

Carpal Tunnel Syndrome

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- General Practitioners
- Outpatient Clinics
- Occupational Health Clinics
- 5-10% Prevalence in Community

Is it common?

- Common
- Usually Females, over 55 years of age
- Often overweight
- Often Family History
- Often obvious associated reason
- Often Bilateral
- Increased incidence with age

CTS in the Community

- Idiopathic
- Medical
- Trauma
- Occupational

What are the Causes of CTS

- No obvious cause found
- Any age, but usually older aged groups
- Often familial association

Idiopathic

- Endocrinological
 - Diabetes
 - Hypothyroidism
- Rheumatological
 - Rheumatoid arthritis
 - Connective Tissue Diseases
 - Sjorgens Syndrome
 - Systemic Lupus Erythematosus
 - Sarcoid Disease
- Pregnancy related
- Renal Failure on chronic haemodialysis

Medical

- Usually post trauma around Carpal Tunnel region

Localised swelling and constriction of contents.

Direct or Indirect effects

Usually acute /subacute onset with appropriate history

Usually improves rapidly over time

Trauma Related

- Confusing literature
- Methodological difficulties
 - Misclassification
 - Differing endpoints and outcome measures for studies undertaken
 - Quality of studies vary greatly
 - Little consistency across many studies
 - Population groups studied often not representative
 - Often little follow up study
 - Often small numbers and low power

Occupational related



- NIOSH Data 1977
 - Dated, often not relevant
 - Part of wider body of literature
 - Association between force and repetition.
 - Weaker association between repetition..
 - Association between forceful / awkward postures eg flexed ulnar deviation

Occupational CTS

National Institute for Occupational Safety and Health. Musculoskeletal Disorders and Workplace Factors. A Critical Review of Epidemiologic Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremity, and Low Back. US Dept. of Health and Human Services July 1997.

- Positive association highly repetitive work
- Positive association forceful work
- Insufficient evidence for awkward postures
- Positive association hand/wrist vibration
- Strong evidence for exposure to combination of risk factors

The literature

- Hand held vibrating tools
- Little known about exact exposure required and duration of exposure



Occupational Risk Factors

- Repetitive means?
 - This and that
- Definition:
 - Every 30 seconds or more frequently



Occupational Risk Factors

- Forceful means...
 - This and that
- Definition.



- Power grip increases Carpal Tunnel Pressure

- Pinch grip results in greater force than power grip

Grasp

- Cold +

- Repetition and load

Cold conditions

- Duration means....

Definition:

At least half of each day or 20 hours of each week.



- Fish cannery worker
- Textile workers
- Metal Casting workers
- Printing/lithography
- Frozen Food Packers
- Fish processing workers
- Poultry workers
- Quarry drillers
- Box manufacturers
- Packing house workers
- Garment workers
- Construction trade workers
- Typists

Workers at Risk

- Volar aspect of the wrist.
- Borders and boundaries of the Tunnel.
- Contents of the Carpal Tunnel
 - Nerve
 - 9 tendons
 - Associated soft tissue

Anatomy of the Carpal Tunnel

- Symptom complex
- Wide variety of symptoms at times
- Symptoms may not be predictable
- Typical symptoms may not be present
- May present atypically – no std criteria
- May not be recognised

My neighbour has Carpal Tunnel Syndrome

Clinical

Symptoms

- Numbness
- Tingling
- Aching
- Weakness
- Loss of sensation
- Sleep disturbance

Clinical

Symptoms

- Numbness
 - Median nerve distribution
 - Thumb, Index, Middle fingers
 - Not always typical
- Sleep disturbance "waking and shaking"
 - Usually at night
 - Usually wakes them
 - Often typical relieving measures eg flick sign

Clinical

Signs

- General
- Musculoskeletal
- Neurological

- Inspection of fingers

- Nailfold changes

Arthritic changes

Skin rash

Thenar wasting

Thyromegaly / goitre

Callous formation

Swelling of volar area

Scars from surgery /
trauma

Clinical Examination

General

Consider associated medical
or other conditions.

Clinical examination

- Cervical spine
- Shoulders
- Elbows
- Fore-arms
- Wrists
 - Provocative testing:
 - Phalens – neg if profound
 - Reverse Phalens
 - Tinnels – as accurate as flicking a coin!!!
- Fingers

Musculoskeletal

Clinical examination

- General
 - Wasting of thenar eminence
- Motor system
 - Weakness
 - reflexes
- Sensory system
 - Light touch
 - Pinprick
 - Vibration

Neurological

- Nerve Conduction Studies – 95% specific
- Results at one point in time
- Influenced by other factors
 - Obesity, age, height, wrist ratio
- Varying threshold between symptoms and ncs findings
- Should form part of complete picture
- Prolonged sensory latency or failure to evoke an action potential on stimulation of the afferent median nerve fibres
 - Specifically.....

Special Investigations

- 25% false positives
- Few of the positives have CTS clinically
 - Asymptomatic no more likely to develop symptoms than age-matched asymptomatic without median mononeuropathy
- Little correlation between history, bedside testing and symptoms.
- Not good for predicting

Nerve Conduction Studies

- Nothing
- Splints
- Steroid Injections – diagnostic / therapeutic.
- Carpal Tunnel Release Procedures
 - Not as good if you have WRCTS
 - Specific indications

Treatment

- Pre-operatively
 - Mild symptoms
 - Work absence
 - Exposure to hand intensive work
 - Involvement of an attorney
- Post operatively
 - Persistence of symptoms 6 months after surgery

Predictors of Poor outcome

- 58 year old Female
- Dental Nurse
- Symptoms of pain, numbness, altered sensation

Case Studies

- 25 year old Male
- Forestry worker
- Symptoms of numbness at times in both hands