

## What is the best diagnostic approach to paresthesias of the hand?

**EVIDENCE-BASED ANSWER** There have been no good studies comparing different strategies for the evaluation of the patient with hand paresthesias. A reasonable strategy is to first evaluate for carpal tunnel syndrome (CTS), the most common condition associated with hand paresthesias. If the patient does not have findings consistent with CTS, then consider other diagnoses (Table). (Grade of recommendation: D, based on expert opinion.)

Findings consistent with CTS include a history of repetitive hand work, asymmetric paresthesias in the distribution of the median nerve, hypoalgesia, weak thumb abduction, or latency of nerve conduction studies. Tingling in the median nerve distribution or on the entire palmar surface also supports the diagnosis. Common conditions associated with CTS are pregnancy, obesity, and hypothyroidism. (Grade of recommendation: B, systematic review of case control studies).

**EVIDENCE SUMMARY** The only studies of hand paresthesias that we found pertained to of CTS. A consensus statement on CTS listed intermittent numbness, tingling, and pain along the sensory distribution of the median nerve as diagnostic criteria for CTS.<sup>1</sup> Patients often report that these symptoms awaken them at night. Shaking the hand may relieve the discomfort. Commonly, the pain is burning in nature and worsens with use during the day. Repetitive trauma or mechanical stress related to workplace tasks is associated with CTS.

A meta-analysis of studies reviewing the precision and accuracy of the history and physical examination in the diagnosis of CTS in adults found that hypoalgesia (LR+, 3.1), classic or probable hand diagram results (LR+ 2.4, LR- 0.2), and weak thumb abduction strength (weakness of resisted movement of the thumb at right angles to the palm; LR+ 1.8, LR- 0.5) best distinguish

those with and those without CTS.<sup>2</sup> A hand diagram is a graphical depiction of the distribution of tingling created by the patient; a classical distribution is in that of the median nerve, while a probable distribution involves the entire palmar surface. The reference standard for these studies was a nerve conduction study. Nocturnal paresthesias, Phalen and Tinel signs, and thenar atrophy had little or no diagnostic utility.

**RECOMMENDATIONS FROM OTHERS** Collins<sup>3</sup> recommends the following approach to paresthesias of the upper extremity. If the paresthesias are symmetric, consider peripheral neuropathy, Raynaud's, or multiple sclerosis. If asymmetric, evaluate for radiculopathy with a neurological examination. If pain is radicular, and neurologic findings are consistent, consider spinal cord or nerve root compression. If the examination is normal, consider a plexopathy or herpes zoster. If there is no radiculopathy, the following maneuvers may suggest a cause. A positive Adson's maneuver is consistent with thoracic outlet syndrome, a Tinel's or Phalen's sign at the wrist suggests carpal tunnel syndrome, or Tinel's sign at the elbow suggests ulnar neuropathy. Note that the latter signs are not well validated by good quality diagnostic test studies.

*Kip A. Corrington, MD, PhD; and Karl Fields, MD  
Moses Cone Family Medicine Residency Program  
Greensboro, North Carolina*

*Joan Nusbelsky, MLS  
W.A. Foote Hospital, Jackson, Michigan*

Clinical Commentary by Peter Danis, MD,  
at <http://www.fpin.org>.

### REFERENCES

1. Carpal tunnel syndrome. American Society of Plastic and Reconstructive Surgeons; Arlington, VA, 1998.
2. D'Arcy CA, McGee S. JAMA 2000; 283:3110-7.
3. Collins, RD. Algorithmic diagnosis of symptoms and signs: cost-effective approach. New York: Igaku-Shoin Medical Publishers, 1995.

**TABLE**

**Markers for diagnoses other than carpal tunnel**

Symptoms or signs	Conditions	Initial tests
Point tenderness and/or a history of trauma	Fracture	Wrist radiographs
Systemic signs, including fever, weight loss, or malaise	Collagen vascular disease, neoplasm, multiple sclerosis, diabetes, hypothyroidism, hypocalcemia, B12 deficiency	CBC, comprehensive metabolic panel, TSH, ESR
Claudication, unilateral edema	Vascular disease	Doppler studies
Symmetrical paresthesias	Peripheral neuropathy, Raynaud's disease, and multiple sclerosis	Based on further information from history or physical
Radicular pain	Cervical herniation or spondylolithesis, spinal tumor	Cervical spine imaging
Exacerbation with neck/shoulder movement	Thoracic outlet syndrome, brachial plexopathy	Adson's test
Ulnar nerve distribution	Ulnar neuropathy	Tinel's at elbow