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:

**Sensory-motor neuropathy¹,²**
- Length-dependent neuropathic pain and numbness
- Altered sensation
- Weakness
- Difficulty walking
- Bilateral carpal tunnel syndrome

**Autonomic neuropathy¹,²**
- 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 signs²,³:**
- Rapid symptom progression, nephropathy, ocular manifestations, failure to respond to immunomodulatory treatment, intolerance of commonly used cardiovascular medications

¹Not a comprehensive list of all the symptoms associated with hATTR amyloidosis.
Identify the signs through diagnostic tools

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

<table>
<thead>
<tr>
<th>Sensory-motor assessments (^1,^5)</th>
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| **Electromyography (EMG)** | • 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)** | • 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 |

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<tr>
<th>Autonomic assessments (^1,^5)</th>
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<tbody>
<tr>
<td><strong>Heart rate deep breathing</strong></td>
<td>• Reduced heart rate variability in response to deep breathing</td>
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<tr>
<td><strong>Tilt table</strong></td>
<td>• Orthostatic hypotension in response to upright tilt</td>
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<th>Cardiac assessments (^3,^6)</th>
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| **Electrocardiography (ECG)** | • Low voltage  
• Pseudo-infarction pattern  
• Progressive reduction in QRS voltage over time  
• Atrioventricular (AV) block |
| **Echocardiography** | • 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)** | • Left ventricular wall thickening  
• Subendocardial late gadolinium enhancement |

\(^a\)Not 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.