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Carpal Tunnel Syndrome: Associated Co-Morbidities in Saudi Arabia

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Abstract. The development of carpal tunnel syndrome appears to be associated with variety of factors. The aim of this article is to assess the frequency of comorbiditis (*diabetes mellitus*, hypothyroid, hypertension, and obesity) in patients with carpal tunnel syndrome in Saudi Arabia. 93 patients were included in this retrospective study. They were following in the orthopedic clinic of King Abdulaziz University Hospital, Jeddah, KSA from January 1999 to December 2009. Clinical data, laboratory, radiological and electrophysiological studies were collected from the medical records manually and electronically. 79 (86%) were female and 12 (13.2%) were male. The average age is 47 years (17-77) of all patients (male and female). Out of the 93 patients 30 (27%) had *diabetes mellitus*, 13 (15%) all female had hypothyroid, and 24 (26%) with hypertension. 29 (31%) were with body mass index range of 25-30, 28 (30%) with body mass index of 30-30, while 18 (19.3%) with body mass index of 35-40 and 16 (17.2%) were with body mass index of more than 40. Our study showed that *diabetes mellitus*, hypertension, hypothyroidism, and obesity are common associated comorbiditis of carpal tunnel syndrome in Saudi Arabia.

Keywords: Carpal tunnel syndrome, comorbiditis, *Diabetes mellitus*, Hypertension, Obesity.

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Introduction

Carpal tunnel syndrome (CTS) is a clinical syndrome that results from median nerve compression at the wrist. It is common in the general population. Patients usually present with paresthesia, numbness and pain in the median nerve innervated fingers with occasional nocturnal exacerbation. Prolonged compression may lead to wasting of the thenar muscles. Confirmation of the diagnosis can be made by electrodiagnostic studies; electromyography (EMG) and nerve conduction velocity (NCS). The patient with mild symptoms of CTS can be treated conservatively, while in moderate to severe cases, surgery is the choice of treatment[1,2].

The purpose of this study is to assess the frequency of comorbidities (*diabetes mellitus*, obesity, hypertension and hypothyroid) in patients with CTS in Saudi Arabia.

Materials and Methods

After obtaining ethics approval from the bioethical and research committee, retrospectively reviewed charts of one hundred and thirty five patients that were treated for carpal tunnel syndrome at King Abdulaziz University Hospital, Jeddah, KSA from January 1999 to December 2009. All patients were diagnosed clinically based on history and physical examination and the diagnosis was confirmed by electrodiagnostic studies (NCS and EMG). The past medical history and BMI of the patients were reviewed. Forty-two patients with incomplete data and missing files were excluded from the study.

The data in this study are expressed as means ± standard error of the mean (SEM).

Results

A total of 93 patients with CTS were included in the study, of those 79 (86.6%) were females and 12 (13.2%) were male. The average age of both males and females were 47 years (range 17-77) for all patients irrespective of their gender.

Of the 93 patients 30 (27.5%) had DM 25 females and 5 males, while 13 (15%) patients all females had hypothyroidism, and 24 (26%) had HTN 17 females and 7 males (Fig. 1).

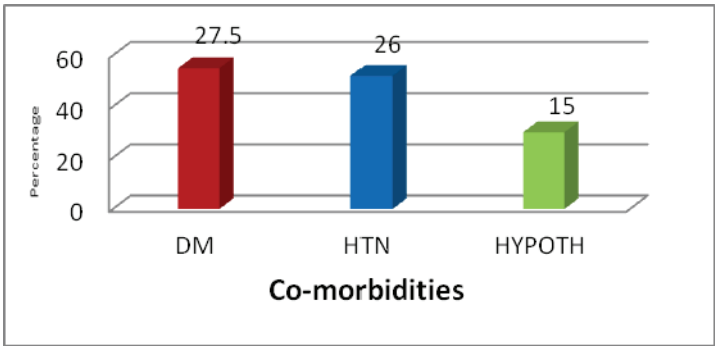

Fig. 1. Percentage of co-morbidities in our patient population (DM = Diabetes mellitus; HTN = Hypertension; HYPOTH = Hypothyroidism).

Overall 29 (31%) patients were overweight with a body mass index (BMI) range of 25-30, 28 (30%) patients were moderately overweight with a BMI of 30-35, 18 (19.3%) were severely overweight with BMI of 35-40, and 16 (17.2%) patients were obese with a BMI of more than 40 (Fig. 2).

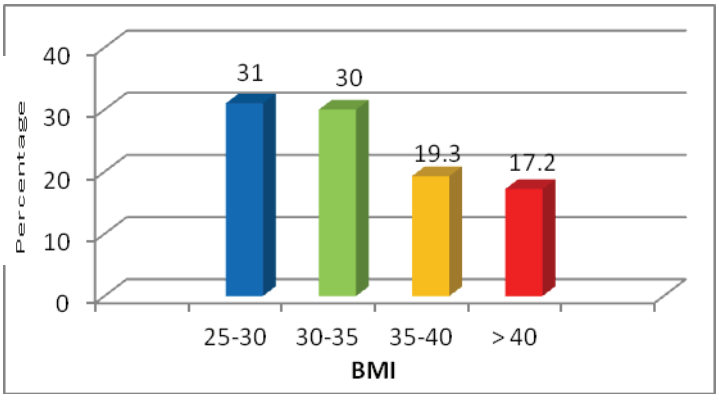

Fig. 2. Distribution of BMI among CTS patients (BMI = Body mass index; CTS = Carpal tunnel syndrome).

Discussion

There is general agreement that carpal tunnel syndrome is multi-factorial and the exact cause is unknown. Varity of local and systemic conditions appears to be associated with the development of the CTS. These include genetic and medical disorders, such as *diabetes mellitus*

(DM), hypertension (HTN), hypothyroidism, rheumatoid arthritis, and obesity[1-3].

The prevalence of diabetes in Saudi Arabia is 30%[4]. Awada *et al.*[5] in their review found that 39% of patients with DM had CTS. In other cross sectional studies such as those conducted by Karpitskaya *et al.* and Singh *et al.*, the prevalence of patients with DM was found to be 22-32%[6,7]. In our review, 27.5% of patients had DM, which is similar to the results in the literature.

Carpal tunnel syndrome (CTS) is known to be associated with treatment of hypertension with beta- blockers[8]. Shiri *et al.* in their review showed that hypertension is an associated factor with CTS[9]. In our population, we were unable to indicate if patients were on beta-blockers from the charts, however, 26% of patients had hypertension.

In their review of 26 patients with hypothyroidism, Palumbo *et al.* found 19 patients to have symptoms of CTS[10]. Karpitskaya *et al.* found that 10.3% of the CTS patients were on thyroid medications and the odds ratio of hypothyroidism and CTS was 3.70[6]. In our review, 15% of the patients with CTS had hypothyroidism.

Al Nozha *et al.*[11] in their review found the prevalence of obesity and overweight in Saudi Arabia to be 35%. Werner *et al.* [12] showed that 67% of their CTS patients were overweight to obese. Furthermore, several other studies (Krpitskaya *et al*., Stallings *et al.*, and Nordstrom *et al.*)[6,13,14] reported increase prevalence of obesity among CTS patients. Our findings were similar with 69% of our patients ranging from moderately overweight to obese.

In conclusion, our study showed that DM, hypertension, hypothyroidism and obesity are common associated comorbidities in patients with CTS in Saudi Arabia, with the highest frequency for *diabetes mellitus* and obesity. Such findings are almost comparable to those reported in the developed countries.

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متلازمة النفق الرسغي والأمراض المرتبطة في المملكة العربية السعودية

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المستخلص. متلازمة النفق الرسغي هو متلازمة سريرية تنتج عن ضغط العصب المتوسط في الرسغ. وتطوره يبدو أنه يترافق مع أمراض وعوامل مختلفة موضعية وعامة. والهدف من هذه المقالة هو تقييم نسبة تردد الأمراض المصاحبة لمرضى متلازمة النفق الرسغي في المملكة العربية السعودية (داء السكري، قصور الدرقية، ارتفاع ضغط الدم، والسمنة). ٩٣ مريضًا بمتلازمة النفق الرسغي شملتهم هذه الدراسة الاسترجاعية. ولقد راجعوا عيادة العظام، مستشفى جامعة الملك عبدالعزيز بجدة. المملكة العربية السعودية من يناير ١٩٩٩ إلى ديسمبر ٢٠٠٩م. تم جمع جميع البيانات السريرية والتحقيقات المختبرية والدراسات الإشعاعية والكهربائية من السجلات الطبية يدويًا وإلكترونيًا. ٧٩ (٨٦٪) من الإناث و ١٢ (١٣,٢٪) من الذكور. متوسط العمر هو ٤٧ عامًا (١٧–٧٧) لجميع المرضى الذكور والإناث. من ٩٣ مريض كان هناك ٣٠ (٢٧٪) مصابون بداء السكري، ١٣ (١٥٪) مرضى بقصور الدرقية وكلهم إناث، و ٢٤ (٢٦٪) مرضى بارتفاع ضغط الدم. ٢٩ (٣١٪) كانت مع مجموعة مؤشر كتلة الجسم من (٢٥–٣٠)، ٢٨ (٣٠٪) مع مؤشر كتلة الجسم من (٣٠–٣٥)، في حين أن ١٨ (١٩,٣٪) مع مؤشر كتلة الجسم من (٣٥–٤٠) و ١٦ (١٧,٢٪) كانوا مع مؤشر كتلة الجسم أكثر من ٤٠. هذه الدراسة

أظهرت أن داء السكري وارتفاع ضغط الدم والسمنة من الأمراض الشائعة المصاحبة لمتلازمة النفق الرسغي في المملكة العربية السعودية. بأعلى نسبة مع داء السكري والسمنة. وهذه النتائج مقارنة لتلك في الدول المتطورة.