UNDERSTANDING and MANAGING POSTURAL TACHYCARDIA SYNDROME (POTS)

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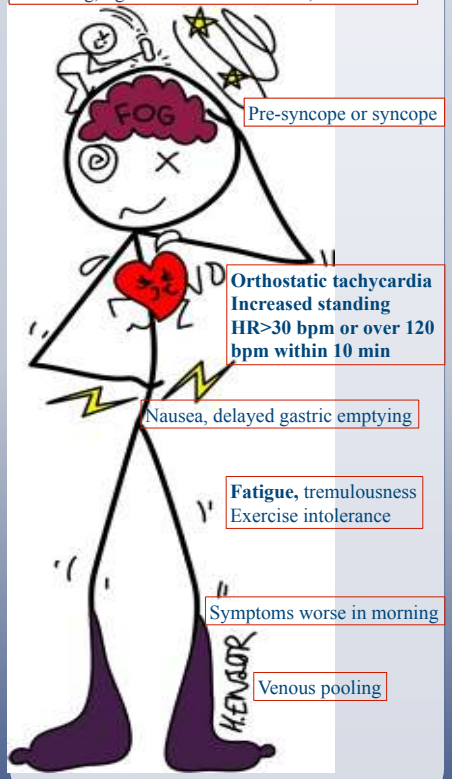
DEFINITION

- Considered a form of dysautonomia syndrome
- Characterized by orthostatic intolerance associated with the presence of excessive tachycardia
- Impacts 1 – 3 million Americans
- Affects primarily women, 5:1, ages 15 – 50 y.o.
- Symptoms can be mild, but 25% are unable to work

CLINICAL FINDINGS

Brain fog, lightheadedness/dizziness, headaches



CLASSIFICATIONS

- **Partial dysautonomia/neuropathic POTS**
  - Most common form of POTS
  - Peripheral autonomic neuropathy of the lower extremity characterized by inability to maintain adequate vascular resistance
- **Hyperadrenergic POTS**
  - Occurs in 10% of POTS
  - Excessive sympathetic discharge resulting in high levels of norepinephrine

DIAGNOSIS

Diagnostic criteria:

- A sustained increase heart rate >30 bpm or over 120 bpm within 10 minutes of standing
- Tachycardia is accompanied by symptoms of cerebral hypoperfusion and autonomic overactivity, relieved by recumbency
- Absence of orthostatic hypotension, in hyperadrenergic POTS, hypertension can occur
- Symptomatic for over 3 months

Diagnostic Tests:

- Orthostatic HR and BP, Active Standing Test
- Tilt Table Test (TTT)
- Catecholamine bloodwork during TTT to determine if hyperadrenergic – norepinephrine >600
- ECG to rule out arrhythmias
- Echocardiogram – to evaluate cardiac structural integrity
- Bloodwork to rule out other causes – CBC, CMP, TSH
- Thermoregulatory sweat test
- 24 hour urine for catecholamine – to rule out pheochromocytoma or sodium level (usually low in POTS)

MANAGEMENT

Non-Pharmacologic Treatments

- Fluids – 2-4 L daily
- Sodium – 4 – 10 g daily

- Compression hose – waist high, 30 mmHg at the ankle
- Elevating head of bed
- Exercise – increase lower extremity and core muscle strength; seated/supine graded exercise plan

Pharmacologic Treatments:

- Fludrocortisone – augments fluid volume
- Midodrine- vasoconstrictor
- B-blocker – low dose, to control tachycardia, hyperadrenergic POTS

  Ivabradine
- DDAVP (Desmopressin) – fluid retention
- SSRI (norepinephrine inhibitor) – heart rate
- Mestinon (pyridostigmine) – increase neyral transmission
- Alpha adrenergic blocker (sympatholytic) –used only in hyperadrenergic POTS - clonidine, methyldopa
- IV fluid infusion – 0.9% normal saline – fluid replacement
- Erythropoietin – increase volume, vasoconstriction

COLLABORATIVE MODEL IN MANAGING POTS PATIENTS

Initial diagnosis

- 1 hour consult with physician
- Initial testing, orthostatic HR and BP
- tilt table test
- medications

Follow up

- Usually done by Nurse Practitioner
- Review test results – TTT and bloodwork
- Comprehensive review of non-pharmacologic management
- Review of exercise protocol including target heart rate calculations
- Medication initiation or adjustments

COLLABORATION IN RESEARCH

Development of Ivabradine Study for POTS

- Protocol development
- Development of POTS symptom scale
  - 20 questions of most common POTS symptom
  - Severity rating
- Use of SF 36 Quality of Life Tool
  - evaluates general health, physical health, activity tolerance, emotional health, pain, energy and emotions, social activity

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