Syncopal Episodes in a Patient with Multiple Sclerosis

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Objective

To determine whether a patient with multiple sclerosis may be more likely to have syncopal episodes or falls

Case: ED visit

• 33 y/o female presenting through ED

• 2 month hx of syncopal episodes

• Patient describes feeling dizzy with some degree of tunnel vision and then blacking out

• Mother reports patient was out 3-5 minutes, did not respond to voice or sternal rub
Physical Exam

• VS: BP 117/62, Pulse 68, 97% on RA, temp 36 degrees C, RR 20

• Neuro: No focal neurological deficits. CNII-XII grossly intact, moving all extremities, no weakness, no facial droop

• Chest: CTA bilaterally

• CV: RRR, no murmurs

• Patient is ambulatory, walks w/o assistance

CT Study

• No acute intracranial hemorrhage, enhancing intra-axial mass, or acute territorial ischemia

• Multiple focal areas of low attenuation in the periventricular and juxtacortical white matter, similar to prior exam

• No high flow vascular malformation or large aneurysm in the brain
Prior MRI w/wout contrast

• Extensive multifocal demyelinating plaques seen throughout both hemispheres including periventricular white matter and corpus callosum

• No lesions demonstrate diffusion signal abnormality or enhancement

• Sparing of the posterior fossa

• Diffuse increased signal in the bilateral anterior and mesial temporal lobes likely related to demyelinating process but unchanged

PMH

• Psychogenic Non-Epileptic Seizures

• Tourettes/Tic Disorder

• Depression

• Bipolar Disorder

• Insomnia
Medications and Social History

• Previous: Alprazolam, Divalproex, Citaloprem, Quetiapine, Levetiracetam, Trazodone, Tecfidera, Haloperidol, Clonazepam, Risperidone

• Current: Abilify (aripiprazole), Lexapro (escitalopram), Tecfidera (dimethyl fumarate), Lo Loestrin Fe (birth control), Trazodone

• Social: Denies etoh, tobacco, illicit drugs (UDS negative) past abusive relationship and incarceration, currently divorced, living with family

Previous Workup – Hx of Seizures

• EEG normal x 5:
  • Posterior dominant rhythm measures 8-9 Hz is of moderate amplitude, symmetric and attenuates with eye opening
  • Hyperventilation and photic stimulation added no further information
  • No epileptiform discharges captured
Previous Workup – Hx of Seizures

- Video EEG: multiple non-epileptic events captured

- Multiple vocal and motor tics:
  - Pill rolling movements of her hands
  - Eyes rolling back
  - Shaking of her arms and legs and pelvis

- Seizures resolve

Workup for Syncope

- Multiple episodes and multiple ED visits:

- Denies CP, orthopnea, palpitations

- Tilt table test and orthostatic BP measurements WNL

- Cardiology consulted: Patient placed on Holter monitor and in sinus rhythm during events, no arrythmias noted
Autonomic dysfunction in MS

Autonomic dysfunction in MS is explained by lesions in regions responsible for autonomic regulation, such as nuclei in the periventricular region of fourth ventricle in the brainstem as well as medullar lesions.

Suggested that spinal cord lesions and axonal loss also play a role in dysfunction.

Autonomic dysfunction in MS

Dizziness during orthostatic procedure (extend to 10 min)

Decrease in reflex bradycardia

Decreased rise in blood pressure during sustained handgrip

Reduced HR variation during deep breathing
Syncope in MS

- No increased risk for syncope in MS *
- No increased risk of postural hypotension *
- Increased rise in HR and dizziness during orthostatic procedure
- Decrease in reflex bradycardia

POTS

Postural Orthostatic Tachycardia Syndrome:

1) >6 months sx of orthostatic intolerance, and

1) HR increase >30 beats/min or >120 beats

1) That occurs in the first 10 min of upright posture or HUTT (head up tilt test)
POTS in MS

POTS in MS patients is explained by the presence of demyelinating brainstem and hemispheric lesions which disrupt the physiological heart rate variability modulation.

Patients with MS are at increased risk of developing POTS.

No increased risk for syncope (POTS vs POTS with MS).

Differential Diagnosis

1) POTS

2) Conversion disorder

3) Incomplete workup
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