Untangling OCD and Tics:
Overview of Tic-related OCD

Erica Greenberg, MD
Director, Pediatric Psychiatry OCD and Tic Disorders Program
Massachusetts General Hospital
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Discussion of off-label & investigational use:

Yes X  No __
Outline

• Overview of tics and Tourette syndrome (TS)
  • Comparing/contrasting tics and compulsions
• Overview of “Tourettic OCD”
• Broad treatment Implications
What are tics?

- Sudden, recurrent, non-rhythmic, abrupt movements and/or sounds
  - "Unvoluntary"
- Wax and wane over time, come in bouts
- They “jump”
  - Change location, number, frequency, type, complexity, severity
- Modifying factors
- Often preceded by a “premonitory urge” / itch / tension
  - Somatic, sensory, feeling that precede tics
  - Feeling of “not just right” or “incompleteness”
  - Temporarily relieved by performing the tic

Mills et al., 2014
Hallett 2015
Motor

• Simple
  • Eye blinks
  • Nose twitches
  • Grimaces
  • Shoulder shrugs
  • Head, arm or leg jerks

• Complex
  • Coordinated movements of multiple muscle groups
  • May appear slower and “purposeful”
  • Complex Gestures/Postures
  • Echopraxia (mimicking others)
  • Poking/pinching/punching
  • Touching/tapping/rubbing

Phonic/Vocal

• Simple
  • Sniffing
  • Coughing
  • Throat clearing
  • Grunting
  • Barking/animal sounds

• Complex
  • Complex utterances
  • Syllables
  • Words
  • Phrases
  • Echolalia (repeating others)
  • Palilalia (repeating oneself)
  • Coprolalia ~15%!!
Tics can be confused with:

- Stereotypies: e.g. hand-flapping, spinning, rocking
- Medical conditions: allergies, visions problems, muscle injury
- Seizures
- Compulsions, impulsive behaviors, psychogenic movements
Tic Treatment Overview

- Many treatments, no cure
- FDA-approved medications:
  - Haloperidol, Pimozide, Aripiprazole
- Tiers:
  - First-tier: Alpha-agonists (clonidine, guanfacine)
  - Second-tier: Atypical antipsychotics (risperidone, aripiprazole; also ziprasidone)
  - Third-tier: Typical antipsychotics (haloperidol, pimozide, also fluphenazine)
- New potential treatments being trialed, and others (e.g. topiramate – anticonvulsant) with positive, but limited evidence
What is Tourette Syndrome?

• Childhood-onset neuropsychiatric disorder characterized by tics
  • Estimated between 0.3% and 0.9% (Scharf et al 2015)

• Criteria:
  • At least 2 motor and 1 vocal tic over the course of the illness
  • At least one year duration, though the tics can wax and wane in frequency
  • Onset before age 18
  • Not secondary to a substance or another medical condition
Other Tic Disorders

• Persistent (Chronic) Motor or Vocal Tic Disorder:
  • Same criteria as TS, but only motor OR vocal tics
  • Additional 1-2% of children

• Provisional Tic Disorder
  • Part of normal development? (~20-25% of kids)
Tourette Pathophysiology

- Dysfunction of frontocortico-striatal-thalamo-cortical (CSTC) circuits
  - Leads to disinhibition of the motor and limbic system
- Neurotransmitters in this circuit:
  - Glutamate
  - Serotonin
  - Dopamine
  - GABA

Tourette Epidemiology

- Male > Female predominance (~3.5:1)
  - 4:1 M:F for Tourette Syndrome; 2:1 for Chronic Tic Disorder
- Mean age of onset is ~5 to 7 years
- Maximum severity typically in early adolescence
- Many improve in late adolescence/early adulthood
  - Rule of Thirds: 1/3 “resolve,” 1/3 improve, 1/3 stay the same
  - ~10% of patients have persistent, disabling symptoms as adults
- High rates of co-occurring conditions
Lifetime Prevalence of Other Psychiatric Disorders in TS

- Comorbid diagnosis
  - 79%-90%
- Obsessive-compulsive disorder: 66%
- ADHD: 54.3%
- Mood: 29.8%
- Anxiety: 36.1%
- Disruptive Behavior: 29.7%

- Autism spectrum disorders: up to 23%
- Body-focused repetitive behavior disorders
  - TTM: ~4%  SPD: ~14%
- Psychotic, substance, elimination disorders
  - No different from general population

Hirschtritt et al 2015
Ganos and Martinos 2015
Greenberg et al 2017
Darrow et al 2017
4-10 Yrs. Old peak risk

Late Teens Tics Improve

Through Adulthood Co-occurring conditions persist

(Hirschtritt et al. 2015; JAMA Psychiatry)
OCD and TS

- 30-60% of TS pts meet DSM-IV criteria for OCD
  - Vs. 0.5-3.6% in general population

- ~30% of OCD pts meet DSM-IV criteria for Tics/TS
  - Vs. 2-4% in the general population

- Studies showing genetic linkage between TS and OCD since 1992 (Pauls, 1992)

Gomes de Alvarenga et al 2012
Høolgaard D et al. 2012
“Tourettic OCD”
(coined by Mansueto et al 2005)

• Group is characterized by:
  • Male, earlier OCD age of onset, worse OCD impairment, sensory difficulties, impulse disorders, ADHD, anxiety disorders, skin picking
  • Obsessions: symmetry, aggression, sexuality, religiosity
  • Compulsions: checking, touching re-writing, evening-up
  • Often have “not just right” feelings (sensory phenomena/incompleteness) driving movements and behaviors
    • If they don’t do it, they “will explode”

• Strong genetic implication – increased heritability of tic-related OCD compared to non-tic-OCD

Høolgaard D et al. 2012
Tourettic OCD Continued

• Indicators also include:
  • Sensory hypersensitivity from an early age
  • Family/personal history of tics
  • Symptoms of ADHD, learning disorders, impulsivity
  • Treatment anomalies:
    • Poor response to SSRI monotherapy / Limited response to fear-based exposures
    • Patients with OCD + tics have had less robust responses to SSRIs compared to those with OCD without tics (Pediatric OCD Treatment Study – 2004)
Comparing Tics and Compulsions

• Obsessive-compulsive disorder:
  • Obsessions: Recurrent intrusive/unwanted thoughts, urges or images that are difficult to ‘unstick,’ and lead to anxiety, disgust, distress
  • Compulsions: Behaviors, rituals (mental or physical) completed with the intention of eliminating the unwanted feeling state

• Tics:
  • Preceded by a “premonitory urge” – often somatic or sensory
    • Like an “itch” or “tension”
    • Feeling of “not just right” or “incompleteness”
  • Compulsions temporarily relieve the distress created by the obsession, tics temporarily relieve the distress caused by the premonitory urge
Contrasting Tics from Compulsions

- Ask: what is driving the behavior? Thought/anxiety or a feeling/sensation?
  - Compulsions are often performed to relieve thoughts/feelings of anxiety or disgust
  - Tics are often performed in response to unpleasant internal sensory phenomena ("premonitory urges")
  - Tapping example
  - “Ticculsions” or “Compultics”
  - Tic-like movement in response to an unwanted thought
- Very difficult to do, but has treatment implications...