Tourette Syndrome
The Whole Tic and Kaboodle

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Updates in Medicine

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Tourette Syndrome
OBJECTIVES

- Common
- Disinhibition
- Distinct from Other “Movements”
- Coexisting Conditions

Tourette Syndrome
OVERVIEW

- Signs and symptoms
- Associated problems
- Management

Tourette Syndrome
KEY CLINICAL POINTS

- Not rare
- Tics usually mild
- Coexisting Conditions: The Rule
- Disinhibition: *before* > *during* > *after*
- Prioritize *Problems*

DSM-5 Diagnostic Criteria
Tourette's Disorder

Multiple Motor *plus* 1 or more Vocal

At least 1 year (may wax/wane)

Onset < 18 years

Not due to substance or medical condition

DSM-5 Diagnostic Criteria

Persistent (Chronic) M *or* V Tic Disorder

Single *or* Multiple, Motor *or* Vocal

At least 1 year (may wax/wane)

Onset < 18 years

Not due to substance or medical condition

DSM-5 Diagnostic Criteria
Provisional Tic Disorder

Single *or* Multiple, Motor *and*/*or* Vocal

Under 1 year

Onset < 18 years

Not due to substance or medical condition

Tourette Syndrome
TIC DEFINITION

- motor or phonic
- involuntary
- sudden
- rapid
- non-rhythmic
- recurrent
- stereotyped

Tics: Characteristics

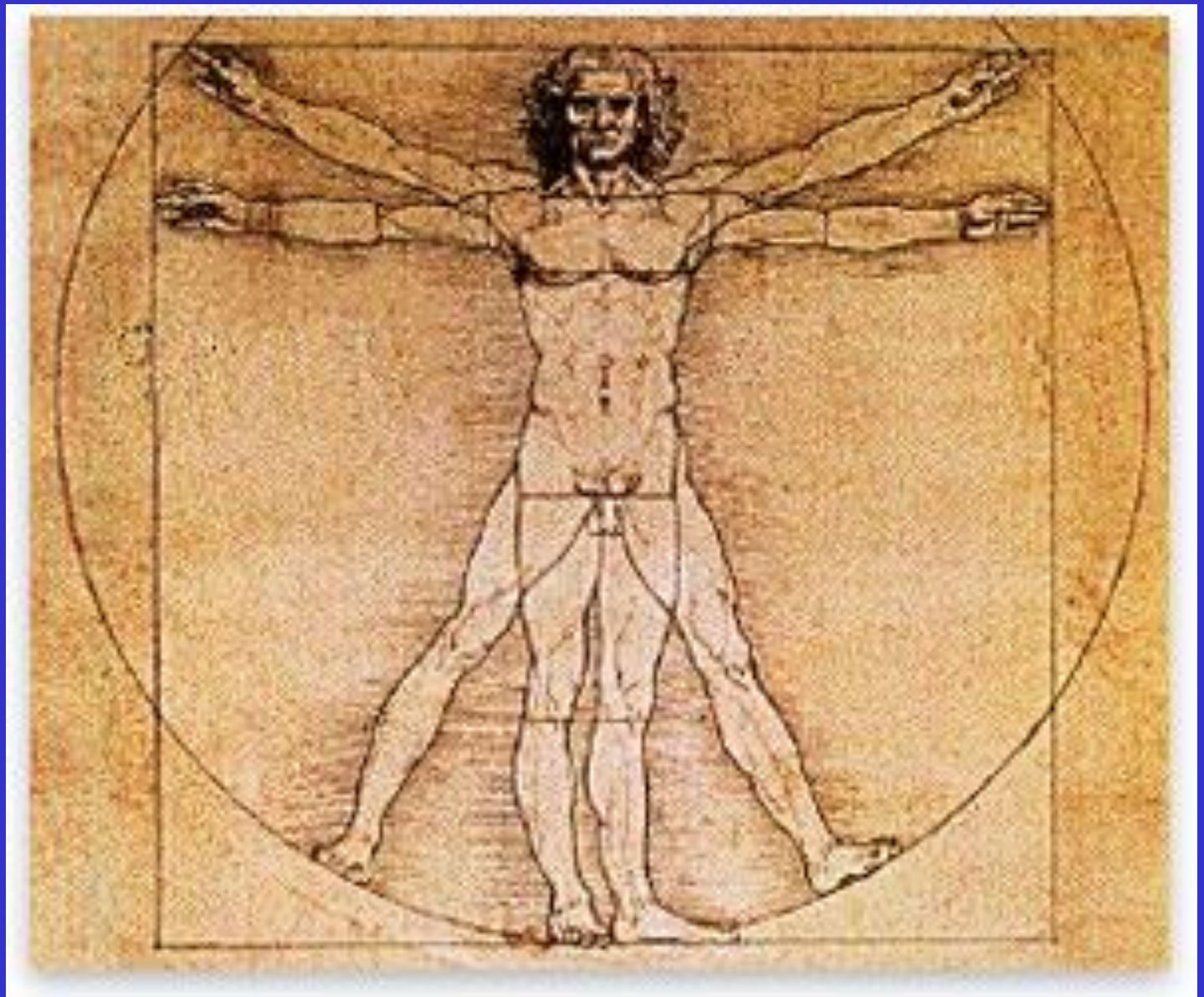
	Simple	Complex
Motor	•"Meaningless"/isolated •Facial and neck •Abdomen •Extremities	•"Purposeful" •Gestures •Dystonic postures •Self-abusive or vulgar
Phonic	•"Meaningless" •"Allergy"-like •Grunting •Tongue-clicking •Animal noises	•"Linguistic" •Syllables •Words, obscenities •Imitative ("echoic") •Speech atypicalities

.....WAXES

WANES.....

PREMONITORY URGE

Anatomic evolution of tics



Tourette Syndrome
EPIDEMIOLOGY

- **Prevalence**
  - 1% males (or more)
  - Male > Female (3-to-10 times)

Tourette Syndrome
IDENTIFICATION

- Clinical aspects of tics
- Coexisting conditions
- Emotion and behavior

Tourette Syndrome
COEXISTING CONDITIONS

KEY POINT *!*

* 90% occurrence if tics mild
* 100% occurrence if tics severe

**in clinically-referred samples*

Tourette Syndrome
PATHOPHYSIOLOGY

Disinhibition

Tics

THE EXPERIENCE

URGE → TIC → RELIEF

Tics

3 PHASES

BEFORE → DURING → AFTER

Disinhibition
3 PHASES

	BEFORE	DURING	AFTER
Tics	Urge	Tic	Relief
OCD	Thought	Compulsion	Relief
Inattention	Distraction	Redirect Attn.	Intrigue/Relief
Impulsive	Emergency	Dart	Realization
Anxiety	Threat	Protect	Safety/Relief
Rage	Disrespect	Aggression	Relief
ASD	Asynch. signals	Confusion	Varied

Tourette Syndrome
COEXISTING CONDITIONS

- Obsessions/Compulsions
- ADHD
- Anxiety & Mood
- Rage
- Social Pragmatics/ASD
- Learning Disabilities
- Neuromaturational
- Sleep
- Substance Use Disorder

Tourette Syndrome
CLINICAL COURSE

- < 7 ADHD
- 7 Simple motor tic (head)
- 8 Vocal tic
- 11 OCS + peak *tic* severity
- > 11 tics ↓ (but lifelong in 50-90%)

Tourette Syndrome
DIAGNOSTIC PITFALLS

- Unaware of tics
- Wax / Wane
- Suppressible
- Not rare
- *Usually* not catastrophic
- Few have coprolalia
- You may not see tics

Tourette Syndrome
DIFFERENTIAL (repetitive behaviors)

Neurological	Psychiatric
Sydenham chorea	Compulsions
Myoclonus	Stereotypies
Tremor	Perseverations
Dystonia	Self-injurious behavior
Athetosis	Addictive behaviors
Spasms	Habits
Dyskinesias	Mannerisms

Tourette Syndrome
DIFFERENTIAL (repetitive behaviors)

Neuro-Psychiatric

Functional Tic-Like Behaviors

- Age onset
- Sex
- Tic features
- Rx response
- Family history of CTDs
- Coexisting
- Urge
- Social Media

Amorelli et al., 2022

FTLB	Tics
Onset teenage years or older	Onset 4-7 years
More common in girls	More common in boys
Severe, explosive symptoms at onset	Can be explosive but often more gradual
Complex tics at onset (including coprophenomena)	Simple tics at onset
Movements involve body and limbs at onset	Tics start in eyes, face, or head
Inability to suppress	Can often suppress at least briefly
Severity constant or worsening over time	Severity waxes and wanes over time

Tourette Syndrome
DIFFERENTIAL (repetitive thoughts)

Psychiatric
Obsessions
Ruminations
Delusions
Perseverative thoughts
Cravings
Over-valued ideas
Flashbacks

Tourette Syndrome
MANAGEMENT: *Guidelines*

American Acad. Neurology *2019*

- Natural History
- Psychoeducation
- E/M ADHD
- E/M OCD
- Other Conditions
- Tic Severity/Expectations
- Behavior Tics Treatments
- Rx Tic Treatments
- Cannabis
- Deep Brain Stimulation

Tourette Syndrome
TIC MANAGEMENT: Education

- **Education**
  - Clarify neurological basis
  - Reassurance & support
  - Emphasize strengths
  - Whole child
  - Whole family

Tourette Syndrome
TIC MANAGEMENT: *Environment*

- Things that worsen tics
  - Excitement & stress
  - Fatigue
  - Attending to tics / Accepting of tics
- Things that improve tics
  - Calm, focused activities
  - Deep relaxation
  - Inhibiting environments

Adapted from presentation by John Walkup, MD

Tourette Syndrome

TIC MANAGEMENT: *Accommodations*

- Teacher in-service
- Classroom education
- Teacher as role model
- Tic breaks/sanctuaries
- Testing accommodations
- Opportunities for movement
- Scribes
- Tic suppression

Tourette Syndrome
TIC MANAGEMENT: Containment

- **Overcome Assumptions**
  - "They can't control it"
  - "I can't set limits on him"
  - "She has a tough life. I want it easier"
  - "He needs special accommodations"
  - "Medication is the answer"
  - "It's all related to the Tourette"

Adapted from a presentation by John Walkup, MD

Types of Reinforcement

Adapted from presentation by John Walkup, MD

	+	-
Internal	Gratification	Relieves distress
External	Attention & Support	Avoidance

Tourette Syndrome
TIC MANAGEMENT: Behavioral

- **CBIT**
  - HRT
    - *Awareness Training*
    - *Competing Response*
    - *Relaxation*
  - FA
    - *Social influences on behaviors*

Tourette Syndrome
TIC MANAGEMENT: Medication

KEY POINTS!

- Do not assume medication is necessary
- Address coexisting condition(s)
- Complete tic remission is rare
- Stimulants are *generally* safe

Pretty much everything known to humankind tried for tics

- *Alkaloid*
  - nicotine
  - reserpine
- *Alpha adrenergic agonist*
  - clonidine
  - lofexidine
  - guanfacine
- *Anti-androgen*
  - finasteride
  - flutamide
- *Anti-cholinesterase*
  - donepezil
- *Anti-convulsant*
  - levetiracetam
  - topiramate
- *Anti-depressant (tricyclic)*
  - desipramine
- *Anti-hypertensive (misc.)*
  - mecamylamine
- *Anti-Parkinson*
  - pergolide
- *Anti-psychotic (other)*
  - tetrabenazine
- *Atypical neuroleptic*
  - aripiprazole
  - risperidone
  - olanzapine
  - ziprasidone
  - quetiapine
- *Atypical neuroleptic (N/A in US & Canada)*
  - sulpiride
  - tiapride
- *Benzodiazepine*
  - clonazepam
- *Cannabinoid*
  - delta-9-tetrahydrocannibinol (THC)
- *Dopamine agonist*
  - ropinirole
- *Dopamine antagonist*
  - metoclopramide
- *MAO inhibitor*
  - selegiline
- *Muscle relaxant*
  - baclofen
- *Neurotoxin*
  - botulinum toxin A
- *Selective NE reuptake inhibitor*
  - atomoxetine
- *Typical neuroleptic*
  - fluphenazine
  - pimozide
  - haloperidol

Tourette Syndrome
MANAGEMENT: *Coexisting Conditions*

KEY POINT!

Target the most troubling symptoms

Complex ADHD: Clinical Practice Guideline

Tourette Syndrome
COEXISTING: *ADHD*

Treatment of **A**DHD in children with **C**hronic **T**ics

- 136 kids: Chronic Tic Disorder & ADHD
- 4 groups:
  - *Methylphenidate*
  - *Clonidine*
  - *Methylphenidate* + *Clonidine*
  - *Placebo*

Tourette Syndrome
TIC MANAGEMENT: *Integrative*

- Complementary
- Alternative
- Holistic
- Naturopathic

Tourette Syndrome
TIC MANAGEMENT: *Investigative*

- Dental device
- Ecopipam
- E/RP
- CBIT variations
- Cannabinoids

Tourette Syndrome
NONINVASIVE STIMULATION

- rTMS
- tDCS
- MNS

Advocacy and Legal Rights

Tourette Syndrome
OUTCOMES

- Usually lifelong
- Tic outcome ≠ Functional outcome
- Better Outcomes:
  - *No coexisting features*
  - *Educate others*
  - *Resilient*

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tourette.org