P31

Report of Transplantation and Organ Donation in Iran: 2002- 2019

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At 2019, Iran reached a rate of 14.3 deceased donors per million of the population (PMP); despite this, 7-10 of patients on the waiting list die every day. At present, Iran is one of the leading countries in organ donation and transplantation rate in the Middle East Countries.

Kidney transplants from cadaver donors due to legislation and public awareness and cultural reasons has been increased between 2014-2019, while numbers of living donors were decreased in Iran. By the 2019, 1354 kidney transplanted from deceased donors, 747 kidney transplanted from Living Donors.

Fig 1: The Kidney Transplant Rate in Iran (2002 – 2019)

From 2002 to 2019, a total of 7928 livers was harvested from deceased donors and transplanted. The rate of heart transplantation had an 8.4-fold increase from 15 cases in 2002 to 126 cases in 2019.

Until 2019, 343 pancreas transplantations were done in Iran. In 2001, the first lung transplant was performed, until now 170 lungs has been transplanted.

From beginning up to now, 62295 transplants performed, of which 52383 were kidney, 7960 livers, 1370 hearts, 170 lungs, 343 of pancreas and 69 small intestine transplants.

Fig2: The Profile of the Iranian Transplant System

The donation rate per a million populations was 14.34 (1078 numbers). The rate of actual deceased organ donation had a 19.06-fold increased from 0.75 in 2003 to 14.3 cases in 2019.

Fig 3: Growth of Deceased Donors in Iran During 2003- 2020 by PMP

Increasing donation rates has been a team effort in Iranian organ donation and transplantation system during the years. The robust administrative, upgrading our OPUs, Coordinators training, improved surgical techniques and postoperative treatment, establish an organ allocation, legislative, and ethical framework was performed in Iran.

P32

Quality Key Performance Indicators in Organ Donation Implementation- United Arab Emirates Experience

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Carrer Baldri i Reixiac 4

Background: United Arab Emirates (UAE) started their deceased donation (DD) program in 2017 approving brain death declaration. International collaboration between UAE National Transplant Committee and Donation and Transplantation Institute (DTI). Hospital-based organ donation unit (H-ODU) launched in Abu Dhabi. Organ Donation European Quality System (ODEQUS) indicators (KPI) measured H-ODU performance.

Materials and Methods: Identification of Death by Neurological Criteria, Referral of Potential DD, Family con-

sent, and Conversion rate were the ODEQUS KPIs implemented first year. H-ODU's staff and DTI team monthly monitored data collection. Abu Dhabi Department of Health (DoH) KPIs monitoring mandate to all hospitals (Table 1).

Results: After two years, donor detection and referral increased from all hospitals. H-ODU improved their donor conversion rate. UAE moved from 0 to 40 DD, 1.1 DPMP and 0.9 DPMP in 2019 and 2020 respectively. Maintenance of the DD activity was observed even during Covid Pandemic year.

Conclusion: H-ODU and KPIs in organ donation monitoring by the Government provides the pivotal approach for the Deceased Organ Donation National System. The collaboration between local and international organization supports the successful implementation of DD best practices in new regions.

Table 1. Abu Dhabi JAWDA KPIs for Organ Donation Program.

JAWDA KPI	Formula	DoH Target
Donation Process Procedures	Existence of protocols and procedures for all relevant steps of the donation process	Yes = 100 %
Donation team full time availability	Availability of the Donation team 24/7	Yes = 100 %
Identification of all Possible Donors in the ICU	$\frac{\text{Number of comatose patients with devastating cerebral lesion admitted to the ICU who are identified and reviewed by the Organ Donation Champion within 24 hours of meeting criteria}}{\text{Number of comatose patients with devastating cerebral lesion admitted to the ICU meeting the criteria for identification of critical care cases}} \times 100$	75%
Identification of Death by Neurological Criteria	$\frac{\text{Number of deaths of patients with DCIL declared dead by neurological criteria}}{\text{Total number of Deaths of patients with DCIL}} \times 100$	50%
Referral of Potential Deceased Brain Death (DBD) Donors	$\frac{\text{Number of potential DBD Donors referred to ADOOTC}}{\text{Total number of potential DBD Donors meeting the criteria for referral}} \times 100$	100%
Patient Family Consent	$\frac{\text{Number of no oppositions}}{\text{Number of families interviewed}} \times 100$	50%

P33

IDOT Covid- International Database On Organ Donation and Transplantation (Covid-19)

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Purpose: SARS-CoV2 virus mortality rate in solid organ transplant recipients (SOTr) is higher than that of general population (10-35% vs 5-7%). Unique SOTr characteristics such as type of SOT or immunosuppression (IS) protocols, leads to a significant bias when interpreting the results and translating them into decision-making information. IDOTCOVID was designed as an international online database of SOT COVID19 + aiming to lead to the development of a clinical decision support algorithm (DSA) available online, open access.

Materials and Methods: Variables (demographic, transplant related, epidemiological, clinical manifestation and COVID 19 treatment related) were selected and validated by an external advisory board of transplant physicians. Data entry was done a) individually by each collaborating center; b) automatic incorporation of data from the Registry of Spanish Society of Nephrology as of August 2020, made available after formalization of the study agreement.

Results: To date, IDOTCOVID has registered 1415 SOTr COVID-19 + from 78 transplant centers in 24 countries. A pre-analysis identified most cases as middle-aged men (57.8 years), kidney transplants 72% ;26% liver transplantation and 20 cases of transplants of other organs. Fever (78%), cough (63%), and dyspnea (41%) as most prevalent symptoms. A mortality rate of 21% was detected during follow-up, with significant discrepancies according to transplanted organ (Kidney 25%, liver 15%, heart 20%, lung 50%; p=.006). Age at diagnosis was associated with an increased risk of death, a mortality of 62% in those with >65yo (n=341), with an increased risk x12 superior to those <35yo. On a multivariate analysis liver transplant

risk remained with lower regardless of age.

Conclusions: These data are being tested to run 5 different supervised learning models to finally build the DSA for supporting clinical decision making; considering the individualization of patient treatment focusing on clinical management (outpatient vs. hospital admission) and of IS (suspension vs reduction).

P34

Innovative Technologies to Increase the Donation and Transplantation Rates: The Saudi Arabia Experience

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Background: World Health Organization is advocating for the development of self-sufficiency in donation and transplantation (D&T) worldwide.

Since 2017, the Ministry of Health of the Kingdom of Saudi Arabia (KSA) launched a program coordinated by DTI Foundation (DTI) with the support of the Saudi Center for Organ Transplantation (SCOT) aiming to improve the deceased donation rates by implementing educational programs and quality management systems. The present study summarizes the effect of the implementation of a quality indicators pilot program in the KSA's critical pathway for organ donation.

Materials and Methods: The DTI-SCOT collaboration has included: a) diagnosis study to achieve a comprehensive vision of donation system (2017); b) implementation of a pilot program to maximize the donor referral in 6 centers; c) monthly follow-up to analyze the data collected led by international experts, d) external audits and e) implementation of an intermediate TPM online training at national level (2020).

Results: The collaboration allowed to identify the organizational, structural, and educational needs. At the pilot program hospitals, the donation alerts increased from 100 to 298 during the first year of the project (250 of the-

se were potential, 101 eligible and 26 were actual donors). This represented near 200% increase in potential donor detection and referral and a final 44% increase in the donation rate. So far, more than 250 ICU doctors, and nurses from more than 30 different hospitals has been training through this program. KSA critical pathway (2017-2020) evolution is summarized at the figure 1.

Conclusions: The collaboration with DTI made possible to establish new donor detection and audit methodologies. In-hospital protocols were reviewed and redefined, specifically those related to brain death diagnosis and donor maintenance. In 2020, beside the COVID-9 pandemic, in 2020, 65 deceased actual donors were reported. Therefore, 188 deceased organ transplantations from deceased donors were performed.

P35

Aftercare of Living Donor in Kidney Transplantation

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Algeria

Due to the discrepancy between the increasing need of kidneys for transplantation and the continuously low numbers of brain dead donors, the possibility of living donor kidney transplantation is gaining importance.

Objective: The indications and evaluation of donors in living donor kidney transplantation were investigated.

Materials and Methods: The statistics of the first Algerian center of kidney transplantation from living donor (about 452 living donors) were evaluated. The fundamental references in the literature and expert opinions are discussed.

Results and Conclusion: Living donor kidney transplantation is an excellent option for patients with end-stage kidney failure. A thorough evaluation of potential donors and their aftercare is indispensable. There is a great potential to expand the living donor programs.

P36

SARS-CVO2 Impact On the Donation and Transplant Activity at The Middle East: International Registry in Organ Donation and Transplantation (IRODaT) 2020

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Purpose: IRODaT is a worldwide registry in organ donation and transplantation (D&T). Out of the 111 countries with D&T activity, 86 reporters have submitted data to IRODaT since 1998. Our aim is to provide a global overview in D&T.

Methodology: Each country is represented by a national reporter, who retrospectively registers the activity on the website. All data is validated prior to be published. IRODaT follows "The Critical Pathway of Deceased Donation (DD)" definition, ensuring uniformity and correct interpretation.

Results: D&T rates mostly dropped due to the emergency of COVID-19 worldwide. In the Middle East, data collected from DD reported a downward trend in Iran, Israel, Kuwait, Turkey, Saudi Arabia, UAE, Qatar, Cyprus and Syria (Figure 1). Regarding kidney transplant from DD, the most affected countries were Iran, Kuwait and Turkey (Figure 2).

The number of living donation (LD) performed was affected significantly. As a result, a decrease in LD up to 66% from Qatar followed by 45 % from Iran and Saudi Arabia was documented. Contrarily, Israel reported a 10 % increase in living kidney donation despite the adverse effects related to the pandemic (Figure 3).

Conclusions: In 2020, the challenges hospitals faced, including restrictions, flight reductions and border closures affected national programs as reflected above. Nevertheless, coordination and transplant teams managed to minimize the impacts of the pandemic.

Figure 1.

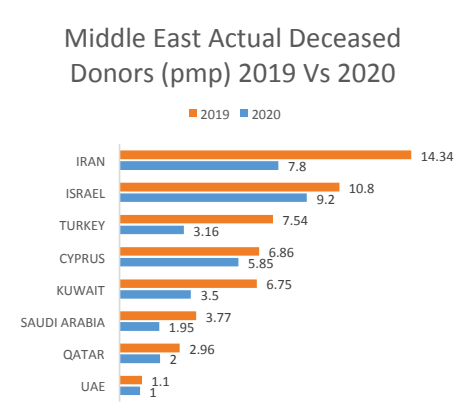


Figure 2.

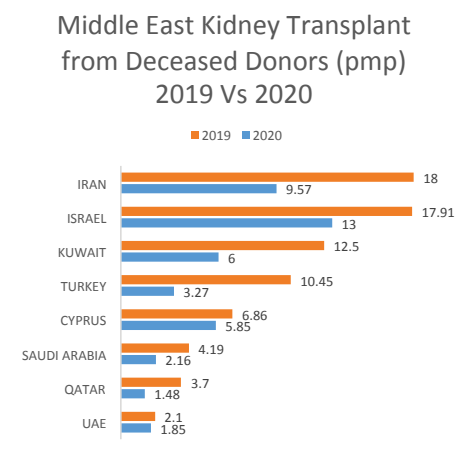
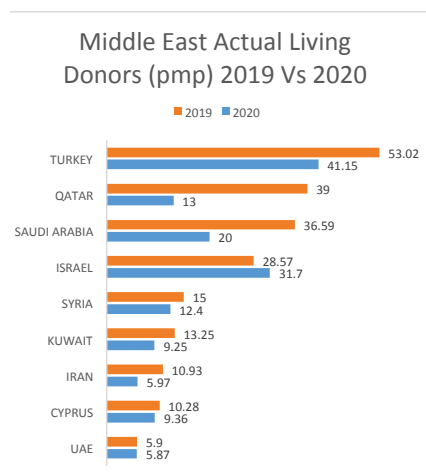


Figure 3.



P37

Attitudes Toward Organ Donation in Arab-Based Population: Lack of Will or Knowledge?

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Purpose: Willingness toward organ donation may vary among younger and older adults. We aimed to assess and characterize awareness and attitudes about organ donation stratified by individuals age.

Patients and Methods: We conducted a cross-sectional random telephone survey with a representative sample of adults from all 13 regions in Saudi Arabia from February 12, 2021 to March 14, 2021. The sample was stratified by individuals age (younger 18 to 35 years old and older ≥ 36 years old).

Results: A total of 3,120 respondents completed the survey (response rate 74%). We found that 58% of younger and 49% of older adults expressed support for transplants, while 54% of the younger and 39% of older adults wanted to donate their organs. However, <5% of study participants had registered in the national donor database. Almost half (46% younger and 49% older) agreed with the primary view that it is very important for the donor and the family to agree on positions of organ donation. Physician or other healthcare worker was selected most frequently (59% younger and 57% older) as the information source most likely to influence attitudes toward organ donation and nearly 50% wanted to learn more about organ donation.

Conclusion: While many younger and older adults support donating their organs, there is a lack knowledge about the organ donation process and distribution system. Efforts are needed for adaptation and implementation of interventions to increase knowledge and support organ donation among younger and older adults.

P38

The Impact of Living-Unrelated Transplant on Establishing Deceased-Donor Liver Program in Syria

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Liver transplant is the criterion standard for patients with end-stage liver disease. Yet there is no liver transplant in Syria. Traveling abroad for a liver transplant is a luxury few Syrians can afford.

There is currently an on-going debate whether to start a liver transplant program using living or deceased donors. In 2003, a new law was enacted, authorizing the use of organs from volunteer strangers and deceased donors. Despite the positive aspects of this law (allowing unrelated donors to increase the number of transplants in the country); the negative aspects also were obvious. The poor used the law to sell their organs to the rich, and this model is in violation of the Istanbul Declaration.

To better document transplant communities' perceptions on organ donation, an e-mail survey was sent to a nationally representative sample of physicians (n = 115) that showed that 58% of respondents did not support the start of liver transplant from live donors, as they fear a considerable risk for the donor and the recipient.

Seventy-one percent of respondents believe that unrelated kidney donation has contributed to tarnishing the reputation of transplant, and 56% believe that a deceased-donor program can run in parallel with unrelated organ donations.

The interest in deceased-donor program has been affected negatively by the systematic approach of using poor persons as the source of the organ. This lack of interest has affected starting a liver program that relies on deceased donors; especially the need for kidneys is more than livers.

Health authorities in Syria were inclined to initiate a liver transplant program from live donors, despite the risks of serious morbidities and mortality. In conclusion then,

paid kidney donation in actual effect is actually a hindrance to establishing a deceased-donor liver program.

P39

The Acceptance and Willingness of Solid Organ Donation in The Arab World

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Introduction: Organ transplantation is the most important treatment option for final stage organ disease and organ failures, some studies found out that willingness of organ donation is multi-factorial. Religious and cultural factors are playing big role in influencing the decision of donation. There are also other factors like family influences, trust of health care system and the individual's knowledge and awareness of the organ donation process. This Study aimed to determine the willingness of organ donation among Arab regions.

Materials and Methods: A cross-sectional study was designed and online questionnaires were distributed to adult volunteers from all Arab countries through social media platform. The questionnaire included questions to assess the participants' willingness and attitude towards solid organ donation. Data entered and analyzed via SPSS Statistics version 23. A p value of 0.05 or less was considered significant.

Results: Our research illustrated that Only 17 % showed their willingness to donate in future and the most acceptable organs to be donated after death were kidneys (57.8 %), followed by liver (45.1 %). Those who experienced organ transplantation showed more tendency for organ donation compared to those who had not (p < 0.0001). Additionally, being involved in charity works in the past was associated with the participants' willingness for organ donation as well. Past transplantation experience donors tend more to accept paid organ donation with a p value of < 0.0001. Nevertheless, neither monthly income (p = 0.303) nor being participated in charity works in the past (p = 0.053) are related to the acceptability of getting paid for organ donation. The study conducted that nearly 90 % were unwilling to donate for money.

Conclusion: The present research revealed the extent of willingness of the general population in the Arab world

to donate solid organs generally and in special circumstances e.g. deceased donation, live donation and donation to relatives and non-relatives. It is clear that the need of solid organ donation overweighs the population acceptance, except in some special events e.g. when the person in need is a close relative.

P40

Assessment of Cystinosis in Pediatric Renal Transplant Recipients: Case Control Study from Kuwait

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Introduction: Cystinosis is an autosomal recessive liposomal storage multisystem disease characterized by deficient cystinosis that results in cystine accumulation in the lysosomes. It can lead to end-stage kidney disease in most cases before 20 years.

We aimed to evaluate the outcome of renal transplantation in pediatric renal transplants with cystinosis.

Materials and Methods: Data of renal transplant recipients with Cystinosis (n=15) in Hamed Al-Essa organ transplant center were retrospectively evaluated against matched control cohort (n=128). Demographic data in both groups were compared and post-transplant complications and both graft and patients outcomes were assessed.

Results: Most of the cystinosis patients (53.3%) were Kuwaiti males in their second decade of life with their mean age 13.3 ± 3.9 vs. 68% and mean age of 14 ± 3.1 years in the control group. The two groups were comparable regarding the type of donor, pre-transplant comorbidities ($p > 0.05$). The percentage of cystinosis cases with immediate graft function was significantly higher than the control ($p = 0.024$), and this was reflected by relatively lower basal creatinine but did not rank to significance (> 0.05), and they received significantly less induction therapy ($p = 0.002$). The two groups were maintained on a comparable immunosuppressive regimen and we did not find any significant difference between the two groups regarding

post-transplant complications like post-transplant diabetes, viral infections, graft function at 1,3,5,10 years, and both graft and patient outcomes were comparable ($p > 0.05$).

Conclusion: Under standard immunosuppression therapy with steroid calcineurin inhibitors, mycophenolate mofetil, renal transplant is safe with good long-term outcomes in patients with cystinosis.

P41

Urinary Tract Infections and Long Term Outcomes After Pediatric Renal Transplantation

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Introduction: Renal transplantation is the best option for treatment of children with end-stage renal disease and it provides a long-term survival. However, the chronic immunosuppression exposes children to multiple complications and side effects such as infections. We aimed to analyze retrospectively long term outcomes and urinary tract infections of 184 pediatric renal transplant recipients at our centers.

Materials and Methods: In 1975, we performed the first living-related renal transplant in Turkey which was also a pediatric kidney transplant. Since 1975 we have performed 3209 kidney transplant at our transplant centers, 370 of them were pediatric kidney transplantation. Medical records of the pediatric patients who underwent renal transplantation between 1999 to 2021 were retrospectively analyzed at our centers. A hundred and eighty-four pediatric renal transplant recipients were defined as study group.

Results: A hundred and two of 184 pediatric transplant patients were male and 82 were female. Mean age of the patients was 13.8 ± 6.7 (range: 1.5-21 years). The follow-up period ranged from 6 to 245 months (mean, 69.1 ± 38.8 months). Donor types were living-related in 77% (141 patients) and deceased donor in 23% (43 patients).

Immunosuppressive medications were tacrolimus in 122 patients, cyclosporine-A in 56 patients, sirolimus in three patients, and everolimus in three patients. Induction treatment was administered to 51 of the subjects. When we assessed urinary tract infections that require hospitalization, were recorded in 27 (14.6%) patients. CMV was determined in five, BK virus in seven patients and severe bacterial urinary tract infections were observed in 15 patients. We did not see graft loss and mortality due to severe bacterial urinary tract infections. The 1, 3, 5, 10, and 15-year graft survival rates were 99%, 92%, 86%, and 76%, respectively, and the 1, 3, 5, 10, and 15-year patient survival rates were 100%, 98%, 95%, and 92%, respectively.

Conclusion: Our study showed that, kidney transplantation in pediatric patients have successful long term results with no graft lost and mortality due to severe bacterial infections.

P42

The Relation of Anxiety, Depression, and Behavioral Problems with the Time Allocated to Television, Computer, Smartphone in Children Receiving Renal Replacement Therapy

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Materials and Methods: The study included 55 children and adolescents between the ages of 8 - 18. While 28 of the participants did not have any chronic disease, 27 of them had chronic diseases and received RRT. Among these patients, 17 of them had kidney transplantation, while 10 patients were receiving dialysis. Socio-demographic information form and Conners Short Form Parent Rating Scale were given to parents, and Children's Depression Inventory and Spilberger's State-Trait Anxi-

ety Scale-2 were filled by children and adolescents. In the analysis, the differences between the two groups and the relation between continuous variables were examined.

Results: The results revealed that the duration of television was significantly higher in children and adolescents receiving RRT. In dialysis and kidney transplantation group, CPRS-48 anxiety sub scores and the duration of the smartphone usage had a positive correlation. Also in kidney transplantation group smartphone and computer durations are positively correlated and television duration is negatively correlated with CPRS-48 behavioral problems subscale.

Conclusion: The children having RRT may be at risk in terms of excessive television exposure. Children who are on dialysis and have had a kidney transplant may be more prone to the negative effects of screen exposure than healthy peers who do not have chronic illness. These children and adolescents should be closely monitored to avoid the negative effects of excessive screen exposure.

Keywords: Screen time, Renal replacement therapy, Kidney transplantation, Renal dialysis

P43

Pediatric Kidney Transplantation: A Single Study in Tunisia

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Background: Kidney transplantation (KT) is the gold standard for renal replacement therapy in pediatric patients with end-stage renal disease (ESRD). Precise surgical techniques and modern protocols for immunosuppression provide excellent long-term patient and graft survival. The aim of this study is to evaluate the clinical characteristics of pediatric KT and its outcomes.

Materials and Methods: We conducted a retrospective study, from 2008 to 2019, including kidney transplant recipients aging below 17 years transplanted in our center.

Demographic data, renal function, rejections, and other complications recorded were noted. Patient and graft survival rates were analyzed.

Results: A total of 259 living donor kidney transplants were done till 2019. Thirty-nine (15%) were ≤ 17 years (56,4% male), aged 7–17 (median 14) years. Cause of end stage renal disease (ESRD) was chronic interstitial nephropathy in 21 patients, Median weight was 52,7 kg [32,8–65,2]. Histories of hemodialysis prior to kidney transplantation were present in 71,1 % of the patients. Three had received a preemptive transplant.

Twenty-four (61,5%) donors were female, 14 (35,9%) were mothers. Mean donor age was $42,7 \pm 11,3$ years.

Overall incidence of hypertension was 46,1%, and diabetes after transplantation occurred in 17,9%.

A total of 51 episodes of infections occurred in these children. Leading were 35 episodes of urinary tract infections, 5 episodes of upper respiratory tract infections, and 4 episodes of gastroenteritis.

Three patients (7,7%) had biopsy-proven acute cellular rejection. One had de novo membranous nephropathy.

Patient and graft survival at 5 years were 92,3% and 89,7%, respectively. One patient died because of Post-transplant lymphoproliferative disorder.

Conclusion: Successful pediatric KT requires a multi-disciplinary approach with effective interagency coordination between pediatric nephrologists, urologists, and transplantation surgeons.

P44

Adherence to Immunosuppression in Iraqi Kidney Transplant Patients During the First Year of Transplant: A Single-Center Experience

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Background: Kidney transplant recipients may have higher rates of medication non-adherence than other recipients of solid organs. Non-adherence to immunosuppressant therapy leads to acute, chronic rejection and graft loss.

Objectives: We sought to measure adherence to immunosuppressive medications among Iraqi renal transplant patients in a single centre.

Patients and Methods: A cross-sectional study conducted from January to November 2020. Seventy-five adult Iraqi renal transplant recipients were recruited. The patients were interviewed and their baseline clinical and transplantation data were collected. An Arabic version of the Basel Assessment of Adherence to Immunosuppressive Medications (BAASIS®) scale was used to evaluate adherence.

Results: The study included 75 adult renal transplant recipients (51 males/24 females) with a mean age of 39.44 ± 12.06 years. The mean time post-transplantation was 8.11 ± 3.12 months. The total adherence was reported in 65.33% of the patients, while 34.6% did not adhere to one (25.3%) or more (9.3%) drug. Chi-square test revealed a statistically significant association between non-adherence and complications (p-value 0.015). Four male patients had a biopsy-proven acute rejection and all of them were non-compliant with medications. On the binary logistic regression model, the P values for employment, time after transplant, and complications were 0.06, 0.06, and 0.08 respectively.

Conclusion: There is a high rate of non-adherence among this sample of Iraqi renal transplant recipients in the first year post-transplant. Time after transplant and transplant complications were related to non-adherence. Larger multicenter studies needed to define the real rate of adherence to immune suppression in Iraq.

Keywords: Immune suppression, Adherence, Renal Transplant, Iraq

P45

Presentation of Tacrolimus Induced Type IV Renal Tubular Acidosis in Liver-Transplanted Patient

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Purpose: Calcineurin inhibitors (CNIs) such as cyclosporine and tacrolimus form the backbone of immunosuppressive regimens used in solid organ transplantation. Both acute and chronic nephrotoxicity have been associated with these agents. We hereby present the case of a young male, who underwent live related liver transplantation and developed metabolic imbalance.

Case: Recipient's post-transplant period was complicated by hepatic artery thrombosis and jump graft was established between portal vein and aorta. His maintenance immunosuppression included prednisone, mycophenolate mofetil and Tacrolimus (Tac). At 25th day post-transplant, laboratory parameters showed serum creatinine 1.4 mg/dl, serum potassium 6.5 mmol/L, serum chloride of 110 mmol/L, bicarbonate of 13 mmol/L but anion gap was normal of 11.5 mmol/L with high Tac level of 20.3 ng/ml. His ECG showed peaked T waves but PR and QRS intervals were not prolonged. Urinary anion gap was 44 mEq/L. A diagnosis of type IV renal tubular acidosis was established. The tacrolimus was initially held and later adjusted to achieve serum level of 7.6 ng/mL. After 2 days of stopping tacrolimus renal functions start improving.

Discussion: Type IV RTA is a rare presentation of CNI induced acute nephrotoxicity. Patients are usually asymptomatic with normal creatinine and urine output. However, our patient had high creatinine with normal anion gap acidosis. Its associated hyperkalemia can lead to paralysis or fatal arrhythmia making early diagnosis and proper treatment a priority.

Conclusion: A high index of suspicion must be maintained for type IV RTA in the presence of normal anion gap metabolic acidosis with associated hyperkalemia and hyperchloremia. Hence, patients should be identified early and treated by discontinuation of the immunosuppressive therapy and correction of the metabolic imbalances.

P46

Impacts of Early Conversion to Belatacept-Based Therapy on Graft Function in Renal Transplant Patients

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Materials and Methods: We collected data on renal transplant recipients from 2016-2020 that were converted to a Belatacept-based IS regimen. Patients were stratified into an early-converted group if starting Bela therapy within 26 weeks of transplantation and late-conversion group if treatment was initiated after 26 weeks. Primary outcomes assessed graft function with estimate glomerular filtration rate (GFR). Secondary outcomes included serum creatinine (sCr) and glucose levels.

Results: At our institute total 40 patients converted to Belatacept based IS. Early conversion to Bela-therapy significantly enhanced graft function as measured by GFR. Early conversions had a significant increase in GFR from 19 ± 5.3 mL/min to 40.0 ± 6.8 mL/min by the ninth month ($p=0.015$) and 34.6 ± 4.6 mL/min by the two-year mark ($p=0.023$). The late conversions had a higher baseline GFR of 38.6 ± 3.8 that was saw little to no deviation over the two years ranging between 33 and 43 mL/min.

Before conversion to Bela, average serum creatinine (sCr) was $3.12 (\pm 0.38)$ and $2.06 (\pm 0.17)$, $p=0.0017$ in the early and late groups, respectively. After conversion, the early group experienced a 33% decrease in sCr by the 2-year mark ($p=0.0017$) compared to their baseline values. Conversely, the late-converted group did not have significant deviations from respective baseline values prior to conversions. At 1, 6, and 24 months post-conversion, the early converted group saw significant improvements in sCr compared to the late converted group with sCr levels decreasing by 13% ($p=0.04$), 23% ($p=0.015$), and 38% ($p=0.011$), respectively.

There was no statistical significance between early and late conversion groups on metabolic glucose levels. There

was no significant difference in the number of acute rejections between the two groups (early – 6 events or 29%, late – 5 events or 26%).

Conclusion: Our study has shown that early Belatacept conversion improves kidney graft function more effectively than later conversion. Therefore, early conversion to Belatacept based IS therapy may be considered more often in selected patients after kidney transplantation.

P47

New Technologies Applied to Master Education in The Time of Covid-19

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Purpose: University of Barcelona together with Donation and Transplantation Institute offer since 2004 a Master degree in Donation and Transplantation. Since 2011, the program had a blended modular structure: Donation, Transplantation, Management, Tissue Banking and Internship (IS). In 2020, due to COVID-19 restrictions, it was adapted to be online. The aim is to analyze the impact of the pandemics on grades and student's satisfaction.

Materials and Methods: Until 2019, face to face included the IS, theoretical sessions, simulations, cases debate and group exercises. Since 2020, theoretical sessions have been included in the virtual classroom and practical simulations have been replaced by live sessions. Immersive training (IT) has been employed to substitute IS and family approach (FA) workshop. For IS, a virtual reality tour to a simulated tertiary Spanish hospital. In FA experience, students can virtually meet with patient's family and practice their communication skills. In February 2021 only donation module has been completed, therefore data are organized in 2 periods, 2011-2019 and 2020, and the grades obtained in the Organ Donation module and the students' satisfaction are evaluated.

Results: In 2011-2019, the average grade in Donation was 8.07/10 and in 2020 the score was 8.08/10. In 2011-2019 the Donation module has been evaluated with an

average of 9.58/10. In 2020 the evaluation was 9.36/10. Comparative results indicate slight difference in the values, demonstrating stability despite the difficulties by the pandemic.

Conclusion: The inclusion of new technologies has been essential to keep offering high quality international educational programs. Further exploring of technologies may also improve efficiency.

P48

Evaluating Heart Transplantation Outcomes from Marginal Donors

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Introduction: Considering lack of enough resources, such as artificial heart or ventricular assist devices for long term cardiac replacement therapy, we decided to evaluate those brain death cases, which seem non eligible as heart donor based on guidelines criteria, as marginal donors, but with no contraindication for replacement at preoperational evaluation.

Materials and Methods: This retrospective study was conducted on heart donors and their recipients at Organ Procurement Unit of Sina. Among the candidates, 75 were categorized as standard donors (Group A) and 18 were marginal donors (Group B), Group C were heart recipients from standard donors; and Group D were heart recipients from marginal donors.

Results: Based on this study 97 heart donors of a total number of 302 donors referred to Sina Hospital, 80.6% were sub grouped as group A, standard donor, and 19.4% group B as marginal group (older than 40 years, or with positive history of drug abuse or smoking, but based on echocardiography and coronary angiography, negative

for HIV, or hepatitis infection). Their mean survival rate in Group C and D were 635.67 ± 434.75 and 508.46 ± 407.8 days respectively with no significant difference between survival rates in MD and SD recipients ($P=0.961$).

Conclusion: Based on this study, marginal donors could be eligible for harvesting, and decrease wait time for end stage heart recipients.

Keywords: Heart transplantation, Marginal donors, Standard donor, Survival

P49

Determination of Cytokine Gene Polymorphisms in a Heart Transplant Patient Resistant to Desensitization Therapy: Case Report

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Introduction: Heart transplantation is the best treatment option for end-stage heart failure. The major goal in solid organ transplantation are organ survivability and functionality. Effect of anti-HLA antibodies and cytokines are important for immune response. Cytokine gene polymorphism are also effective during cytokines releasing. TNF- α - IL-6 (pro-inflammatory), TGF- β 1 - IL-10 (potent immunosuppressive) and IFN- γ (macrophages activators) are cytokines that are planned to be studied.

Case report: The patient who received a heart transplant at Ankara Baskent University Hospital in 2011. Patient's PRA screening, identification, LSA test done Transplantation and Tissue Typing Lab at Adana Baskent University Dr. Turgut Noyan Medical and Research Center. Due to antibody-mediated rejection used for desensitization Rituximab, IVIg, Bortezomib. Because of anti-HLA antibodies resistance to therapy cytokine gene polymorphisms

(TNF- α , TGF- β 1, IL-6, IL-10, IFN- γ) planned to investigate.

Results: LSA Class-I in desensitized patient: 6% (MFI: 6473-1145); LSA Class-II: 26% (MFI: 18564-1383). The CGP study identified polymorphic regions compatible with high release of TNF- α (G/A), high release of IL-6 (G/G), intermediate release of IL-10 (GCC/ACC), intermediate release of TGF- β 1 (T /C G/C) and low release of IFN- γ (A /A).

Discussion: The discovery of polymorphic regions compatible with the high-release pro-inflammatory action of TNF- α and IL-6 induces inflammation as well as B-cell activation. The discovery of polymorphic regions compatible with the intermediate release of the potent immunosuppressive effects of TGF- β 1 and IL-10 suggests that the patient may not be able to effectively suppress the activation of the immune system. The influence of cytokine gene polymorphism on the formation of a resistant antibody response in a patient, despite desensitization, also contributes to the pro-inflammatory response in which these cytokines are involved.

P50

Renal Impact of Right Ventricular Failure in Left Ventricular Assist Device Patients

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Heart failure one of the biggest health problem in world. In early stage of heart failure medical treatment can be solution but in end stage heart failure cardiac transplantation is gold standard treatment. Improvement in technology last generation (centrifugal flow) ventricular assist device (VAD) release to market. At the beginning VAD were used for bringing for recovery or transplantation. Because of limited donor for cardiac transplantation, VAD are start to used for destination therapy. In heart failure, heart can not perform pumping function enough. If heart can not do its function tissue perfusion effected. Because of this reason multi organ failure (MOF) can be added to patient clinic. So it can be mortal. Also cardiopulmonary bypass can be effect organs with limited reserve. After

cardiac surgery acute kidney injury can be seen 28-55%. After all cardiac operation acute kidney injury can be one of the most common complications. Also the acute kidney injury increases mortality after operation. In right ventricular failure venous congestion occurs. Tissue perfusion pressure is the difference between mean arterial pressure and venous pressure. Because of this reason tissue perfusion pressure gets lower. In this study we try to evaluate pre-operative right ventricular inefficiency has any effect over renal injury.

Materials and Methods: Between April 2012 and January 2020, 80 VADs were implanted in our clinic. We retrospectively evaluated all of them. After implantation of VAD we try to keep mean arterial pressure between 60-90 mmHg for supporting tissue perfusion. Patients' preoperative echocardiogram, blood tests, cardiac catheterisation parameters were recorded. All patients were followed monthly. All operations are done by the same surgical team. After implanting a VAD, position of the inflow is checked by trans oesophageal echocardiogram. The outflow graft was anastomosed to the ascending aorta in every case. All patients making chart for intake and output for fluid. All patients getting medical heart failure therapy (Ramipril, furosemide, spironolactone). The diagnosis of acute kidney injury and dialysis requiring kidney failure made by The Kidney Disease Improving Global Outcomes (KDIGO) criteria. TAPSE values in transthoracic echo performed in the preoperative period to evaluate right ventricular functions. We divide patients into two groups according to TAPSE value.

Results: Twenty-one patients were excluded because of Fontan circulation, chronic renal failure and early mortality (1 month) totally. Fifty-nine patients were enrolled in study. Twenty-eight patients had mild right ventricular failure (MRVF) (TAPSE ≥ 16) (47.5%) and 31 patients (TAPSE < 16) had advanced right ventricular failure (ARVF) (52.5%). In MRVF group 10 patients had acute kidney injury (35.7%) while in ARVF group 13 patients had acute kidney injury (41.9%). In MRVF group 4 patients needed for dialysis (14.3%) while in ARVF group 5 patients needed dialysis (16.1%).

Conclusions: Acute kidney injury and the need for dialysis are a serious cause of mortality in cardiac surgery, especially in the group of patients with heart failure. By preventing the occurrence of acute kidney injury, serious benefit can be provided in reducing mortality.

P51

Acute Allograft Pyelonephritis: Vague Symptoms, Indeterminate Laboratory and the Necessity of Indication Biopsy

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Purpose: In this study, we examined the clinical and biochemical features of biopsy-proven acute pyelonephritis (APN) among 769 kidney transplants.

Materials and Methods: This cohort study was performed between January 2003 and December 2019, at the University of Health Sciences -Izmir. APN refers to urinary tract infection with acute graft dysfunction. All suspected cases of APN underwent diagnostic biopsy and have received antibiotic treatment for an average of 14-21 days. Group 1 and Group 2 each included nine patients with APN developed in the first six months and afterwards following transplantation (18/769, 2.3%).

Results: Group 1 patients unexceptionally had acute graft dysfunction. Only two of them (22%) were symptomatic. All patients recovered baseline graft function after treatment.

The patients in Group 2 had at least two of the laboratory findings including leukocytosis, neutrophilia and high CRP values. Six patients had urine culture positivity. Recurrent pyelonephritis occurred in three patients. Four patients lost their graft. With a mean follow-up of 48.0 ± 28.4 months, fourteen patients (78%) were alive with a functioning graft.

Conclusion: Diagnostic biopsy is of great importance in patients with urinary tract infection accompanied by acute graft dysfunction in the first six months after transplantation.

P52

Covid-19 Pneumonia in Kidney Transplant Recipients: A Promising Treatment Algorithm in the Absence of a Disease-Specific Drug

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Purpose: There is no consensus on the management of COVID-19 and modification of immunosuppressive therapy in kidney transplant recipients (KTRs). In this study, we examined the clinical outcome of our KTRs with Covid-19 disease, who were treated with a broad-spectrum anti-inflammatory protocol.

Materials and Methods: Among 809 KTRs, 64 patients diagnosed with Covid-19 disease between April 2020 and February 2021, were evaluated. 29 patients with pneumonia confirmed by chest computed tomography (CCT), were hospitalized. The treatment protocol included high dose intravenous methylprednisolone, favipiravir, enoxaparin and an empirical antibiotic. Patients with pneumonic involvement of more than 25% on CCT with or without respiratory failure, were given a total of 2 g / kg intravenous immunoglobulin (IVIg) therapy. Non-responders received tocilizumab, an IL-6 receptor antibody.

Results: Of the 29 patients with pneumonia, 6 were treated in other hospitals. None of them received IVIg and 5 of them deceased. In our center, IVIg treatment was applied to 15 of 23 patients. 7 of them required tocilizumab. Respiratory parameters improved significantly in all but one patients after IVIg ± tocilizumab treatment. The mortality rate was 6.6% in patients who received IVIg therapy and 35.7% in those who did not ($p = 0.08$). Mortality rate was higher in patients who received treatment in external centers (2.2% vs 26.3%; $p=0.0073$).

Conclusion: The treatment of KTRs with severe Covid-19 pneumonia in organ transplant centers with significant experience yields better results. The administration of broad-spectrum anti-inflammatory treatment in this patient group was safe and provided excellent outcomes.

P53

Does Covid-19 Pneumonia Course Worse in Transplantation Patients Than in Non-Transplantation Patients?

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Background: Preliminary data from Europe and the United States pointed to solid organ transplant (SOT) recipients as a high-risk group for developing severe COVID-19. In this study, we aimed to investigate clinical course of COVID 19 pneumonia in SOT patients. Our study was performed in order to investigate whether the clinical course of Covid 19 pneumonia in SOT patients was different from non-SOT patients

Materials and Methods: We prospectively recorded 361 patients who hospitalized for COVID 19 pneumonia between February 2021-March 2021 at Baskent University Ankara Hospital. Demographic, clinical, treatment, and laboratory data, Covid-19 severity, post transplantation time, received immune suppressive drugs, comorbidities, duration of hospitalization, duration of intensive care unit (ICU) stay, hospital death were recorded. Data compared to find out 30 days mortality and risk factors between survivors and non-survivors. SPSS version 20.0 (IBM Corp.) was used for statistical analysis. Chi-square

and Mann Whitney U tests were used for comparison between groups. $P < 0.05$ was accepted as statistical significance level.

Results: Twenty-five of the patients were SOT (6 livers, 19 renal) patients (20M/5F, Mean \pm SD= 50 ± 14 years) patients. Twenty-four of these (96%) were hospitalized. Three of the patients (1F, 2 M) died within 30 days after hospitalization. The number of patients needed supplemental nasal oxygen was higher in SOT patients than in non-SOT patients ($n = 15$ and 78 respectively, $p = 0.005$). Disease severity was not statistically different between SOT and non-SOT patients ($p = 0.224$).

There was no statistically difference was found between patients with SOT and non-SOT ($n = 3$ and $n = 28$ respectively, $p = 0.439$) patients in terms of mortality. Mean ICU stay duration was different in SOT patients than non-SOT patients ($p = 0.030$).

Conclusion: Our study showed no statistical difference in terms of Covid-19 Disease severity and mortality between SOT and Non SOT groups.

Close medical follows up by hospitalization, regardless of the indication, can be lifesaving in early management of cytokine storm in these patients.

P54

Cytomegalovirus Viremia in Solid Organ Transplantation Patients in the First Year After Transplantation

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Purpose: Cytomegalovirus (CMV) infection is an important problem for transplantation. While effective antivirals for prophylaxis or preemptive therapy have reduced the severity and consequences of infection, CMV viremia and CMV related disease are still matters for patients and graft survival. The aim of our study is to determine the frequency of CMV infections the first year after transplantation.

Materials and Methods: In this study we analyzed the data of 252 liver and kidney transplantation patients who were operated between May 2016 and May 2020. Demographic and laboratory data of the patients recorded retrospectively and analyzed with SPSS 25 statistic program.

Results: Our study included 35 livers (14%) and 217 kidney transplant recipients. The ratio of male to female was 3,8 and the median age was 41 (range 18-71). We determined 32 (12,7%) CMV DNAemia, 13 (5%) CMV syndrome and 6 (2,4%) CMV end organ diseases. Four patients got gastrointestinal disease diagnose with histopathology and two patients got CMV pneumonia diagnose with bronchoscopy and radiology. The mortality rate was %0,8 in the first year.

Conclusion: Cytomegalovirus reactivations in the first year after transplantation play critical role on graft survival in solid organ transplantation. Regular following of CMV DNAemia is crucial for modifying prophylactic and preemptive antiviral regimens.

P55

Graft Outcomes Following Immunosuppressive Therapy with Different Combinations in Kidney Transplant Recipients: A Single Center Study

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Introduction: Advances in immunosuppressive strategies over the past decades have led to significant improvements in the field of kidney transplantation. The aim of this study is to examine immunosuppressive regimens administered to kidney transplant recipients in our center, graft outcomes and complication's rates.

Materials and Methods: We conducted a retrospective study including all kidney transplant recipients (KTR) who underwent kidney transplantation in our center, from December 2007 to December 2020. Demographic and clinical data, immunosuppressive regimens, and cli-

nical events during the study period were collected. Graft rejection and complication's rates were analyzed.

Results: A total of 258 KTR were included. The median age was 32 years, 64,7 % were male, 5,4% had a history of diabetes, 77,5 % had a history of hemodialysis before kidney transplantation and 19,4 % had a history of peritoneal dialysis. CKD was secondary to chronic interstitial nephropathy in 45,7%, to glomerulonephritis in 20,5% and to other causes and unknown etiology in 21,3%.

The most frequent regimen in de novo KTRs comprised tacrolimus, mycophenolate mofetil (MMF), and corticosteroids (55,4%), followed by the combination comprising cyclosporine, MMF and corticosteroids (28,7%).

After transplantation, the incidence of biopsy-proven acute rejection was low and similar between groups (Tac/MMF/Cs, 21,8%; Cic/MMF/Cs, 12,5%); Most rejection episodes occurred during the first 6 months of the study. There were no between-group differences in the incidence of adverse events; NODAT ($p=0,592$), hypertension ($p=0,885$), and urinary tract infections ($p=0,274$).

Conclusion: Triple therapy comprising a calcineurin inhibitor, antiproliferative drugs and corticosteroids was the most common immunosuppressive regimen used in our center.

P56

New Onset Diabetes as Complication After Kidney Transplantation: Incidence and Outcomes

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Background: Diabetes after transplantation (DAT) is a common complication after kidney transplantation. It increases the risk of cardiovascular disease. The aim of this study is to examine its effect on the outcomes of kidney transplantation.

Materials and Methods: This study included non-diabetic renal allograft recipients, transplanted from

2008 to 2019 in our department. Demographic and clinical data at transplant time and clinical events during the study period were collected. Patient and graft survival rates were analyzed. Patients with or without DAT were compared.

Results: Our study included 257 patients, the overall incidence of DAT was 21,8 %. The median age was 36 years with a male predominance (sex ratio = 3). Laboratory data such as serum cholesterol, serum creatinine at discharge and 24-hour proteinuria, as well as systolic and diastolic blood pressure, were similar in those with and without DAT.

There was no significant difference in cardiovascular diseases and infectious complications rates between the group of patients with DAT and the group without. There was no significant difference in graft survival at 5 years between the patients with DAT and those without ($p=0,459$). The 5-year patient survival in the patients with DAT was 87,5%. There was no significant difference in survival between the group with DAT and the group without ($p=0,589$).

Conclusion: DAT affects graft and patient survival, and increases the incidence of post-transplant cardiovascular disease. The incidence and impact of DAT can be minimized through pre- and post-transplant screening to identify patients at higher risk.

P57

Risk Factors of New-Onset Diabetes After Kidney Transplantation: A Tunisian Single Center Study

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Background: Kidney transplant recipients who had diabetes after kidney transplantation (DAT) have been reported to be at increased risk of cardiovascular complications. The aim of this study is to estimate the incidence of DAT, and to determine its risk factors in our population.

Materials and Methods: Retrospective data collection

of 272 renal transplant recipients over a 12-year period was performed to record presence of DAT. Demographic (gender, age), and clinical (origin of graft, body mass index at transplantation time and 3, 6 and 12 months after, causes of kidney failure) data were analyzed. Patients with or without DAT were compared.

Results: DAT incidence was 20,6%. Risk of DAT was highest in the first year of post-transplantation (69,6%). The majority of patients (65,9%) were receiving an immunosuppressive regimen associating Tacrolimus, Mycophenolate Acid and Prednisolone. Risk factors for DAT included: oldest age at transplant ($p=0,001$), origin of graft ($p=0,06$) and higher body mass index at transplant time ($p=0,009$), 3 months ($p=0,013$) and 6 months after ($p=0,06$). None of gender ($p=0,150$), smoking (0,082) and causes of kidney failure ($p=0,551$) was found to be significantly associated with the risk of DAT. The group of patients with DAT had a highest rate of hospitalization ($p=0,017$).

Conclusion: NODAT was common in renal transplant recipients. Some risk factors predate transplant and could be used to risk-stratify patients to determine appropriate risk-reduction strategies.

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Long Term Outcomes After Acute Rejection in Kidney Transplant Recipients

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Introduction: Acute rejection (AR) is a common complication in kidney transplantation, it occurs within the first three to six months after kidney transplantation. The aim of this study is to estimate the incidence of AR and to evaluate the clinical outcomes.

Materials and Methods: Retrospective data collection of 272 renal transplant recipients over a 12-year period was performed to record presence of AR. Demographic, pathological and clinical data were analyzed. 5-year death and graft loss rates were analyzed.

Results: Our study included 49 AR episodes experienced by 46 patients (69,6% male, median age 31 years old), including 22 biopsy-proven AR episodes (44,9%), and 17 cellular AR episodes (77,3%). Chronic interstitial nephropathy were the main causes of ESRD (43,5%). Living donor was more frequent (97,8%). Median HLA mismatches was 3 [1,25-4]. The majority of patients had received an induction therapy by thymoglobulin (71,7%). The majority of patients (69,6%) were receiving an immunosuppressive regimen associating Tacrolimus, Mycophenolate Acid and Prednisolone. Pulse steroids were the most commonly reported therapy, used in 30 (65,2%) participants, 6 (13%) received other therapies, including lymphocyte depleting antibodies, IVIG, and plasmapheresis.

As compared with recipients without AR, those with AR were more likely to experience graft loss at 5-year post transplant (7,6% vs 26 respectively with $p=0,001$). Those with AR experienced higher rates of death (17,4%) ($p=0,043$).

Conclusion: AR is associated with increased risks of longer-term graft failure and death, particularly death from cardiovascular disease and cancer.

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Risks Factors of Death After Kidney Transplantation

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Introduction: Kidney transplantation is the treatment of choice for patients with advanced kidney disease requiring renal replacement therapy, which improve life expectancy and quality of life. However, the results of kidney transplantation are impacted by the categories of events responsible for patient death.

The aim of this study was to evaluate patient death after KT and to determine risk factors associated with these major event.

Materials and Methods: It is a retrospective descriptive

study carried-out with kidney transplant patients between 2007 and 2020, in the transplantation unit of Sahloul Hospital, located in the city of Sousse.

Results: From January 2007 through June 2020, 272 transplants were performed in our center.

The crude mortality rate was 9,5 % (n=26). The cause of death was infection in 19,2 %, neurologic complication in 11,5%, neoplasia in 11,5% and other causes in 11,5% of cases. It was not possible to determine the cause of death in 38,4 % of cases. Most of them were men (61,5%). A total of 88,4% of patients needed dialysis before the KT, it was hemodialysis in 76,9 % of cases. Chronic tubulo interstitial nephropathy (42,3%, n=11) was the main cause of ESKD besides unknown causes (19,2%, n=5). All the patients received an induction therapy by interleukin-2 receptor antagonist, 20 mg at day 0 and day 4 (34,6%, n=9) or thymoglobulin, 250 to 300mg spread over 4 to 5 days (65,3%) Most of the patients received calcineurin inhibitors (tacrolimus: n=16 or cyclosporine: n=9), mycophenolate mofetil, and corticosteroids as initial immunosuppressive therapy. There were 16 deaths with functioning graft. The two most important factors associated with increased mortality after kidney transplant were tobacco consumption (P=0,03) and graft loss (P=0,001) compared with survival population. There was no statistically significant impact of age, cause of ESKD, type and duration of dialysis and induction therapy.

Conclusion: Kidney transplantation is the preferred mode of treatment for end-stage renal disease, however graft loss was very associated to mortality in the post-transplant period.

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Does Urologic Complications Affect Graft Survival After Kidney Transplantation?

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Introduction: Despite the distinct progress in kidney transplantation, urologic complications remained a potential source of morbidity, occasionally resulting in transplant loss. In this study we report urologic complications following renal transplantation at a single renal transplant institution.

Materials and Methods: A retrospective study was performed on all patients who present urologic complication after their kidney transplant between January 2008, and December 2020.

Results: There were 274 kidneys transplanted at our institution. Urologic complications occurred in 42 patients which corresponds to incidence of 15,3%.

The median age of our study group was 33,5 years (23 males, 45,7%). Comorbidities such as hypertension (n=20; 47,6%), diabetes mellitus (n= 4,9.5%), and hyperlipidemia (n =5, 11.9%) were highly prevalent. The cause of kidney failure was a Congenital abnormality of the kidney and urinary tract (CAKUT) in 33,3% of Patients. 71,4 % of patients had received hemodialysis before transplantation. There were living kidney donor (n=40) in the majority of cases. Lich Gregoir was the anastomosis technique used in all patients. Most patients had benefited of double J stent implantation for one month after transplantation to prevent stenosis. Six patients were diagnosed as having minor urinary leakage. Ureteral stenosis was found on 14 patients. twenty-five patients had symptomatic severe urinary tract infection. Twenty-six patients had vesicoureteral reflux. All complications occurred within the first year of transplantation. In our study group, graft loss was objective in 14,3 % of patients. No patient death occurred due to urological complications.

Conclusion: Urologic complications are inevitable in renal transplantation. They can affect kidney survival.

Early diagnosis and treatment of urological complications may prevent further morbidity of our transplant patients.

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Effects of Recurrent Urinary Tract Infections On Graft Outcomes After Kidney Transplantation

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Introduction: Urinary tract infection (UTI) is the most common infection after renal transplantation. UTI especially recurrent UTI, degrades the quality of life and can impair graft function. The aim of this study is to estimate the incidence of recurrent UTI and to examine its effect on the outcomes of kidney transplantation.

Materials and Methods: This study included kidney allograft recipients, transplanted from 2008 to 2020 in our department. Demographic and clinical data at transplant time and clinical events during the study period were collected. Graft survival and function were analyzed. Patients with or without recurrent UTI were compared.

Results: Our study included 274 patients, the overall incidence of recurrent UTI was 7,6%. The average age was 31,3 years with a female predominance (sex ratio = 1,62). Patient age, comorbidities, immunosuppressive regimens were similar in those with and without recurrent UTI.

Congenital abnormalities of the kidney and urinary tract (CAKUT) represent the cause of end-stage renal disease in 38,1 % and 20,9 % in the group of patients with recurrent UTI and the group without, respectively (p=0,072).

Median estimated glomerular filtration rate values at 6, 12, 24, 36, 48 months' post-transplantation were lower among patients with recurrent UIT. (all p < 0,05).

Median transplant survival among patient with recurrent UIT was 45 months [27-56]. There was no significant difference in transplant survival between the group with recurrent UIT and the group without (p=0.692).

Conclusion: UTI after kidney transplantation can affect transplant function and transplant survival, as well as recipient survival. The impact of recurrent UIT can be minimized through post-transplant screening to identify patients at higher risk and prevention.

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Recurrent Urinary Tract Infections Among Renal Transplant Recipients: Risk Factors and Outcome with Developing Resistance

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Introduction: Urinary tract infection(UTI) is the most common type of bacterial infection among kidney transplant recipients, with adverse effects on graft and patient survival.

Aim of the study: To assess risk factors and outcome of renal transplant recipients with recurrent episodes of urinary tract infection.

Patients and Methods: Out of 2000 kidney transplant recipients who are followed up in Hamed Al-Essa organ transplant center of Kuwait, 122 were suffering recurrent episodes of UTI. Cases with clinically evident pyelonephritis (PN represented group 1, n=33) while cases without PN represented group 2 (n=89). Along the previous 6 months of the study, we assessed these patients regarding risk factors and their outcome.

Results: The two groups were comparable regarding their demographics. Group 1 showed a positive gallium scan in 60.6% of cases (vs. 25.8% of group 2, p=0.001), vesicoureteric reflux was noted in 63.6% of cases in group 1(vs. 21.3% in group 2, p=0.001), but the two groups were comparable regarding gender, diabetes and immunoglobulin levels. E Coli and Klebsiella Pn. were isolated in the majority of patients in the 1st and 2nd episodes of UTI with increasing risk of resistance after the 3rd episode onwards (up to > 60% in the 4th episode).

Conclusion: Recurrent UTI is not uncommon among

renal transplants and gallium scans support the clinical diagnosis of PN in most cases. VU reflux was found the main risk factor for recurrent UTI with PN. Resistant bacterial strains were found to increase after the 3rd episode onwards.

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Long-Term Survivors After Renal Transplant with and without Zero-HLA Mismatches: Kuwait Experience

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Introduction: Notwithstanding the high rates of rejection, allograft failure, and patient death in the early years of renal transplantation, few patients were doing well. The higher the HLA match the better the renal graft outcome.

Aim of our work: To assess long-term renal transplant survivors with and without zero-HLA mismatches

Materials and Methods: From 1993 to 2018, 2990 renal transplants were followed up in the Hamed Al-Essa Organ transplant center of Kuwait. Of them, 348 renal transplants were long survivors (>15 years' graft survival). Fifty kidney transplant recipients (1.67%) were transplanted with zero-HLA mismatches (group 1) while those with any HLA mismatch comprised group 2 (n=298). All recipients had negative lymphocytotoxicity crossmatch prior to transplantation.

Results: Sixty percent of patients in both groups were males with their mean age 29.08 ± 10.6 vs. 36.2 ± 10.8 years respectively. Chronic glomerulonephritis (GN) represented the main cause of end-stage kidney disease (24 cases, 48.7% in group 1 and 143 cases, 41.2% in group 2, $p > 0.05$). Most of the patients in group 1 (66.7%) did not receive induction while most of them in group 2 (75.6%) did so ($p < 0.001$) however, both groups were maintained on the triple immunosuppressive protocol. The mean follow-up period was nearly similar (19.4 ± 3.3 and 19.2 ± 4.3 years). Mean rejection episodes were significantly higher in group 2 ($p = 0.04$) but this had no significant impact on the mean serum creatinine on the last follow-up which

was higher in group 2 (215 ± 195 vs. 156 ± 122 $\mu\text{mol/L}$ respectively, $p = 0.06$). Moreover, post-transplant diabetes was significantly more prevalent in group 2 ($p = 0.014$). We did not find any significant difference between the two groups regarding viral infections as BK or CMV viremia or malignancies ($p > 0.05$). Patients with graft failure were significantly higher in group 2 ($p = 0.03$) without a significant difference in patient outcome ($p = 0.33$).

Conclusions: Long-term survivors after renal transplant with zero HLA mismatch had better outcomes and fewer post-transplant complications even with minimal immunosuppression.

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Reversible Ischemic Nephropathy in Cadaveric Renal Transplant Recipient

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Introduction and Aim: Atherosclerotic renal artery stenosis is one of the risk factors for cardiovascular death. It can lead to ischemic nephropathy. We aimed to report a case of successful management of ischemic nephropathy that develops in a kidney transplant recipient with graft artery stenosis.

Case report: We present a 52-year-old-male diabetic, hypertensive, non-smoker patient, with hypothyroidism on replacement therapy. He had a history of recurrent urinary tract infection -due to vesicoureteric reflux- before starting hemodialysis in July 2009. He received his cadaveric renal allograft in 11.3.2020 with slow graft function. He received thymoglobulin as induction and steroid, tacrolimus, and mycophenolate mofetil (MMF) as maintenance. He was discharged with nadir creatinine around $130 \mu\text{mol/L}$. His diabetes was controlled by an intensive insulin regimen.

Later, he developed graft dysfunction with partially controlled hypertension and suspected graft artery stenosis by Doppler ultrasound but no evidence of obstruction. His tacrolimus level was adequate and his echocardiography was unremarkable. He received empirical pulse steroid, and his graft biopsy showed severe acute tubular

necrosis, suspicious T cell-mediated rejection, negative C4d, and positive SV40 stain suggesting BK nephropathy. His BK viremia (500copies/ ml) and viruria (885 billion copies/ml) were improving on immunosuppression minimization but without a positive impact on graft function (dialysis-dependent). His repeated doppler showed flattening of the systolic wave. Computed tomographic angiography revealed diffusely attenuated graft arteries. So, satisfactory graft artery angioplasty was carried out in addition to stenting of the two arteries. Fortunately, the patient started to make urine on the same day with a good systolic wave by doppler. His graft function started to improve and he was discharged with stable graft function. Later, his immunosuppressive regimen was tailored to steroid and low-dose tacrolimus.

Conclusion: Ischemic nephropathy is reversible if properly managed even in presence of other comorbidities.

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Contrast Induced Nephropathy in Kidney Transplant Recipients: Single Center Experience

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Introduction: Kidney transplant recipients are at higher risk for developing CIN due to aspects that are unique to renal allografts such as immunosuppression, lack of sympathetic innervation, glomerular hyperfiltration, and burden of cardiovascular disease.

Aim of the Study: To determine the prevalence of contrast-induced nephropathy among renal transplant recipients who received low-osmolality iodine-based contrast material before radiological assessment.

Patients and Methods: A total of 79 kidney transplant recipients were included in this retrospective study. All of them were followed up in Hamed Al-Essa organ transplant center and received low osmolality iodine-based contrast before radiological assessment for different causes during the period between 2010 and 2020. All patients received pre-contrast precautions according to our protocol (IV hydration, sodium bicarbonate therapy, and

acetylcysteine). CIN was defined as a rise in serum creatinine by 25% from baseline within one week of contrast exposure (group 1, n=7) and was compared to the rest of the cases without CIN (group 2, n=72). Risk factors of CIN will be assessed included demographics, comorbid conditions (hypertension, diabetes, and ischemic heart disease), and the use of calcineurin inhibitor, ACEI, ARB, and or diuretics.

Results: Most of the patients (55.7%) were males in their 6th decade of life. Indications for use of contrast were coronary angiography (61.8%), CT abdomen/chest (27.6%), and pulmonary angiography (10.5%). The studied groups were comparable regarding demographics, use of ACEI/ARB or diuretics, pre-contrast proteinuria, diabetes, hypertension ($p>0.05$) but ischemic heart disease was significantly higher in group 1 ($p=0.039$). Basal creatinine, hemoglobin, albumin was comparable in the 2 groups but there was a non-significant rise of creatinine at 1 week and 1 month of contrast exposure in group 1 ($p>0.05$). Moreover, graft and patient outcomes were equivalent in the 2 groups ($p>0.05$).

Conclusion: The lower prevalence of CIN (8.8%) among our kidney transplants might be due to related to the lower risk factors and the routine use of pre-contrast precautions.

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Drug Induced Pure Red Cell Aplasia in Renal Transplant Recipient: Case Report and Review Of Literature

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Objectives: Severe anemia requiring multiple blood transfusions in the post-transplant period triggers rejection. The evaluation of anemia among transplant recipients is a challenging task. Tacrolimus needs to be kept in the suspect box in the management of pure red cell aplasia (PRCA), but further evidence is needed to prove whether Tacrolimus is a real cause of post-transplant anemia.

Case Scenario: A 66-year-old male diabetic nephro-

pathy underwent a preemptive live renal transplant on 13.9.2018. He had a past history of CABG and TAVI 3 years prior to transplantation. Initially, he was maintained on prednisolone, Mycophenolate-mofetil, and tacrolimus, after Basileximab induction. One month later he started to complain of low cardiac output symptoms. CBC showed normocytic normochromic anemia (with hemoglobin dropped from 112 down to 69 g/l) with reticulocytopenia necessitated regular blood transfusion. He has a normal iron profile, serum folate, and vitamin B12, as negative hemolytic and autoimmune screen. Bone marrow biopsy was revealed acquired PRCA most likely drug-induced as viral profile were negative for Parvovirus B19, CMV, and EBV. The patient was managed by discontinuing Mycophenolate-mofetil, and the steroid dose was increased up to 20 mg /day but without improvement. Considering tacrolimus as a cause, three weeks later, Cyclosporine was replacing tacrolimus, CBC follow-up showed improvement without any need for further blood transfusion. After one month of Cyclosporine maintenance, Mycophenolate-Mofetil was resumed with a steady increase of hemoglobin up to 150 g/l, and serum creatinine of 122 u mol/l.

Conclusion: PRCA is a rare disorder among renal transplant recipients which could be induced by the maintenance of Tacrolimus.

pathy associated with diabetic retinopathy, hypertension, and dyslipidemia. He started hemodialysis in October 2017, and 2 years later, he underwent a cadaveric kidney transplant with 2 HLA mismatches and high PRA. He was desensitized with IVIG and Rituximab. He received thymoglobulin as induction and was maintained on prednisolone, mycophenolate mofetil, and tacrolimus. His serum creatinine came down to a nadir of 90 umol/L. he developed graft dysfunction that was investigated and proven to be due to BK nephropathy. So his MMF was replaced by leflunomide in addition to IVIG. Ten months later, he had an accidental fall and sought orthopedic evaluation. MRI lumbar spine and pelvis revealed lumbar spondylosis, avascular necrosis of the femoral head, and obturator muscle abscess. He was explored surgically, but the surgeon denoted that he did not find any abscess or AVN. The patient's blood grew Nocardia and he was readmitted and started imipenem and linezolid empirically. Computed tomography (CT) of the brain and chest ruled out any CNS or pulmonary involvement but a bone scan revealed osteomyelitis of right superior pubic ramus and prepubic swelling likely an abscess in both obturator externus and internus which was confirmed by the CT. He continued the same antibiotics for 6 months based on culture and sensitivity. He is enjoying stable graft function (creatinine 155umol/L) with improved BK viremia with immunosuppression minimization.

Conclusion: Successful management of combined BK nephropathy and Nocardiosis in renal transplant recipients with minimization of immunosuppression and proper antimicrobial therapy.

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Successful Management of Combined BK Nephropathy and Nocardiosis in Renal Transplant Recipient: Case Report

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Introduction and Aim: Nocardiosis is a life-threatening infection in immune-compromised patients. The prevalence of the disease was reported to be 2.3-5% in renal allograft recipients. We aimed to present a case of BK nephropathy associating Nocardiosis with successful recovery.

Case report: The fifty-four-year-old gentleman was suffering end-stage kidney disease due to diabetic nephro-

P68**Systemic Tuberculosis After Renal Transplantation: A Case Report**

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Purpose of Study: Tuberculosis (TB) is a common opportunistic infection in renal transplant patients, with high prevalence in developing countries. Here, we present a 49-year-old kidney transplant recipient who developed late systemic tuberculosis with atypical presentation.

Materials and Methods: A 49-year-old man follow up in our nephrology department.

Results: A 49-year-old man, known to have chronic kidney failure secondary to interstitial nephropathy on hemodialysis since 2005, hypertension and dilated cardiomyopathy. He received a living kidney transplant in December 2014 from his brother with full match HLA. The post-operative follow up was uneventful: creatinine was at 260 µmol/l at discharge. After 6 years, he was admitted for fever, abdominal pain and general condition deterioration. Abdominal CT scan revealed a thickening of the last ileal loop associated with multiple satellite adenomegalies, probably secondary to infectious ileitis. The thoracic CT angiography revealed a retractile condensation of the right apical segment. He presented a testicular mass suggestive of a seminomatous tumor at doppler ultrasound. Tests for Mycobacterium tuberculosis by sputum and urine specimens were negative. PCR in blood was negative for tuberculosis. Aspergillosis, toxoplasmosis and atypical germs serologies were negative. The bronchial biopsy was normal. We performed a colonoscopy which showed an ulcerated aspect of Bauhin valvula. Histology showed granulomatous ileitis with suppurative necrosis. The anatomic pathological examination of the left testis showed granulomatous and necrotizing inflammation evoking firstly caseo-follicular tuberculosis. The diagnosis of systemic tuberculosis was retained. He

received quadruple treatment for a period of 9 months reduced to double treatment for 7 months. After 7 months, patient outcome was favorable.

Conclusion: Tuberculosis after renal transplant is a common problem. A high degree of awareness of TB is required in all renal transplant patients so that it can be diagnosed and treated early, reducing the risk of morbidity-mortality.

P69**Cytomegalovirus Polyradiculopathy After Kidney Transplantation: A Case Report**

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Purpose of Study: Neurologic complications are rare after kidney transplantation. There have few reports of CMV polyradiculopathy in renal transplant recipients. Here we present a case of active CMV infection inducing polyradiculopathy in a 49-year-old renal transplant recipient with favorable outcome.

Materials and Methods: A 49-year-old patient followed in our nephrology department.

Results: A 49-year-old man, known to have chronic kidney failure secondary to interstitial nephropathy on hemodialysis since 1993. He received a living kidney transplant in 1995. Both donor and recipient were positive for CMV. Immunosuppression consists of a quadruple immunosuppressive regimen: induction with methylprednisolone and anti-lymphocyte serum and maintenance therapy with prednisone, azathioprine and ciclosporin. The post-operative follow up was uneventful and creatinine at discharge was at 130 µmol/l.

Fifteen years later the patient was admitted for general condition worsening with motor impairment. Clinical examination showed abolition of reflexes at lower limbs and amyotrophy. Standing and walking were impossible.

Sensor examinations were normal and his cranial nerves were intact. Serology for hepatitis B, C, VIH, atypical germs and herpes simplex virus were negative. The electromyogram revealed a severe sensory motoneuron demyelinating polyneuropathy predominating in the two lower limbs. CMV antigenemia was positive at 120 cells. Lumbar puncture showed 1 white cell, albuminuria at 0.4g/l and the presence of CMV- Ig M. PCR in cerebrospinal fluid was positive for CMV.

The diagnosis of CMV polyradiculoneuropathy was probable and we instated treatment with ganciclovir combined with polyvalent immunoglobulins 2 g/kg in loading dose and a maintenance dose of 1g/kg every three weeks for a course of 24 weeks. At follow up, the patient resumed motricity and walking slowly.

Conclusion: Cytomegalovirus (CMV) polyradiculoneuropathy is a rare complication after kidney transplantation. Due to the risk of morbidity and mortality, clinicians should be aware in cases of symmetric progressive polyneuropathy affecting lower limbs.

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HLA Class I and ABO Polymorphism in Hemodialysis and Renal Transplant Patients with Covid-19

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Purpose of Study: COVID-19 is an infectious disease caused by SARS-CoV2. The clinical picture varies from asymptomatic forms to the most severe forms. A particular genetic terrain could explain this diversity such as the HLA system and the ABO system.

The objective of this work is to study the distribution of HLA and ABO molecules in chronic hemodialysis and

renal transplanted patients who have presented a symptomatic form of COVID-19.

Materials and Methods: Our study population involved 29 patients infected with SARS-CoV2 (population 1: P1); 14 of them are chronic hemodialysis patients and 15 are renal transplant patients followed in our nephrology department. Our control population was formed by a 1st group of 60 chronic hemodialysis subjects (population 2: P2) and a 2nd group of 123 unrelated healthy subjects (population 3: P3).

Results: The blood group distribution in P1 was 27.5% for "O", 48.2% for "A", 14% for "B" and 10.3% for "AB". Comparing this distribution with that of our control population (P2) (45% for "O"; 25% for "A"; 20% for "B" and 10% for "AB"), a significant difference was noted ($p=0.001$).

When comparing our population P1 with the control group P2, a positive association with HLA-A24 antigen was reported (20.69% VS 3.33%; $p=0.02$; OR=7.57). When comparing our population P1 with the 2nd control group P3, no association was noted.

Concerning the haplotype study, we noted an association of the haplotype HLA-A2, B44 with COVID-19(+) patients P1 compared to P2 and to P3 (24% VS 6%; $p=0.05$ and 24% VS 3%; $p<0.01$ respectively).

Conclusion: We report a positive association of the haplotype HLA-A2, B44; especially HLA-A24 antigen with the symptomatic form of SARS-CoV2. A higher frequency of blood group "A" has been noted in our COVID-19 (+) patients and more particularly those who have presented a severe form.

P71**Short-Term Post-Renal Transplantation Cardiovascular Events: A Tertiary Care Center Experience**

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Background: Cardiovascular events continue to be a major cause of morbidity and mortality post-renal transplantation, especially in Saudi Arabia. Although literature related to long-term cardiovascular events is available, not many studies focus on short-term cardiovascular outcomes. The current study aimed to assess the short-term cardiovascular events and their predictors following renal transplantation.

Materials and Methods: The study design was retrospective and cross-sectional, targeting all patients aged 14 years and older, who had a renal transplantation at King Abdulaziz Medical City from January 1, 2016 to March 31, 2020. Data related to demographic information, transplantation details, and post-transplantation cardiac events were obtained. The follow-up period was one year after the transplantation. The main endpoint was a new cardiovascular disease diagnosis.

Results: In total, 344 patients were enrolled. Of 33 (9.9%) cardiology consultations, 23 (6.6%) new diagnoses were made. The most common diagnosis was arrhythmia (1.2%). Male gender ($p = 0.043$), age ($p = 0.015$), B- blood type ($p = 0.014$), anemia ($p = 0.031$), diabetes mellitus (DM) ($p = 0.002$), dyslipidemia ($p = 0.009$), hypertension ($p = 0.002$), a history of coronary artery disease ($p = 0.037$), and DM as an index cause of renal failure ($p = 0.001$) were identified as the associated predictors.

Conclusion: Cardiovascular events following a renal transplantation remain a complex issue, influenced by more than the known baseline risk factors. Investigating the identified predictors could support larger multicenter studies. The development of screening strategies to identify high-risk individuals will contribute to effective management strategies, and the appropriate treatment strategy to improve health outcomes.

P72**Genitourinary Cancers Following Kidney Transplant: Our 20 Years of Experience with Mammalian Target of Rapamycin Inhibitors**

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Purpose: The aim of this study to investigate patients with genitourinary cancer after kidney transplant and the effects of immunosuppression reduction and switching to a mammalian target of rapamycin inhibitor drugs.

Materials and Methods: Kidney transplant recipients were evaluated retrospectively from patient medical records (between January 2000 and January 2020). Patients with less than 1 year of follow-up were excluded from the study.

Results: Of the 827 patients, genitourinary cancer was detected in 11 (1.3%) subjects, 5(45%) had renal cell carcinoma (2 of them transplant kidney-associated renal cell carcinoma), 5 had (45%) prostate cancer and 1(9%) had transitional cell carcinoma of bladder. Radical surgery was performed in all cases. Two patients had bone metastasis due to prostate cancer at the diagnosis. Two patients were treated with renal allograft nephrectomy due to de novo renal cell carcinoma. The mean follow-up was 97 ± 45 (26-189) months, the mean age 50 ± 10.2 and 19% were female. At cancer diagnosis, the mean glomerular filtration rate(GFR) was 52 ± 26 ml/min/1.72m² and proteinuria was 218 ± 233 mg/d. Immunosuppression regimen was changed in 8 patients (72%), with new regimen being double-drug in 6 patients, and triple-drug protocol in 3 patients. Seven patients were switched to a mammalian target of rapamycin inhibitor-based double (4 patients) or triple (3 patients) regimen. 6 of them were switched from tacrolimus. During follow-up after starting new tre-

atment (average 38 ± 40 mo), patients had no progressive kidney failure or rejection. At the last control, the mean GFR was 62.8 ± 34 and there was no significant difference when compared with cancer diagnosis time. There was no local recurrence of primary tumor, and newly developing metastasis during follow-up. Three patients died of malignancy unrelated reasons (ileus, uroseptic shock and heart failure).

Conclusion: Mammalian target of rapamycin inhibitor-based drugs can be considered as an important maintenance immunosuppressive treatment option for kidney transplant recipients with genitourinary cancer cancers.

P73

The Outcomes of Six Human Leukocyte Antigen-Mismatched Living Donor Kidney Transplantation: A Single Center Study

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Purpose: In this study, we evaluated outcomes of six human leukocyte antigen(HLA)-mismatched(MM) living donor kidney transplantations (LDKT).

Materials and Methods: Kidney transplant recipients were evaluated retrospectively from patient medical records (between January 2010 and March 2020). The participants were divided into three groups (Group A: Six HLA-MM LDKT, Group B: zero to five HLA-MM LDKT, Group C: Deceased donor kidney transplantation). Patients with less than 1 year of follow-up were excluded from the study. The presence of positive complement dependent cytotoxicity(CDC) crossmatch had been considered as a contraindication to kidney transplantation.

Results: A total of 426 cases, 15 in Group A, 176 in Group

B, 245 in Group C, were included in the study. The mean follow-up was 56 ± 31 (12-132) months, the mean age was 43 ± 11 (18-71) years and 37% were female. There was no significant difference between the Group A, B and C in terms of graft loss (0%, 4%, 7.7%, $p=0.16$), last control mean glomerular filtration rate(GFR) (60.7 ± 15 , 58 ± 19 , 55.2 ± 23 mL/min/1.72 m², $p=0.33$) and mortality (1%, 3%, 8%, $p=0.73$). During the follow-up, neither hyper acute nor accelerated acute rejection was observed. Group A had higher rates of acute rejection episodes (46% vs 25%, 21%, $p=0.07$). Also Kaplan meier analysis showed that the rejection rates were significantly higher in Group A($p=0.02$). (Figure 1). However, in this group, patients with rejection had no graft loss or mortality at the last control.

Conclusion: The presence of six HLA-MM may be associated with higher rates of biopsy-proven acute rejection. However, the mortality and graft survival is comparable with other groups.

P74

Crystal Nephropathy: Study of A Series of 7 Cases

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Introduction: Crystal nephropathy is a deposit of crystals in the renal parenchyma leading in most cases to renal failure.

Purpose: Describe the characteristics of this nephropathy and its etiologies in our population.

Materials and Methods: This is a retrospective study of 7 patients with crystal nephropathy diagnosed by a kidney biopsy (KB).

Results: Our study included 7 patients, 4 men and 3 women. The average age was 34.71 years (16 to 50 years). Five of our patients were kidney transplant recipients.

In the transplanted population, the initial nephropathy was unknown in 3 cases, chronic interstitial nephropathy

in one case and membranous glomerulonephritis in one case. The mean duration of dialysis before kidney transplant was 32.8 months with a preemptive kidney transplant in one case.

Renal graft biopsy demonstrated deposition of birefringent calcium oxalate crystals in polarized light in all patients with acute tubular necrosis (ATN) lesions in one case, tubular atrophy in one case and interstitial fibrosis with severe atrophy and calcineurin -inhibitor toxicity in one case.

KB in the 2 non-transplanted patients demonstrated deposition of birefringent calcium oxalate crystals in polarized light with ATN lesions and interstitial edema in one patient.

The causes were primary oxalosis in 3 transplant recipients, secondary oxalosis due to vitamin C abuse in another transplant patient, repeated intake of third-generation cephalosporin and ciprofloxacin intake in 2 non-transplanted patients. The outcome was unfavorable in 6 patients: a return to dialysis in 4 transplanted patients, chronic renal failure with an estimated GFR of 20 ml / min in a transplanted patient and non-recovery of renal function with definitive dialysis in a non-transplanted patient. The outcome was spontaneously favorable in one patient.

Conclusion: The causes of crystal nephropathy are varied. Early identification, systematic examination in polarized light, and treatment are important in preventing graft loss.

P75

Erythema Nodosum Due to Sirolimus in A Kidney Transplant Recipient: Case Report and A Review of Literature

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Purpose of Study: Erythema nodosum (EN) is a panniculitide. The process may be associated with a wide variety of diseases and it may be drug-induced. There are few reports of EN due to mTOR inhibitors. We report the first case of EN in a transplant patient due to sirolimus.

Materials and Methods: A 35 year-old female patient regularly followed in our nephrology department.

Result: A 35-year-old female with a history of ovarian germ cell tumor, in remission for 7 years, was suffering from ESRD. In 2005, she received a kidney allograft at the age of 19 from a related donor. Her immunosuppressive medication included sirolimus, mycophenolate mofetil and corticoids after induction. She underwent a smooth post-operative course with normal graft function. In 2009, the patient developed painful erythematous lesions on the anterior aspect of both lower limbs, which clinically were classic for EN. Rheumatologic disorders were ruled out. HBs Ag, anti HCV, anti-CMV, anti-HIV, and anti-EBV antibodies were all negative. Stool analysis was also negative. Serological tests for fungi, mycoplasma, and brucella were negative. Skin biopsy revealed peri-venular subcutaneous lymphocyte infiltration. No cause was found and the patient was put on colchicin. The skin lesions persisted for years and extended to all four limbs despite treatment and thorough investigation. Finally, sirolimus was suspected and switched to cyclosporine. The discontinuation of sirolimus was associated with marked improvement of skin lesions within a few weeks. The disappearance of her skin findings within after stopping sirolimus further supported this suspicion. She is now clinically stable and has a stable graft function at 125 µmol/L.

Conclusion: Sirolimus has been shown to improve long term graft survival in many calcineurin inhibitor avoidance protocols and to prevent neoplasia. However, reports of drug-related side effects are increasing. mTORs may present with a wide spectrum of cutaneous findings. Thus, careful follow up to identify and manage cutaneous side effects of sirolimus is essential to limit associated morbidity.

P76

Urolithiasis and Its Impact on Transplanted Patients

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Introduction: Urolithiasis in a kidney transplanted patient is an uncommon but complex urological complication. Its potential severity comes from its occurrence on a solitary kidney and on a field of immunosuppression.

Materials and Methods: A retrospective study was performed. We included kidney transplanted patients between November 2002 and November 2019 and presenting lithiasis during their follow-up. Clinical, biological and radiological data were collected as well as lithiasis disease related data. The management of and patient's evolution were also specified.

Results: Seven of 416 kidney transplanted patients developed lithiasis during their follow-up with an incidence of 1.6 %. The mean age at lithiasis diagnosis was 36.5 years [24-55 years], the sex ratio was 1.3. They developed stones after mean follow-up of 67 months [4-168 months]. The stones' size varied from 2 to 18mm. Treatment was alkalinisation in 3 cases, extracorporeal lithotripsy in 2 cases, a double J stent in 3 cases and pyelolithotomy in 2 cases. Four patients had multiple treatments. Three patients had 1 residual stone during evolution (7mm average diameter), 1 microlithiasis, 1 lost to follow-up after treatment and only 2 (out of 7) were "stone free". One patient developed obstructive acute renal failure with recourse to two hemodialysis sessions. The aggravation of graft function occurred in 2 other patients without the need

for extra-renal purification. But, lithiasis didn't damage the graft survival after a median follow-up of 62 months' post-treatment.

Conclusion: Urolithiasis in the kidney transplanted patient requires an adapted multidisciplinary management. The lack of suggestive Symptoms is due to the absence of innervation of the kidney graft. The risk of graft loss requires careful screening to detect urolithiasis in time before the onset of complications. Its management remains a challenge for both the nephrologist and urologist.

P77

Pregnancy After Renal Transplantation

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Algeria

Kidney transplantation has improved the quality and the life expectancy of patients with end stage renal disease or on dialysis. These find a cycle almost normal ovarian after kidney transplantation and have an infertility rate equivalent to that of the general population

Patients and Methods: 20 pregnancies from renal transplant recipients were analysed and long-term outcome of the renal graft was studied. We analyzed the outcomes from clinical and biological data before, during and after pregnancy.

Results: Mean patient age was 35.3 ± 3 years and mean-time between transplantation and the onset of pregnancy was 56.4 ± 31.5 months.

There was no significant difference between the biological data before and after pregnancy. We did not observe any acute rejection. The mean maternal complications were preeclampsia in 30%, low birth weight in 29%, prematurity in 44% and cesarean sections in 57%. There is no impact of the pregnancy on the renal graft during the follow-up (3 years). The follow-up revealed 2 cases of chronic rejection.

P78

Identifying The Specific Causes of Kidney Allograft Loss: A Population-Based Study

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Introduction: Results of kidney transplantation have been improving but long-term allograft survival remains disappointing. The objective of the present study was to identify the specific causes of renal allograft loss, to assess their incidence and long-term outcomes.

Materials and Methods: A total of 453 patients transplanted between 2014 and 2021 in the first Algerian center for kidney transplantation from living donor, were retrospectively included. we analyzed Donor and recipient clinical and biological parameters as well as anti-HLA antibody directed against the donor were included. The main outcome was the long-term kidney allograft survival, including the study of the associated causes of graft loss, the delay of graft loss according to their causes and the determinants of graft loss.

Results: There were 39 graft losses during the follow-up period (median time: 4.51 years) with an identified cause in 97.08 %. Kidney allograft survival at 7 years' post-transplant was 88 %. The causes of allograft loss were: antibody-mediated rejection (45 %), medical intercurrent disease (22.2 %), recurrence of primary renal disease (10.8 %), BK- or CMV-associated nephropathy (12.78 %), and calcineurin inhibitor nephrotoxicity (9.5 %). indetermined (2.92%)

Conclusion: The main causes of allograft loss were antibody-mediated rejection and thrombosis. These results encourage efforts to prevent and detect these complications earlier in order to improve allograft survival.

P79

Use of Peripheral Insertion Central Venous Catheter in Kidney Transplant Patients: An Alternative

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Kidney transplantation continues to be the treatment of choice in patients with end-stage chronic kidney disease. Unfortunately, the majority of patients in the adult population have coexisting diseases. anemia, platelet dysfunction and changes in the cardiovascular system are not the exception in the evolution of the disease. This group of patients has an increased risk of intraoperative and postoperative complications associated with the general conditions of their body and others with the surgical procedure. For this reason, adequate control of fluids and electrolytes under adequate monitoring and hemodynamic support is essential, optimizing the patient's vital signs and improving the ideal conditions of the implant to guarantee proper functioning. A series of 18 cases of kidney transplant patients with peripheral insertion central venous catheter (PICC) was performed; of which no major complications associated with their placement and use during surgery were reported. In 4 patients, technical difficulty was found for insertion of the catheter, achieving its installation in the contralateral arm. no infections associated with the puncture site were found. Only 2 patients had catheter dysfunction in the postoperative period associated with the lack of heparinization of their ports in hospitalization. Due to its low rate of complications and easy use, the PICC catheter can be an alternative in patients with kidney disease who represent a challenge due to the complexity of their vascular accesses.

P80

The Outcome of Plasma Cell-Rich Acute Rejection in Kidney Transplantation, Is It Really Poor?

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Purpose of Study: The outcome of Plasma cell-rich acute rejection (PCAR) in kidney transplant is reported to be poor. It can be associated with any type of rejection. However, it may not be considered as independent morphological prognostic feature. Different treatment modalities were prescribed with variable responses.

Materials and Methods: We report here five cases of PCAR out of 1920 kidney transplant recipients under follow up in our center from 1996 till 2020. We describe their presentations, type of rejection, associated conditions, treatment protocol and management outcome.

Results: The five patients, aged 28 to 54 years, had live donor renal transplant. Three of them were females. Two had high PRA, one received paired kidney exchange donor and one was positive for HBsAg but aviremic. Induction immunosuppression was basiliximab in one and only solumedrol in the others. They all received triple immunosuppression with prednisolone, mycophenolate and calcineurin inhibitor and had immediate graft function. Rejection happened between 23 to 180 months' post-transplant. Three patients had acute T-cell mediated rejections (Banff 1A), two with features consistent with early membranous nephropathy and one with suspicious antibody mediated rejection (AMR). One patient had acute T-cell mediated rejection (Banff 1B) and the fifth one had borderline T-cell mediated rejection with morphological changes suggestive of chronic active AMR. Plasma cells constituted 20 to 40% of the interstitial infiltration. All patients received solumedrol pulse. AMR was treated with additional plasma exchange and IVIG plus rituximab except for the patient with positive HBsAg. Thymoglobulin was given for the mixed rejection. Both patients with features of membranous nephropathy received rituximab and one of them had additionally IVIG. Four patients responded well to treatment and the mean improvement in eGFR was 12.8%, 24.9%, 40.3%

and 39.1% at 1-, 3-, 6- and 12-months post treatment. One patient lost her graft after 4 months despite initial improvement. Repeat kidney biopsy at 3 to 12 weeks post treatment showed resolution of plasma cell infiltration in all patients.

Conclusion: Outcome of PCAR management was favorable among our patients despite different types of rejection and different associated conditions.

P81

The Effect of Living Donor Renal Volume On the Kidney Recipient's Graft Function

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Materials and Methods: Retrospective analysis of Living donor kidney transplant (LDKT) between January 2017-December 2018. Donor and recipient were studied as pairs. We study (LDKT) volume through 3D CT-angiography images, age, gender, serum creatinine (SCr), kidney function using the Chronic Kidney Disease Epidemiology Collaboration formula. (CKD-EPIcr). Recipients: BMI, HLA mismatch, time on dialysis, cold ischemic time(CIT), delay graft function (DGF). Graft function was assessed with SCr and (CKD-EPI cr) at 3, 12 and 24 months.

Statistical analysis was performed by Bivariate and multivariate analysis using the R standard software.

Results: 56 donor-recipient pairs were included. Donors: mean age 51.4 years (range 33-74), gender: 51.8 % female, kidney volume: 164.4 ± 37.6 cm³, SCr 0.8 ± 0.2 mg%, CKD-EPIcr 96.4 ± 14.2 ml/min/1.73m². Recipients age 45 years (range 20-72), gender: male 54%. SCr and CKDEPI cr, were 1.49 ± 0.46 mg% and 55.6 ± 17.3 ml/min/1.73m² at 3 months' post-transplant, and 1.72 ± 0.66 mg% and 48.8 ± 19.2 ml/min/1.73m² at 12 months' post-transplant. In multivariate analysis, graft volume correlated with SCr at 3 months: adjusted-r² 0.196 (p<0.01) and CKD-EPIcr at 12 months: adjusted-r² .0073 (p= 0.026).

Conclusion: In our population of LDKT recipients, parenchymal graft volume was positively correlated with recipient kidney function (CKD-EPI cr) at 12 months post-transplant.

P82

Covid-19 Infections in Pediatric Renal Transplant Recipients

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The novel Coronavirus SARS-CoV-2 (COVID-19) first appeared in Turkey in March 2020, it spread rapidly and caused about 50 thousand deaths. Our understanding of the course and consequences of COVID-19 infection in kidney transplant recipients using long-term immunosuppressive medications is insufficient. While COVID-19 is mostly a respiratory illness, in some instances, it can induce renal and multi-organ failure. It is uncertain how vulnerable immuno-compromised hosts are to severe systemic illness.

We present 14 cases of COVID-19 infection from 215 pediatric patients with kidney transplantation. The average age of the patients was 14.6 (range 4-19), with 6 of them were female. The mean follow-up time after transplantation was 68.7 (range 6-148) months. In 9 patients (64%), fever was the most frequent symptom. Six patients (43%) had mild respiratory symptoms such as cough, chest pain and loss of smell. Our 3 patients (21%) were in need of hospitalization. One of them was diagnosed with COVID-19 infection one week after being treated with plasmapheresis, IVIG and rituximab for acute antibody-mediated rejection. That patient developed significant lung disease and multi-organ failure. The second patient was a 5-year-old male who was admitted to the hospital due to diarrhea and required fluid replacement. The third hospitalized patient developed pneumonia but did not require intubation and recovered fully with antibiotic, antiviral and supportive therapy. The majority of our patients (79%) had minor symptoms and recovered completely

after receiving supportive treatment. Despite the fact that 19 of the patients were in close contact for COVID-19, the transmission could not be demonstrated by PCR test, and the patients did not exhibit any symptoms.

According to our experience, COVID-19 is generally overcome with mild symptoms in pediatric renal transplant patients. We believe that as information sharing increases, we will learn more about COVID-19 in renal transplant recipients.

P83

Donor Hepatectomy for Living Related Liver Transplantation

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Background: Donor hepatectomy for living liver transplantation is widely used, especially in countries with a poor brain death donor pool.

Materials and Methods: A total of 67 donor hepatectomies have been performed at Gazi University Transplantation Center since 2006. All data were collected retrospectively from hospital charts. The first step in donor evaluation is whole blood tests, viral load, blood group analysis. Later, all donors evaluate the transplantation surgery, gastroenterology, pulmonary, cardiology and psychiatric teams. Then, MR cholangiography(MRC) is performed with 3D celiac CT angiography to evaluate the hepatic vascular and biliary tree anatomy. If MRC is not satisfactory, intraoperative cholangiography was performed.

Results: Of the 67 donors, 43 were female and 24 were male subject. Among 67, there were first degree 38, second degree 25, third degree 2 and fourth degree 2 were identified. The mean age of the donor was 33.6 ± 7.5 years (range 21-52 years). The mean BMI of the donor was 27.2 ± 1.9 (median 27). Donor hepatectomy was performed in 27 donors as right lobectomy, in 29 donors as left lobectomy, and in 13 donors as left lateral(LL) lobectomy. The mean liver volume for right hepatectomy was $33.8 \pm 4\%$ (median 35%) and the right lobe median graft-re-

recipient body weight ratio 1.7%(0.9-1.5%) and mean intraoperative blood transfusion 1.2 ± 1.4 U (0- 10). The duration of the stay of the donors in the median was 9 days (6-28). Early surgical complication (bleeding) was detected in only one patient in the grade III Clavien system. This patient was immediately re-explored. It was a LL lobectomy and bleeding was originating from left gastric artery(LGA) stump (LL's artery was originating from LGA). After uneventful early postoperative follow-up, he was discharged in postoperative D7. Cholangitis was developed in two donors after surgery at PO3 and PO5. Donors received antibiotic treatment and discharged without any problem POD14, POD13 respectively. We have not seen any vascular complications after surgery in this group.

Conclusion: We believe that donor safety is the first priority for all live donor programs.

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