

Recognize the red-flag symptoms of hATTR amyloidosis

Because hereditary transthyretin-mediated (hATTR) amyloidosis affects multiple organs, patients can present with a range of sensory and motor, autonomic, and cardiac symptoms. **Multisystem involvement or a family history of these symptoms are red flags of hATTR amyloidosis. Recognizing these signs can be the first step to a definitive diagnosis.**¹⁻⁴

Look for signs of multisystem involvement, which may include^a:



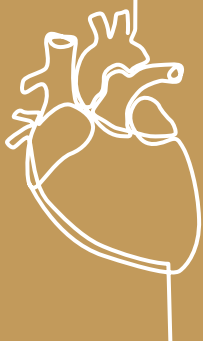
Sensory-motor neuropathy^{1,2}

- Length-dependent neuropathic pain and numbness
- Altered sensation
- Weakness
- Difficulty walking
- Bilateral carpal tunnel syndrome



Autonomic neuropathy^{1,2}

- Orthostatic hypotension
- Diarrhea, constipation, nausea and vomiting
- Unintentional weight loss
- Recurrent urinary tract infections
- Sexual dysfunction



Cardiac manifestations³

- Conduction abnormalities
- Arrhythmias
- Heart failure
- Left ventricular hypertrophy

Additional signs^{2,3}:

Rapid symptom progression, nephropathy, ocular manifestations, failure to respond to immunomodulatory treatment, intolerance of commonly used cardiovascular medications

^aNot a comprehensive list of all the symptoms associated with hATTR amyloidosis.



Identify the signs through diagnostic tools^a

Several types of tests can help identify the signs of hATTR amyloidosis.

Sensory-motor assessments^{1,5}

Electromyography (EMG)	<ul style="list-style-type: none">• Fibrillation potentials and positive sharp waves signifying axonal injury and active denervation• Volitional motor unit recruitment consistent with chronic denervation and reinnervation
Nerve conduction study (NCS)	<ul style="list-style-type: none">• Axonal large-fiber polyneuropathy with greater sensory involvement than motor• Absent or reduced sensory nerve conduction amplitudes• Reduced or absent motor nerve conduction amplitudes with normal to mildly slowed conduction velocities

Autonomic assessments^{1,5}

Heart rate deep breathing	<ul style="list-style-type: none">• Reduced heart rate variability in response to deep breathing
Tilt table	<ul style="list-style-type: none">• Orthostatic hypotension in response to upright tilt

Cardiac assessments^{3,6}

Electrocardiography (ECG)	<ul style="list-style-type: none">• Low voltage• Pseudo-infarction pattern• Progressive reduction in QRS voltage over time• Atrioventricular (AV) block
Echocardiography	<ul style="list-style-type: none">• Left ventricular wall thickening• Refractile myocardium (granular sparkling)• Low tissue Doppler velocities, reduced longitudinal strain that may be more pronounced at the base than the apex
Cardiac magnetic resonance imaging (CMRI)	<ul style="list-style-type: none">• Left ventricular wall thickening• Subendocardial late gadolinium enhancement

^aNot a comprehensive list of diagnostic tools.



Learn more about hATTR amyloidosis and find out how to ensure a timely diagnosis by visiting www.hATTRamyloidosis.com.

References: 1. Ando Y, Coelho T, Berk JL, et al. *Orphanet J Rare Dis.* 2013;8:31. 2. Conceição I, González-Duarte A, Obici L, et al. *J Peripher Nerv Syst.* 2016;21(1):5-9. 3. Dharmarajan K, Maurer MS. *J Am Geriatr Soc.* 2012;60(4):765-774. 4. Gertz MA. *Am J Manag Care.* 2017;23(suppl 7):S107-S112. 5. Shin SC, Robinson-Papp J. *Mt Sinai J Med.* 2012;79(6):733-748. 6. Falk RH, Quarta CC. *Heart Fail Rev.* 2015;20(2):125-131.