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Carpal tunnel syndrome: one flew over the surgeon's nest. The Cochrane Neurological Network

Received: 10 February 2003
Accepted: 10 May 2003

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Abstract The Cochrane Collaboration is an international non-profit and independent organization, dedicated to making up-to-date, accurate information about the effects of healthcare readily available worldwide. It produces and disseminates systematic reviews of healthcare interventions and promotes the search for evidence in the form of clinical trials and other studies of interventions. The major product of the Collaboration is the Cochrane Database of Systematic Reviews which is published quarterly as part of The Cochrane Library. A systematic review, when well done, is a reliable summary of the body of knowledge at the time. Its result may mean that one has to temper one's opinion of the value of a particular treatment but there is no place nowadays for ineffective or hazardous treatments. Systematic reviews should be looked upon as extremely useful sorting tools to get a better perspective of current status of knowledge, and looked to see what questions new trials should seek to answer in future. This is the case of the reviews on the treatment of Carpal Tunnel Syndrome (CTS). On October 26, 2002, in Corciano, the Cochrane Neurological Network

organised its 2nd Multidisciplinary Workshop to discuss Cochrane systematic reviews on the treatment of CTS. A variety of experts participated in the presentation, including neurologists and orthopaedic hand surgeons of different backgrounds. The main outcome of the meeting was to capture the current state of knowledge on CTS by looking back at evidence from systematic reviews and their single trials. Secondary outcome of the meeting was determined that it is necessary to favor controlled clinical studies on the disease correcting for the drawbacks highlighted in previous studies. Such corrections should include specific diagnostic criteria of the CTS; a larger sample size of the single trials; suitable follow up; subgroup division by age, sex, and clinically and instrumentally determined severity of the disease; duration of the disease; and degree of stressful activity.
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Key words Carpal tunnel syndrome • Systematic reviews • Cochrane library

Introduction

The management of carpal tunnel syndrome (CTS) has been the object of a multidisciplinary workshop held by the Cochrane Neurologic Network (CNN) to implement the results of CTS reviews published in the Cochrane Library (issue 3, 2002). The CNN aims, in fact is to establish an information channel among healthcare professionals working in the field of neurological diseases. The objectives of the workshop were to introduce participants to the systematic reviews published by the Cochrane Collaboration, demonstrate their advantages, and provide validated information on the treatment and management of CTS by means of the comments and discussion of experts, who are daily involved in this multidisciplinary disease.

The experts were three orthopedic hand surgeons of different backgrounds (a medical university surgeon, a hospital surgeon and an arthroscopic hand surgeon) and two neurologists (one of whom was experienced in evidence-based medicine and the other an author of epidemiological studies of the natural history of CTS). Attendees were rheumatologists, occupational medicine specialists, neurosurgeons, neurologists, clinical neurophysiologists, internists, orthopedic surgeons, physiotherapists, and trainees in these fields of medicine. One neurologist, one neurophysiologist, and one orthopedic surgeon were invited, at the beginning of the meeting, to describe their routine treatment of the disease to give a realistic picture of their different styles of management.

The *neurologist* ascertains clinical and occupational history and performs a clinical examination to determine if there are other associated conditions (e.g. endocrinological or rheumatoid disease, pregnancy, wrist fracture) in order to properly treat the patient. Electromyography (EMG) and further instrumental examinations are requested only if clinical evaluation leaves room for doubt. Oral medication is not prescribed, but the neurologist suggests lifestyle modifications to avoid repetitive manual activity. The choice of therapy is deferred to the hand surgeon once the diagnosis of CTS has been confirmed.

The neurophysiopathologist bases the therapeutic decision on the severity of the disease. In severe cases in which the nerve is completely damaged, a surgical intervention is considered useless.

Even for just analgesic purposes, the *orthopedic surgeon* considers intervention necessary due to its simplicity, rapidity, affordability and absence of complications due to the continuing technical refinements in this surgical field.

For all these specialists, the diagnoses were only clinical.

Local corticosteroid injection for carpal tunnel syndrome

The first Cochrane systematic review discussed at the workshop, entitled "Local corticosteroid injection for carpal tunnel syndrome" [1], evaluated the efficacy of steroid injection in patients with typical CTS symptoms. The systematic review found that this pharmacological treatment is more effective than placebo at the first one-month follow-up, in patients affected from 2 to 4 years by CTS. The review is limited in that the severity of the syndrome in the studied populations was not specified. However, in the study with the largest sample size, EMG revealed that this population had a disease at an advanced level. Thus there is uncertainty both in the treatment of mild or moderate CTS and in the duration of benefits lasting more than one month after treatment.

The experts commented that a 1-month follow-up is not sufficient to determine the collateral effects of the injection, possible recurrence, nor the number of patients who are forced to turn to surgical treatment. The disease's natural history is important in defining the prognosis based on clinical and instrumental criteria [2].

The participants commented that it is fundamental to define the type of CTS, either idiopathic or secondary, since it is essential to treat the cause of the disease.

The research implications resulting from the critical appraisal of the review are that further studies are necessary to establish the duration of benefits from steroid injection in the treatment of CTS, as well as its efficacy for the two populations not considered.

Non-surgical treatment (other than steroid injection) for CTS

The review entitled "Non-surgical treatment (other than steroid injection) for carpal tunnel syndrome" [3] considered various conservative treatments for this syndrome. The treatments are numerous and range from orally administered medicines including non-steroidal anti-inflammatory drugs (NSAIDs), steroids and vitamins to physical therapy (ultrasound) and behavioral therapy (yoga, physiotherapy, occupational therapy).

The experts commented that current clinical practice utilizes splints, behavior modification and, for some, oral administration of steroids. There is an interest to know the results of physical therapy because some of the experts are not convinced of its efficacy and therefore do not prescribe it.

The participants' commented that, in all studies regarding CTS, it is necessary to stratify patients according to the presence of high-risk work activities. From a

methodological point of view, this subgroup should be considered first.

Surgical vs. non-surgical treatment for CTS

The systematic review “Surgical versus non-surgical treatment for carpal tunnel syndrome” [4] found, on the basis a single included study, that surgical treatment is significantly correlated to clinical improvement after one year, when compared to splinting, in severe CTS evaluated by EMG. The review is limited in that only one study [5] comparing surgery to splinting satisfied the inclusion criteria. In this 1964 study [5], however, the randomization method was not clearly explained, the sample test group consisted of only 22 women and the follow-up was performed at one year. Surgical complications were not an outcome measure and were therefore not considered. In September 2002, another randomized clinical study was published on the same topic (surgery versus splints) [6], and should be incorporated into the Cochrane review at the next update.

The experts commented that some orthopedic surgeons affirm the need and desire to implement a controlled, randomized, clinical study to determine the success of surgery on patients with CTS of mild or medium severity. Others choose surgery anyway: due to its previously established efficacy in clinical practice, the results favoring surgery could only be positive. Furthermore, surgical intervention is so simple, quick, and inexpensive that it could even be utilized for analgesic purposes. The experts also noted that clinical neurophysiologists support the need for stratification of neurological damage based on the outcome of neurophysiological assessment as well as on the duration of symptoms. Finally, the importance of performing an accurate and thorough bibliographical search, like the ones like those of the Cochrane Collaboration, was stressed since older and more obscure studies may not be indexed in every bibliographic database.

The discussion concluded by stating a need for a controlled, randomized, clinical study in order to evaluate the efficacy of treating, above all, patients with CTS of mild to medium symptomatic severity in which there is the greatest variance among therapeutic interventions.

Open vs. endoscopic surgical treatment for CTS

The Cochrane protocol entitled “Open versus endoscopic surgical treatment for carpal tunnel syndrome” [7] outlined the methodology for a new systematic review comparing arthroscopic to open surgical treatments; the review is near publication.

The experts commented that it is necessary to distinguish the different types of surgical interventions (various endoscopic techniques such as single or dual portal techniques; various open techniques such as standard or microincision; and with or without additional procedures). These subgroups must be determined considering the diverse incidences of complications involved.

Conclusions

Based on the evidence provided by the Cochrane Collaboration, it can be affirmed that there are no certainties that can be used to compare the efficacy of conservative treatments to surgical treatment in dealing with the diverse levels of severity of CTS, nor can any data be confirmed regarding the duration of eventual benefits. As a result of this multidisciplinary meeting, it became apparent that researchers must favor clinical studies correcting for the drawbacks highlighted in previous studies. Such corrections should include: specific diagnostic criteria, large sample size, suitable follow-up, subgroup division by age, sex, and clinically and instrumentally determined severities of the disease, duration of the disease, and degree of stressful activity.

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