Untangling OCD and Tics:

Overview of Tic-related OCD

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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?

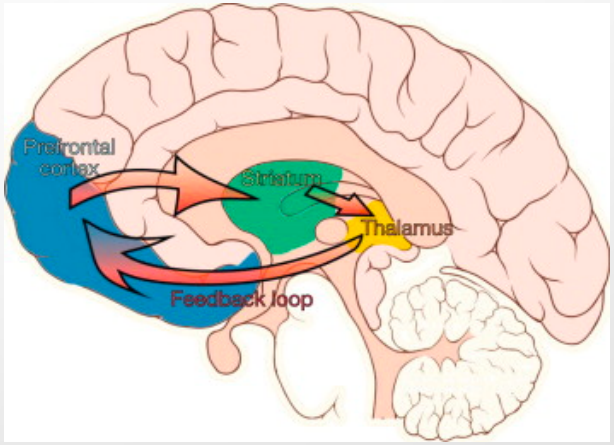
- Childhood-onset neuropsychiatric disorder characterized by tics
  - Estimated between 0.3% and 0.9% (Scharf et al 2015)
- Criteria:
  - At least **2** motor and **1** vocal tic over the course of the illness
  - At least one year duration, though the tics can wax and wane in frequency
  - Onset before 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



Beddows 2015 - http://scitechconnect.elsevier.com/neurobiology-basis-of-ocd/. Modified from original image, credits: Patrick J. Lynch and C. Carl Jaffe.

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

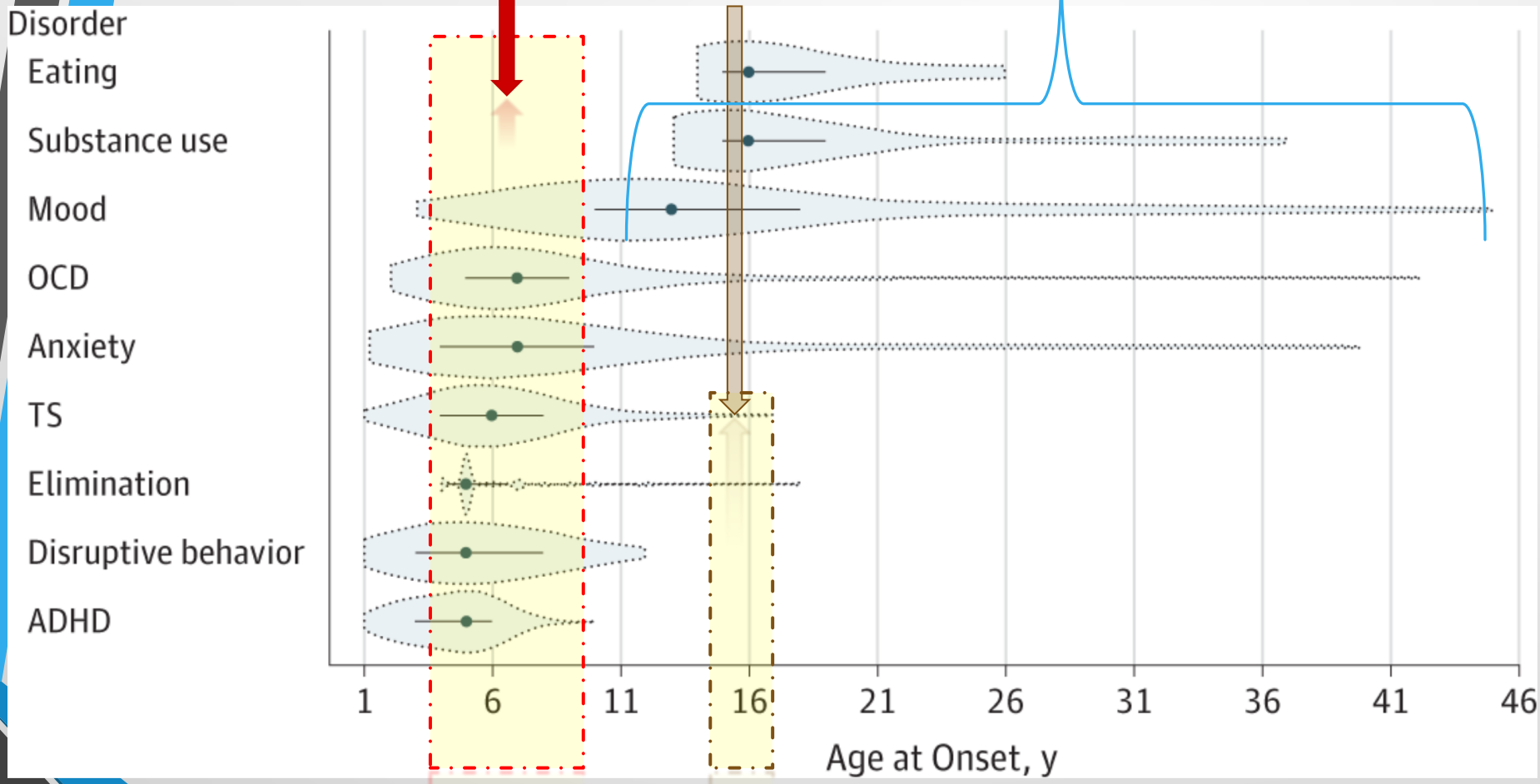
- Comorbid diagnosis
  - 79%-90%
- **Obsessive-compulsive disorder: 66%**
- ADHD: 54.3%
- Mood: 29.8%
- Anxiety: 36.1%
- Disruptive Behavior: 29.7%
- Autism spectrum disorders: up to 23%
- Body-focused repetitive behavior disorders
  - TTM: ~4% SPD: ~14%
- Psychotic, substance, elimination disorders
  - 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)

Mansueto and Keuler – from:
http://www.behaviortherapycenter.com/tourettic-ocd

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…