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Original Research

What Types of Treatment Are Provided for Patients With Carpal Tunnel Syndrome? A Retrospective Analysis of Commercial Insurance

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Abstract

Background: Treatment of carpal tunnel syndrome (CTS) in commercially insured patients across the spectrum of provider types rarely has been described.

Objective: To describe patterns of types of treatment for patients with CTS using a large commercial insurance database.

Design: Retrospective cohort descriptive study.

Setting: Administrative health data from the Clinformatics Data Mart (OptumInsight, Eden Prairie, MN).

Patients: Adults with a primary diagnosis of CTS seen from between January 2010 to December 2012 who had a total of 48 months of continuous data (12 months before diagnosis and 36 months after diagnosis) (n = 24,931).

Outcomes: Frequency of types of treatment (heat, manual therapy, positioning, steroids, stretching, surgery) by number of treatments, number of visits, provider type, and characteristics.

Results: Fifty-three percent of patients received no reported treatment, and 50.4% had no additional visits. Surgery (42.5%) and positioning (39.8%) were the most frequent single treatments. Patients who were seen by orthopedist for their first visit more frequently received some treatment (75.1%) and at least 1 additional visit (74.1%) compared with those seen by general practitioners (59.5%, 57.5%, respectively) or other providers (65.4%, 68.4, respectively). Orthopedists more frequently prescribed positioning devices (26.8%) and surgery (36.8%) than general practitioners (18.8%, 14.1%, respectively) or other providers (15.7%, 19.7%, respectively). Older adults more frequently had CTS surgery, as did people who lived in the Midwest. Overall, only 24% of patients with CTS had surgery.

Conclusions: For more than one-half of patients with CTS no treatment was provided after an initial visit. Surgery rates were much lower than what has previously been reported in the literature. Generally, patients with CTS receive treatments that are supported by current treatment guidelines.

Introduction

Carpal tunnel syndrome (CTS) is the common name for median nerve compressive neuropathy caused by entrapment of the median nerve and is the most common upper extremity peripheral entrapment neuropathy [1]. Patients with CTS experience considerable distress, significant decreases in function [2-4], and reduced quality of life [5]. Although CTS has been strongly associated with occupations that require repetitive, forceful hand use [6], it is also common in the general population who do not have such jobs. In many cases, the underlying disease process cannot be identified, and CTS is designated

idiopathic [7]. CTS is often viewed as only a work-related disorder; however, it is estimated that only 26% of CTS patients are covered under Workers' Compensation insurance [8]. Unfortunately, there is very limited information documenting the remaining 74% of patients with CTS covered by Medicare, Medicaid, and private insurers in the U.S. population, and what information exists is outdated [8]. Studies suggest that patients with CTS with workers compensation are treated differently than those who have private insurance [9] and are more likely to have poor outcomes after surgery [10].

Current guidelines on CTS agree that most patients, except those with severe CTS, should receive an initial

course of conservative treatment [11-13]. There are at least 16 possible interventions for CTS with varying levels of evidence to support their use [13]. Surgical treatment is considered the most effective treatment for severe CTS [14] but is a less-than-optimal initial approach for people with mild-to-moderate CTS because of the potential for adverse events [15], recurrence [16], and high medical costs [17,18]. A recent international multidisciplinary treatment guideline [12] has suggested that treatment should be based on the duration and severity of the CTS and advocated for combinations of education, splinting, and steroids, with surgery provided for those with severe CTS or who did not respond well to conservative treatment. Yet, despite guidelines describing best practice for the treatment of CTS, there is very little information about actual treatment of CTS in clinical practice.

There are few recently published studies of usual courses/trajectories of conservative CTS care. A recent systematic review that described the clinical course and prognostic factors of CTS found 16 studies that were naturalistic studies of CTS treatment [19]. Of these studies, 15 were on data from secondary or tertiary sites (eg, hand clinic, electromyographic laboratory, surgical clinic), had relatively small samples (12-297 patients), and thus were biased by the nature of the sites at which the data were collected: patients seen in these sites would routinely be people with more severe forms of CTS who would, thus, benefit from surgery and not from conservative treatments. The single study that examined a general population of 425 patients was completed in 1997 with patients treated from 1979 to 1988 [20]. Thus, there are no recent studies that have examined a general population of people with CTS to determine the types of treatments received and the general outcomes of treatment.

The ability to provide successful and cost-effective treatment for CTS will improve patient function and financial security and reduce health care costs. Retrospective analysis of existing health care data is one method to describe current health care practices and examine long-term outcomes. In this study, we performed a retrospective analysis and use descriptive statistics to assess the initial and late treatment patterns for CTS patients using 1 of the nation's large commercial insurance databases to answer the following questions: (1) What percentage of people with CTS received each of the following types of care: positioning treatments, steroid treatments, manual therapy-based treatments, heat-based treatments, exercise treatments, and surgery over 36 months, and during the first 6 months? (2) What percentages of people with CTS received no treatment, or 1 or more types of treatment? (3) What percentage of people with CTS had more than 1 visit, and what were the most frequent types of treatment received during multiple visits? (4) How does treatment differ by the first provider type (general practitioner, orthopedist, or other

provider)? (5) How does treatment differ by patient characteristics (age, gender, region of treatment)?

Methods

The institutional review board at the XXX does not require approval for this type of study, as the data do not meet the definition of "human subjects." We used existing data in which the information was recorded in such a manner that subjects could not be identified, directly or through identifiers linked to them. All principles of the Declaration of Helsinki were followed.

We conducted a retrospective cohort descriptive analysis using administrative health data from the Clinformatics Data Mart (OptumInsight, Eden Prairie, MN) database. This database is from one of the nation's largest commercial health insurers and has been used to examine treatments in numerous epidemiologic and health service studies [21-23]. Persons covered by this insurer are enrolled in a fee-for-service or managed care plan (health maintenance organizations, preferred provider organizations, and exclusive provider organizations). To receive reimbursement, providers must submit complete claims. During the 2-year case identification period (2010-2012), more than 19 million people had at least 1 day of eligibility.

Subjects

To assemble our study cohort, we identified all patients with a diagnosis of CTS (*International Classification of Diseases, Ninth Revision* codes 354.0, 354.1) seen between January 1, 2010, and December 31, 2012. To be included in the study, all patients had to have a minimum of 48 months of continuous enrollment: 36 months from the date of diagnosis to ensure that we correctly obtained all treatments and 12 months before the date of diagnosis with no incident of CTS (look-back period) to ensure that we examined new cases of CTS. Thus, patients first identified in 2010 were followed until 2013, those identified in 2011 were followed until 2014, and those identified in 2012 were followed until 2015.

We omitted all patients with a claim for pregnancy at the first incident of CTS because these patients frequently develop CTS that ends postpartum [24]. Pregnant women with CTS are treated conservatively and, therefore, do not represent the distributions of potential treatments for more idiopathic CTS. We only included patients 18 years of age or older. We retained only patients with a primary diagnosis of CTS, as it was more likely that any treatments reported during a visit were for CTS and not some other diagnosis. We also excluded 5199 patients whose CTS initial diagnosis was not from provider visits. Excluding these patients did not change the overall proportions of subject

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