Pediatric Movement Disorders: Not all that Shakes is Bad

Hyperkinetic movements are unwanted or excess movements

Hyperkinetic Movement Disorders
- Stereotypies
- Tics
- Chorea
- Athetosis
- Tremor
- Myoclonus
- Dystonia

Patient 1: Chief Complaint
9 year old boy with abnormal hand movements

Patient 1: History
- Rubs hands together and touches his hair and face
- Occurs repetitively for past several years
- Increases when watching TV
- Patient not always aware of movements

Patient 1: Examination
- No abnormal movements
- Poor hand coordination
Video 1

What are these movements?
1. Tics
2. Stereotypies
3. Seizures
4. Chorea

Motor Stereotypies
Repetitive, involuntary movements that can be voluntarily suppressed

Stereotypies
- Often rhythmic
- Predictable
- Nonfunctional
- Occurs when bored, tired or excited

Motor Stereotypies

Primary
- Common
- Complex arm and hand
- Head nodding

Secondary
- Neurodevelopment disorders
- Genetic and metabolic disorders
- Sensory deficits
- Infection or post-infection
- Drug induced

Complex hand and arm stereotypies

Video 2
Hand wringing in Rett syndrome

Possible Etiologies
- Learnt Behaviors
- Developmental
- Functional
- Neurobiology and Genetics

Treatment for Stereotypies
- Parental and patient education
- Behavioral Modification Therapy

Patient 2: Chief Complaint
6 year old boy with abnormal head movements

Patient 2: History
- Jerking of head to one side
- No alteration in mental status
- Prior history of shoulder jerking and grunting
- Tenses or has funny sensations with movements

Patient 2: Examination
- Normal neurological exam
- Repeated shoulder shrugging and head thrusting
Patient 2: Home video

Video 4

What are these movements?
1. Tics
2. Stereotypies
3. Seizures
4. Chorea

Tics
Repeated random-appearing sequence of one or more discrete involuntary movements that are briefly suppressible and associated with an urge to perform the movement

Tics versus Stereotypies

<table>
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<th>Complex Tics</th>
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<tbody>
<tr>
<td>Motor</td>
<td>Phonic</td>
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<td>Simple</td>
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TICS

Simple Motor Tics

Video 5

Singer et al. Movement Disorders in Childhood. 2010

**Complex Motor Tics**

**Video 6**

**DSM-IV Classification**
- Transient Tic Disorder
  - Present >4 weeks but <1 year
- Chronic Motor or Vocal Tic Disorder
  - Present >1 year
- Tourette syndrome
  - Motor and phonic tics for >1 year
- Tic Disorders, not otherwise specified

**Co-morbidities**
- Attention deficit hyperactivity disorder
- Obsessive compulsive disorder
- Anxiety and depression
- Episodic outbursts
- Academic difficulties
- Sleep disorders

“Rule of Thirds”

Resolve
Improve
Continue
Patient 3: Chief Complaint

6 month old baby girl with abnormal movements

Patient 3: History

- Viral infection, bilateral acute otitis media
- A week later started having abnormal movement of the right hand
- Progressed to left side and face
- No alteration in alertness
- Resolves during sleep

Patient 3: Examination

- Age appropriate neurological exam
- Constant discrete movements
  - Piano playing motion of her fingers
  - Toe flexion and extension
  - Lip Pursing

Patient 3: What are these movements?

1. Tics
2. Stereotypies
3. Seizures
4. Chorea
Chorea

Ongoing random-appearing sequence of one or more discrete involuntary movements or movement fragments

Chorea

- Involuntary
- Continuous but variable
- Typically bilateral but asymmetric
- Parakinesias
- Motor impersistence

Darting Tongue

Video 8

The Chorea Spectrum

Athetosis ↔ Chorea ↔ Ballism

Etiologies

- Primary
  - Benign hereditary chorea

- Secondary
  - Immunologic or Autoimmune processes
  - Vascular or Hypoxic ischemic injury
  - Genetic and Metabolic disorders
  - Toxin or medication induced

Treatment of Chorea

- Dopamine receptor blocking agents
- Benzodiazepines and/or valproic acid
- Tetrabenazine
Patient 4: Chief Complaint

5 month old baby girl with abnormal head movements

Patient 4: History & Examination

- History
  - Episodes of head and leg movements
  - Movements are brief but repetitive
  - Occur upon awakening
  - Increasing in frequency

- Examination
  - Gross motor delay

What are these movements?

1. Tics
2. Stereotypies
3. Seizures
4. Chorea

Conclusion

- Hyperkinetic movements are common in children
- Look for patterns in the movements and time course
- Treatment beyond education not always required

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Thank you

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