



TBI-BH ECHO

Traumatic Brain Injury - Behavioral Health ECHO
UW Medicine | Psychiatry and Behavioral Sciences

Movement symptoms & TBI

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Speaker disclosures

✓ No conflicts of interest

The following series planners have no conflicts of interest:

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Addition disclosure

- ▶ I am a psychiatrist, consultant psychiatrist, and neuropsychiatrist
 - ▶ IE not a neurologist or movement disorder expert
 - ▶ For this talk, we will focus on what to look for and why
 - ▶ Spoiler alert: Most formal diagnoses and treatments are complicated. It may require surgery and a formal team
 - ▶ As part of this lecture, we will review publicly available videos on YouTube
 - ▶ We have no affiliation or formal/informal relationship with the featured people or creators of those videos



Objectives

1. Describe why looking for movement disorders in a patient with a TBI is important
2. List the three big categories of movement disorders



Movement disorders

- ▶ It Impacts the ability to generate and/or control movement.
- ▶ Broad category definitions
 - ▶ Transient vs. Persistent
 - ▶ Hyperkinetic vs Hypokinetic (vs somewhere between)
 - ▶ Focal vs Global



Rates

- ▶ 20% of severe TBI survivors (wide range in research 13% - 66%)
 - ▶ 1/2 improve within 1 year
- ▶ 10.1% of mild to moderate TBI survivors
 - ▶ Persist only in a minority of patients (up to 3%)
- ▶ The most common is a tremor (the most common motor disorder outside of TBI)
- ▶ The most common persisting disorder is tremor, followed by dystonia



Etiology & Risk factors

- ▶ Primary Injury
 - ▶ Basal ganglion, diffuse axonal injury, rotational forces
- ▶ Secondary Injury
 - ▶ Hypoxia, hypotension, edema
- ▶ Most commonly seen
 - ▶ Severe TBI
 - ▶ Neuro-imaging showing focal lesions or generalized cerebral edema
 - ▶ Prolonged coma
 - ▶ Younger age
 - ▶ +/-Male



Motor disorders by movement type

- ▶ Hyperkinetic
 - ▶ Tremor
 - ▶ Dystonia
 - ▶ Ballism/Chorea
 - ▶ Tics & tourettism
 - ▶ Myoclonus
 - ▶ Akathesia/Stereotypy/hyperekplexia
- ▶ Hypokinetic
 - ▶ Parkinsonism
- ▶ Other



Tremor

- ▶ <https://www.youtube.com/watch?v=QdPGXdBxijc> (1:08)
- ▶ Rhythmic and oscillatory
- ▶ Subtypes
 - ▶ Resting
 - ▶ Postural
 - ▶ Kinetic
 - ▶ Intention
- ▶ Timing
 - ▶ 1st weeks to years after injury
- ▶ Treatment
 - ▶ Meds (no studies), physical activity (light weights), and surgery



Dystonia

- ▶ <https://www.youtube.com/watch?v=mSwo28t5t3k> (55 - 1:07)
- ▶ Simultaneous contractions of agonist-antagonist muscles
- ▶ Subtypes
 - ▶ Focal
 - ▶ Segmental
 - ▶ Generalized
 - ▶ Hemidystonia*
- ▶ Timing
 - ▶ Delayed. The mean latency is 20 months.
- ▶ Treatment
 - ▶ Working on ROM, Medications, botulinum injections, surgery



Chorea, Ballism, & Athetosis

- ▶ <https://www.youtube.com/watch?v=AIUQHHj1pc8> (0:19 - 0:55)
- ▶ Rapid, unpredictable, dancelike, writhing, purposeless
- ▶ Timing
 - ▶ Delayed. Weeks to months
- ▶ Treatment
 - ▶ Working on ROM, medications, botulinum injections, surgery
 - ▶ Medications: Amantidine, baclofen, anticholergics, neuroleptics, bentos, L-dopa



Tics and Tourettes

- ▶ <https://www.youtube.com/shorts/vtSChwXxn9o>
- ▶ Semi-voluntary repetitive, non-rhythmic, sudden movements/vocalizations
 - ▶ Uncommon 0.9%
- ▶ Treatment
 - ▶ Psychoeducation & CBT
 - ▶ Neuroleptics
 - ▶ Clonidine
 - ▶ Pramipaxole
 - ▶ SSRI
 - ▶ Botox



Myoclonus

- ▶ <https://www.youtube.com/watch?v=bHG3GdvZOps> (0:10 - 0:25)
- ▶ Shock-like arrhythmic jerks
- ▶ Subtypes
 - ▶ Focal
 - ▶ Multifocal
 - ▶ Generalized
- ▶ Timing
 - ▶ Stimulus induced
- ▶ Treatment
 - ▶ Very limited evidence anticonvulsants



Stereotypy, Hyperreflexia, & Akathisia

- ▶ Collectively uncommon
- ▶ Might respond to amantadine or propranolol



Hypokinetic disorders

- ▶ Parkinsonism
 - ▶ <https://www.youtube.com/watch?v=e6H7-Bj7rNU> 2:00, 3:00, 6:00
- ▶ Four cardinal features
 - ▶ Bradykinesia, rigidity, resting tremor, and postural instability
- ▶ Risk factors
 - ▶ Multiple repetitive closed head traumas
 - ▶ Some sports like boxing
- ▶ Onset months after injury
- ▶ If it has a sudden increase in symptoms, neuroimaging is needed
- ▶ Treated like Parkinson's



Summary

- ▶ Mild/Most Moderate TBIs do not typically present with movement disorders symptoms
- ▶ It is increasingly common with SEVERE TBI
- ▶ If more symptoms are present, it may hint at a more severe TBI history of other neurologic disorders.
- ▶ It also suggests that it may be worthwhile to screen/consider if other more common impairments may be present
- ▶ Symptoms can get better over a year's time
- ▶ Most of them have a recommendation for moving/maintaining range of motion



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