

The autonomic nervous system and its disorders in young adults

Sagatov Ikrom, Taganklichev Serdar

Neurology Resident at Samarkand State Medical University

Xakimova Sokhiba Ziyadullayevna

Neurologist, Doctor of Medical Sciences, Professor,

Head of the Department of Neurology,

Faculty of Postgraduate and Continuing Education,

Samarkand State Medical University

Abstract

The autonomic nervous system (ANS) regulates involuntary functions such as heart rate, blood pressure, respiration, gastrointestinal motility, thermoregulation, and sweating. In young adults, ANS disorders (“dysautonomias”) commonly present with orthostatic intolerance—dizziness, palpitations, presyncope/syncope, fatigue, “brain fog,” and exercise intolerance—often triggered by standing, heat, dehydration, prolonged sitting/standing, or illness.

Keywords

Autonomic nervous system; dysautonomia; orthostatic intolerance; postural orthostatic tachycardia syndrome (POTS); vasovagal syncope;

Major clinically relevant syndromes in this age group include postural orthostatic tachycardia syndrome (POTS), vasovagal (reflex) syncope, and (less commonly) orthostatic hypotension due to autonomic failure or secondary causes. Early recognition relies on careful history, orthostatic vital signs, ECG screening, and, when needed, formal autonomic testing (e.g., tilt-table testing) to distinguish reflex syncope, orthostatic hypotension, and POTS, enabling targeted lifestyle and medical management. The ANS has two main functional arms: the sympathetic system (supports “fight-or-flight,” increases heart rate/vascular tone) and the parasympathetic system (supports “rest-and-digest,” slows heart rate and promotes digestion). Proper autonomic control is essential for maintaining cerebral perfusion when changing posture. When a person stands, blood pools in the legs and abdomen; normally, baroreflex mechanisms rapidly increase vascular tone and adjust heart rate to preserve blood pressure and brain blood flow. Autonomic disorders disrupt these compensatory responses and lead to orthostatic symptoms.

In young adults, one of the most frequent dysautonomia diagnoses is POTS, defined by chronic orthostatic symptoms with an exaggerated heart-rate rise on standing (without orthostatic hypotension). Patients may report palpitations, tremor, fatigue, headache, nausea, and cognitive complaints, often worsening with heat, dehydration, or exertion. Diagnosis is typically based on history plus an active stand test or tilt testing, while excluding alternative causes of tachycardia (anemia, thyroid disease, dehydration, medications). Management starts with non-pharmacologic measures—fluid and salt optimization, compression garments, and structured, gradual exercise—then individualized medications when needed. Another common ANS-related condition in this age group is vasovagal (reflex) syncope, which is a reflex that can cause vasodilation and/or bradycardia leading to transient cerebral hypoperfusion and fainting. Typical triggers include prolonged standing, emotional stress, pain, or medical procedures. Diagnosis is often clinical (history-based), and guidelines emphasize structured evaluation to rule out cardiac causes; tilt-table testing can help in selected cases when the diagnosis is uncertain or to reproduce symptoms and clarify the mechanism. Orthostatic hypotension (OH)—a sustained blood pressure drop on standing—can occur from volume depletion, medications, or less commonly primary/secondary autonomic failure. Evaluation includes orthostatic blood pressure/heart rate measurements and review of reversible factors (dehydration, antihypertensives, antidepressants). Tilt-table testing is useful when bedside measurements are inconclusive or when symptoms strongly suggest orthostatic intolerance. Treatment focuses first on correcting causes and lifestyle strategies (hydration, physical counter-maneuvers), with medications reserved for persistent symptomatic cases.

Conclusion

ANS disorders in young adults most often manifest as orthostatic intolerance syndromes—particularly POTS and reflex syncope—while orthostatic hypotension is less common but clinically important to identify. Accurate diagnosis depends on symptom pattern recognition, orthostatic vitals, and selective use of autonomic testing (including tilt-table testing) to distinguish POTS, reflex syncope, and OH. Management is typically stepwise, beginning with education and lifestyle-based interventions (fluids/salt, compression, graded exercise) and adding targeted pharmacotherapy when symptoms remain disabling.