Tourettic OCD: Updates and Insights

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Dr. Tomczak has nothing to disclose
Dr. Katz has nothing to disclose
OVERVIEW

- Background
- The unique symptomatology of Tourettic OCD
- Neurocircuitry
- Genetics
- Exacerbating factors:
  - Infectious/Inflammatory processes
  - Perinatal complications
  - Psychosocial stress
- Treatment
- Psychoeducation
- TOCD: a unique endophenotype
First described in the literature in 2005 (Mansueto et. al)
Not currently recognized in DSM-V
"Tic-related" OCD

Mounting evidence of a distinct intermediate neuropsychiatric disorder distinct from either OCD or TS

Under-recognized entity with few focused studies

Extrapolation from studies of tic-related OCD and/or co-morbid tics and OCD
**SYMPTOM PRESENTATION**

**OCD**
Triggered by distressing anxious thoughts (obsessions)
Voluntary, Repetitive rituals intended to alleviate anxiety, typically multi-step behaviors

**TOCD**
Triggered by premonitory urges/somatic sensations
Involuntary, Sudden stereotyped, movements typically one body area

**Tic Disorder**
Somatic urge often with cognition of needing to be “just so”
Repetitive complex movements often with several steps including tapping, arranging, repetitions

Contamination obsessions with cleaning compulsions
Hoarding
Symmetry obsessions with ordering compulsions

1st. tic/sensory urge
2nd. tic/sensory urge
3rd. tic/sensory urge
4th. similar movement, carried out due to a dislike of odd numbers (OCD)
Specific Symptoms of TOCD

- Age of onset 7-13 (between OCD and TS)
- Complex multi-step behaviors
- Rituals preceded by uncomfortable sensation, *not* intrusive anxious thoughts “Just so”
- No “bad” outcome if ritual not completed, but feeling of discomfort persists
The Cortico-Striatal Cortical Circuit (CSTC) is involved in both OCD and Tics.

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Jahanshahi et al, 2015
Nature Reviews Neuroscience
GENETICS

● Tourette syndrome - 70-80% heritability

● Tourette Syndrome Association International Consortium for Genetics (TSAICG) identified numerous genetic mutations in the dopaminergic, serotonergic and glutamatergic pathways of families with Tourette Syndrome.

● Multiple Genome wide association study (GWAS) did not identify specific significant SNPs but the top variants were in genes regulating expression and methylation of genes in the frontostriatal circuitry

● TIC GENETICS WES found histaminergic pathway genes were highly enriched. Histamine is involved in inflammation, and smooth muscle tone
• OCD heritability 37% in adults with OCD and 43% in childhood onset OCD

• The age of onset linked to familial genetic loading

• Pediatric OCD - two-fold higher risk of having first degree relative

• Tics and OCD share some genetic blueprint

• Monozygotic twin show only 50% concordance rates in tic-related OCD

• TOCD genetics still unknown
• Danish OCD and Tic Study:
  - > 1 million children aged birth - 17
  - documented history of infections
  - streptococcal and non-streptococcal
  - increased risk of both tic and OCD symptoms

  *Not always recapitulated in the literature*

• European Multicentre Tics in Children Study (EMTICS)
  - 259 children aged 3-10
  - first degree relative with tics but no personal history
  - no correlation with prior GAS infection
In predisposed individuals, immune response cross reacts with the brain.

> particular association with receptors in the basal ganglia.
INFECTIOUS OR INFLAMMATORY PROCESSES

- Pediatric Autoimmune Disease Associated with Streptococcus (PANDAS)

- Autoimmune encephalitis, triggered by strep infection (Group A strep), which can result in neuropsychiatric symptoms

- *Acute* onset tic or OCD symptoms among other symptoms

- Some controversy in the literature - a valid entity though may be over-prescribed/ascribed
PERINATAL COMPLICATIONS

- Geller et al., 2008
  - induction, use of forceps, prolonged labor, conversion to C-section
    - earlier age of onset
    - symptom severity
    - increased incidence of co-morbid tics and OCD (TOCD?)

- Tourette International Collaborative Genetics Study, 2016
  - 586 patients with chronic tic disorders, 527 healthy controls
  → Pre and perinatal complications increase incidence of CTD and OCD
    - premature birth
    - severe hyperemesis gravidarum
    - problems during delivery
      - prenatal complications - CTD
      - inter-natal and post-natal - OCD
PSYCHOSOCIAL STRESS

- Linked to CTD and OCD incidence and symptom severity, suggesting link to TOCD as well
- Exemplified during COVID-19 pandemic

J Med Internet Res. 2020 Sep; 22(9): e21915.
• Common first line medications
• More treatment refractory than OCD or TS alone
If working, continue current regimen for 12-18 months
- Lab monitoring: HbA1c, lipid panel, prolactin, CBC
BEHAVIORAL THERAPY FOR TOCD

- **OCD therapies**: Cognitive Behavioral Therapy (CBT) and Exposure Response Prevention Therapy (ERP)
- **Tic therapies**: Comprehensive Behavioral Intervention for Tics (CBIT)

Focus on decreasing anxious-somatic distress through CBT or ERP in addition to targeting tics with behavioral interventions using CBIT techniques.
With CBT and ERP target unhelpful thinking causing anxiety that triggers tics

Implement CBIT techniques with a competing behavior in response to the urge to tic, which over time will lessen the premonitory urge

"Thriving with OCD" By Payton Burns
SPECIAL CONSIDERATIONS FOR PARENTS

- Children with TOCD can feel intense physical discomfort if unable perform their impulsions

- They be irritable and easily frustrated - negative impact on family dynamics

- In order to perform “just right” behaviors they often involve other family members, especially mothers to participate in the sequence of behaviors and rituals
PARENT INVOLVEMENT

- Parents may unintentionally accommodate TOCD behaviors
- Parents might knowingly capitulate to TOCD behaviors in order to avoid frustrations or tantrums
- Parental anxiety is often projected on children with TOCD
- Avoid positive-reinforcement!
GENERAL POINTS FOR PATIENTS AND PARENTS

- healthy diet
- sleep-wake cycle
- do not overschedule
- limit screen time
- encourage physical activity, e.g. soccer, long-distance running, swimming can help decrease anxiety and indirectly OCD and tics
TREATMENT OF TOCD

• Engagement in behavioral therapy involves time, patience, and resources (CBT or ERP + CBIT)
• CBT and ERP focus on distress tolerance rather than fear or anxiety
• Relaxation techniques and substitution training such as habit reversal therapy (HRT) are helpful
• Multiple medication trials, and side effects are possible

○ Parents are essential to treatment
SCHOOL IMPLICATIONS

• Interference with academic functioning and disciplinary action
• Academic accommodations such as 504 plan or Individualized Educational Plan (IEP)
• Communication with teachers and school psychologists should focus on emotional support, mitigation of social anxiety, and bullying prevention
SCHOOL AND LIFE IMPLICATIONS:
• Complexity of symptoms can impede social, emotional, and academic development
### UNIQUE ENDOPHENOTYPE

<table>
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<th>Tourette</th>
<th>with mild OCD</th>
<th>TOCD</th>
<th>with mild tics</th>
<th>OCD</th>
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<tbody>
<tr>
<td>Anxious obsessions/ &quot;just so phenomenon&quot;</td>
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<tr>
<td>Somatically driven urges</td>
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<td>Externalizing (impulsions or compulsions)</td>
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<td>Vocal and/or motor tics</td>
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<td>Tendency to be treatment refractory</td>
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UNIQUE ENDOPHENOTYPE

Conelea et al., JAACAP, October 2014
UNIQUE ENDOPHENOTYPE

Conelea et. al, JAACAP, October 2014
• Overlapping TS and OCD genetics and neurocircuitry

• Currently unknown why some patients develop tics vs OCD vs TOCD

• Epigenetic and Environmental factors clearly play a role

• May determine varying presentations
  - dietary habits
  - gut microbiome composition
  - physical exercise
  - allergens
  - environmental stressors
  - family conditioning
  - access and initiation of treatment
● TOCD is a unique endophenotype but often hard to diagnose

● The symptoms are a moving target which is a challenge

● TOCD diagnostic and developmental continuum

● TOCD is often treatment refractory thus may represent the end of the spectrum

● More research is needed to better understand this subgroup of patients
QUESTIONS?

THANK YOU!

Please feel free to ask us questions