Autonomic Nervous System Dysregulation:
An Overview

Nicole Miranda, PT, DPT

Provider Fact Sheet (Part 1)

Produced by

VESTIBULAR REHABILITATION SPECIAL INTEREST GROUP
Academy of Neurologic Physical Therapy

A Special Interest Group of

ACADEMY OF NEUROLOGIC PHYSICAL THERAPY

Contact us:
ANPT
Phone: 952.646.2038
info@neuropt.org
www.neuropt.org

a component of

APTA.
American Physical Therapy Association

Overview: There are several conditions that may result in dysregulation of the autonomic nervous system including but not limited to a routine virus or infection, medical/surgical procedures, new or progressive neurological disorders, endocrine or hormonal changes, and traumatic events or injuries.[1] There is evidence to suggest that some individuals are more at risk of disturbed autonomic function based on their family and personal health history including associated genetic conditions and immune system reactivity.[2,3]

People who are experiencing altered autonomic function tend to have reduced tolerance for upright activity or exercise, and limited ability to perform routine ADLs. Over time this can lead to deconditioning, postural changes, and altered central processing of visual, vestibular, and somatosensory information due to lack of general movement. Physical therapists can recognize the types of autonomic dysregulation to facilitate professional communication and necessary referrals for collaborative care. Early detection and referral can be critical to obtaining a proper medical diagnosis.[4,5,6.7]

Signs and Symptoms: Acute and chronic symptoms associated with autonomic dysregulation overlap heavily with vestibular disorders. A detailed interview of symptom triggers, duration, intensity, and any alleviating factors is necessary at every patient encounter.

OH[8]	Dysautonomia[9]	POTS[10]	ME/CFS[11]
(Orthostatic Hypotension) Dizziness Headache Palpitations Leg Buckling (Pre) Syncope	Dizziness Headache Palpitations GI Motility Changes Bowel & Bladder Changes Abnormal BP (high or low) Abnormal HR (high or low) Temp Dysregulation Hormonal Changes Malnutrition (Pre) Syncope *There are many subtypes of Dysautonomia	Dizziness Headache Palpitations GI Motility Changes Bowel & Bladder Changes Tachycardia Temp Dysregulation Brain Fog Exercise Intolerance Fatigue Fluid Retention Muscle Fasciculations Nausea (Pre) Syncope Sleep Disturbance	**(Myalgic Encephalomyelitis/ Chronic Fatigue Syndrome)** Dizziness Fatigue (Profound) ADLs Impaired Cognitive Impairment Orthostatic Intolerance Post-Exertion Malaise Unrefreshed Sleep *Often Home Bound or Bed Bound

Clinical Testing and Outcome Measures: Recording resting vital signs, noting reactivity of body systems, performing provocative testing, and monitoring of vitals during interventions will reveal the behavior of the ANS and the need for other healthcare provider consultations. Pain inventories may be necessary to address cervical, headache, migraine or other contributions. The Dizziness Handicap Inventory may assist in determining multiple

factors contributing to symptoms of dizziness alongside a routine vestibular and balance assessment. The Composite Autonomic Symptom Scale COMPASS-31 has been validated to identify signs of small fiber neuropathy in people experiencing dysautonomia and can be helpful to identify necessary specialty referrals within the impairment domain subcategories.[12] Finally, joint hypermobility testing is prudent due to a correlation with dysautonomia.[13]

Orthostatic Challenge Testing

IMPAIRMENT/DX	TEST	PROCEDURE	DIAGNOSTIC CRITERIA
Orthostatic Hypotension (OH)[8]	Supine to Sit, or Sit to Stand	Obtain HR and BP in a supine or seated resting position. Note △ in HR and BP during by 3 min. of monitored sitting or upright standing	<u>Upon Position Change</u>: Systolic BP ↓ >20 mmHg and/or Diastolic BP ↓ >10 mmHg within 3 min of moving supine to sit or sit to stand *May have delayed OH
**Dysautonomia	Active Stand Test[1]	Obtain HR and BP after 10 of supine rest. Note △ in HR and BP at 1, 3, 5, 7, and 10 min. of monitored upright standing	<u>Upon Standing</u>: • Abnormal HR (Bradycardia or Tachycardia) • Abnormal BP △ ↓or ↑ • Temp Dysregulation • Integumentary changes (rash, flush, pallor, livido reticularis, Raynaud's)
Postural Orthostatic Tachycardia Syndrome (POTS)[1]	Active Stand Test[12]	Obtain HR and BP after 10 of supine rest. Note △ in HR and BP at 1, 3, 5, 7, and 10 min. of monitored upright standing	<u>Upon Standing</u>: • HR ↑ > 30 bpm (ages 19+); or sustained HR ↑ >120 bpm • HR ↑ > 40 bpm (ages <19); or sustained HR ↑ >120 bpm • BP ↓ < 20 mmHg systolic or < 10 mmHg diastolic BP; No evidence of OH • Symptoms present for ≥ 3 months
Myalgic Encephalomyelitis/ Chronic Fatigue Syndrome (ME/CFS)[11]	NASA 10 Minute Lean Test[1]	Obtain HR and BP after 10-30 min. of supine rest. Note △ in HR and BP at every min. of monitored upright standing for 10 min.	<u>Upon Standing</u>: • Profound fatigue > 6 months • Post-Exertional Malaise • Unrefreshed Sleep • Cognitive Impairment and/or Orthostatic Intolerance *Abnormal high HR and narrow pulse pressure (systolic – diastolic BP); Reduced cardiac pump[9]

**There is no clear clinical test for generalized Dysautonomia. If the individual does not meet diagnostic criteria for OH or POTS, that does not rule out Autonomic Dysregulation.