

## Relationship between Obsessive Compulsive Disorder and Carpal Tunnel Syndrome

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**Objective:** Carpal Tunnel Syndrome (CTS) is the most frequent local neuropathy which often relapses despite treatment. This study is performed to determine the frequency of obsessive compulsive disorders in CTS as a main reason for relapse in patients referring to Electro-diagnosis clinic during year 2007.

**Methods:** In a case control study we considered two groups of subjects: with CTS (cases) and without CTS (controls), diagnosed by electro-diagnosis (EDX) and clinical assessment. Patients with underlying diseases such as diabetes mellitus, thyroid diseases and polyneuropathy, and patients with previous history of treatment, and also, pregnant women were excluded from the study. The EDX study has been performed by a physiatrist. All patients had an interview with a psychiatrist for assessment of obsessive compulsive disorder of cleaning type. Chi square test was used for data analysis.

**Results:** The study was conducted on 300 patients in two equal groups of cases and controls. Two hundred and fifty one patients (83.7%) were female and forty nine patients (16.3%) were male. Age range was from 20 to 80 years old. The Frequency of obsessive compulsive disorder was 42% in cases versus 28% in controls which is statistically significant ( $P < 0.05$ ) and calculated odds ratio was 1.86 (95%CI=1.15-3.01).

**Conclusion:** According to the significance of co morbidity between CTS and obsession, we suggest further researches for better clarifying the relationship. Perhaps contemporary treatment is useful for treatment and preventing CTS relapse and/or lowering the number of surgical treatment cases which decreases the overall treatment.

**Declaration of interest:** None.

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### Introduction

Carpal Tunnel Syndrome (CTS) consists of various symptoms which are caused due to the entrapment of the median nerve at the wrist (carpal tunnel) (1,2). Those diagnosed with CTS suffer from symptoms such as numbness and muscle weakness in the hand. However since other conditions may be misdiagnosed as CTS, only if history and physical examinations suggest

CTS, patients will usually be tested electro-diagnostically (EDX) with nerve conduction study (NCS) and electromyography (EMG2).

Prevalence of this syndrome in different populations has been reported to be between 0.6 and 6.8 percent (1). However the average prevalence of CTS in the world is stated to be 2.7 percent (2). In 87 percent of cases the syndrome is bilateral. The risk factors of this syndrome are diabetes, thyroid disorders, rheumatoid arthritis, and some patients with special occupations such as typists (2,3). Treatment duration of CTS, according to its severity, would be between six and eight weeks which include wearing a wrist band known as 'Wrist Band Orthosis' (WBO) which is completed by taking medication and local steroid injection (4,5).

It has been shown in many instances that CTS has reappeared in patients who had

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already received treatment for this syndrome and on the other hand we can acknowledge, from experience after treatment of these patients, that excessive use of their hands and wrists for washing and other purposes would lead to relapse of CTS in those patients.

The prevalence of obsessive compulsive disorder (OCD), according to recent epidemiological studies, is estimated to be 2 to 3 percent (6). The prevalence of OCD in Iran is reported to be 1.9%-2.5% and washing is the most common compulsion (7,8). This disorder increases patient's stress and interferes negatively with the daily activities of the patient (4,5,8, 9).

Fonttenelle et al. conducted a study on obsessive disorder in different areas of the world, it was shown that the most prevalent obsessive compulsion in Iran was washing and cleaning compulsion (10). If the prevalence of washing OCD in patients diagnosed with CTS is significantly higher than the general population, diagnosing this type of OCD in CTS patients along with offering them the treatment necessarily for OCD and CTS may lead to a decrease in the risk of OCD relapse, the probability of surgery in those patients and therefore decreases the cost of treatment.

According to the best of our knowledge no study has investigated the relation of OCD and CTS, therefore we decided to study this relationship. In this study we aimed to survey the prevalence of washing and cleaning OCD in patients diagnosed with CTS in comparison to a control group without CTS.

## Materials and Methods

This study was conducted in city of Kerman on the patients who had attended Kerman Shahid Bahonar Hospital and Kerman Fatemeh Zahra Hospital for electro-diagnosis assessment for the latest 6 month period of their treatment in year 2007.

In this case control study, calculation of sample size was performed based on a pilot study done prior to the study. The required sample size was 141, with respect to 12% frequency of OCD in case group and 5% in control group, 5% level of significance, 80% power and odds ratio=4.

With respect to limited period 300 patients who had sought treatment from the mentioned Hospital in the last 6 month of 1386 according to convenience sampling, divided into 2 groups of subjects without and with CTS (150 patients in each group). The diagnosis was base on patients' complaint, positive physical examination for median nerve involvement, positive Tinel's sign and positive Phalen's test. Final diagnosis was confirmed by electro diagnosis (EMG/NCV) (11).

Patients diagnosed with CTS were placed in the case group. Patients diagnosed with diabetes mellitus, thyroid disorders, double crush syndrome (CTS and Radiculopathy), polyneuropathy, pregnant women, patients who had already received treatment for CTS and those who were identified to have any type of risk factor disorders were excluded from our study.

The control group were selected among patients who undergone-electro diagnosis assessment but were found to be EMG/NCS negative. Electro diagnosis assessment (EMG/NCS) was conducted by a psychiatrist on all patients.

The instrument for assessing electro diagnosis was the two channels electromyograph (Medelec Synergy; Oxford Instruments Medical, Surrey, UK). All individuals from both groups were assessed with semi structured interview based on DSM.IV-TR by a psychiatrist and his assistant to determine the diagnosis of washing and cleaning OCD. The psychiatrist and his assistant were blind about the CTS in patient and only recorded his/her OCD diagnosis.

The statistical analysis was done using SPSS software (version 11.5). Chi square test was used for data analysis. The results of these analyses are reported in terms of odds ratio and chi-square significance. P values of less than 0.05 were considered significant.

## Results

The age range of patients was between 20 and 80. Mean age of case group was 46.5 ( $\pm$  21.9), the average range of control group was 46.1 ( $\pm$  21.9). Two hundred fifty one patients were female (83.7%) and forty nine patients

were male (16.3%) as is shown in Table 1. In the case group 63 patients (42%) were diagnosed with washing and cleaning OCD. In the control group 42 patients (28%) were diagnosed with washing and cleaning OCD which was significantly less than the case group ( $\chi^2=6.46$ ,  $df=1$ ,  $P<0.05$ ) and the Odds Ratio calculated was 1.86 (95% CI= 1.86-3.01). This shows that patients diagnosed with CTS are more likely to have washing and cleaning OCD (Table 2).

From 125 females in the case group, 20 were diagnosed with washing and cleaning OCD and from 125 females in control group only 13 were diagnosed with washing and cleaning OCD ( $P<0.01$ ) which shows a clear link between OCD and CTS in female patients.

In both groups, there existed one male diagnosed with washing and cleaning therefore the link between OCD and CTS which was shown to be significant in female patients is not generalized to male patients.

**Table 1.** The frequency of case and control groups according to their sex

Group	Male	Female	Total
CTS patients	25 (16.7%)	125 (83.3%)	150 (100%)
Non-CTS subjects	24 (14%)	126 (84%)	150 (100%)
Total	49 (16.3%)	251 (83.7%)	300 (100%)

**Table 2.** The frequency of washing and deaning OCD in case and control groups

Group	Positive OCD	Negative OCD	Total
CTS patients	63 (42%)	87 (58%)	150 (100%)
Non-CTS subjects	42 (28%)	108 (72%)	150 (100%)

## Discussion

Our research showed that the prevalence of washing and cleaning OCD in patients diagnosed with CTS is significantly more than those who are CTS negative. It should be noted here that prevalence of OCD in the world has been predicted to be 2 to 3 percent (3,5). As mentioned before in a study conducted by Fontenenelle et al. and another study by Mohammadi et al. the most prevalent OCD in Iran was reported to be washing and cleaning type (4,10). In our research it has been shown that prevalence of washing and cleaning OCD is 14% in CTS patients and 9.3% in non-CTS patients.

After taking into considerations that the

current study was conducted on individuals with various symptoms such as pain and upper limb paresthesia who have referred in the electro-diagnosis clinic and not the general population, in one hand, and in other hand psychiatric disorders are more common in individuals who suffer from pain. Also because emotional reaction is a consequence of and a contribution to pain, treatment of one improves the other (12-14). With regard to Hobart Mowrer's two-factor conditioning theory which provides a behavioral explanation for OCD symptoms via classical conditioning, a natural stimulus (or event, mainly responsibility) becomes conditioned to elicit distress. Because of this natural stimulus' association with an unrelated (or feared) stimulus, the higher responsibility of women for cleaning in our culture may be a precipitating factor for CTS. In Iranian culture responsibility attitude and interpretation are important features of OCD (10). Therefore the higher prevalence of these disorders in the control group when compared to the general population is understandable.

Our study showed that there was a significant difference of prevalence between the female case and control groups however there wasn't a significant difference among males in case and control groups. Considering the fact that in eastern societies cleaning and washing is one of the essential cultural duties of female individuals, the difference between male and female findings would be understandable.

According to the findings of this research and noting that CTS is one of the common painful disorders in our society, considering relapse and repetitive treatment and also, the higher prevalence of washing and cleaning OCD in CTS patients, it seems that OCD case findings in CTS patients with simultaneous treatment may be useful for lowering the risk of pain, relapse and ultimately lowering the rate of surgical treatment. According to the significance of co morbidity relation between CTS and obsession, we suggested further researches for better clarifying the relationship. Perhaps contemporary treatment is useful for treatment and preventing CTS relapse and/or lowering the number of surgical treatment cases which decreases the overall treatment.

**Suggestions for future researches:**

- I. Future researches should be carried out on a larger sample size and a larger number of male individuals.
- II. The effect of simultaneous treatment of OCD and CTS with respect to CTS relapse should be further surveyed.

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