

Carpal tunnel syndrome (CTS)

An overview of best practice

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- Carpal tunnel syndrome (CTS) commonly causes tingling, numbness and sometimes pain in the median nerve distribution in the hand and wrist.
- Most cases are idiopathic.
- Prolonged and highly repetitive flexion or extension of the wrist for a major part of the working day increases the risk of CTS, especially when allied with a forceful grip (1).
- Hand-transmitted vibration is also thought to increase risk, but the balance of evidence on keyboard and computer work does not indicate an association with CTS (1,2).
- The history is the most important factor in diagnosis.
- Conservative treatment includes assessing and modifying relevant activities, night splints and steroid injections.

Background

Carpal tunnel syndrome (CTS) is a symptomatic compression neuropathy of the median nerve at the level of the wrist. The reported prevalence varies from 3% to 5% with a peak incidence between 40 and 60 years.

Pathology

Carpal tunnel pressure has been shown to be elevated in patients with CTS. Pathological specimens reveal demyelination, perineural

thickening and epineurial fibrosis of the nerve. Nerve conduction studies typically show delayed conduction.

Risk factors

- CTS is more prevalent among women than men.
- Genetic predisposition is the single strongest predictive factor (3).
- Diabetes mellitus, hypothyroidism and hyperthyroidism, inflammatory arthritis, pregnancy, chronic renal failure and local musculoskeletal abnormalities are all associated with CTS.
- CTS patients are twice as likely to be overweight than the general population (4).
- CTS may arise due to acute trauma eg. Colles fracture, however this is uncommon (3,4).
- Prolonged and highly repetitive flexion or extension of the wrist for a major part of the working day increases the risk of CTS, especially when allied with a forceful grip (1).
- Persistent use of keyboard or mouse devices has been shown not to be a risk factor in well designed studies (1,2).

Diagnosis

History: The onset is usually gradual. Symptoms vary but include intermittent numbness, tingling and a feeling of clumsiness and/or weakness in the hand and lower forearm. Typically symptoms are felt within the distribution of the median nerve (radial three and a half digits), however it is not uncommon for patients to report that the whole hand is affected. Patients with paraesthesias only involving the ulnar side of

the hand are unlikely to have CTS. In severe CTS, pain may occur along with atrophy of the thenar muscles.

Patients may wake from sleep and hold the hand out of bed, shaking it to get relief, often walking around. The presence of nocturnal symptoms increases the likelihood of CTS (5).

Examination: Sensation may be altered (sometimes increased) in the median nerve area. Many clinical tests such as Phalen's, Tinel's and Durkan's tests have been described but unfortunately their validity and inter-observer reliability are poor and they should not be relied upon to establish the diagnosis (5,6).

Other tests: Nerve conduction studies (NCS) have a high level of specificity, however approximately 5-10% of workers with clinical CTS will have normal studies(3,5). Additionally, some 15% of workers may have asymptomatic median nerve dysfunction which, if demonstrated on NCS, could be misleading(7). Surgeons vary in their use of NCS and some advocate their use on all cases prior to surgery (6). It would appear sensible to use NCS to help to verify the diagnosis in at least those cases where the diagnosis is uncertain.

Ultrasound and MRI scanning can demonstrate compression of the median nerve, however their use in the clinical setting is unclear presently.

Management: Clinical management of CTS should reflect the severity of the disease. A wait-and-see approach with education, reassurance and the prescription of a wrist splint is reasonable where symptoms are short-lived. Altering work practices that may have contributed is logical and specialist help is available via contracted worksite assessors.

Local corticosteroid injection is effective in the short term for the treatment of CTS (8), may help confirm the diagnosis and can provide relief whilst awaiting surgical intervention. Serious complications appear to be rare, however it is recommended that those who are unfamiliar with the technique refer to an appropriately trained colleague (3).

Wrist splints should hold the wrist in neutral to five degrees extension and be prescribed for use at least nocturnally for four to six weeks.

Oral steroids, splinting, ultrasound, yoga (reduces

sleep disturbance but not pain) and wrist mobilisation provide short-term relief from CTS, but other non-surgical methods such as vitamin B6, diuretics, non-steroidal anti-inflammatory drugs, magnets, laser acupuncture and chiropractic treatment have not shown benefit (9).

Surgical division of the retinaculum provides a permanent and complete cure in most cases (3). Alternatives to open carpal tunnel release do not offer better relief from symptoms, however endoscopic release may enable people to return to work on average one week earlier (10).

Return to work after surgery

The New Zealand Orthopaedic Association recommends a return to all activities within six weeks following carpal tunnel decompression. In a recent study involving New Zealand freezing workers, the average time for a return to full duties in lamb boners was four weeks, with light duties commencing immediately after suture removal at 10 days (11).

Issues relevant to ACC

Gradually developing CTS may be covered if work related, but there must be a causal factor in the work that would increase the risk of CTS for persons undertaking that work. CTS may also be covered when it has developed more acutely as a complication of a wrist fracture.

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