The Association of Age, Sex and the Number of Sides of Carpal Tunnel Syndrome

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Abstract

The association of age, sex and the number of sides of carpal tunnel syndrome were studied in 250 patients. The mean age of the patients with bilateral involvement was more than unilateral involvement ($t = 2.48$, $p < 0.05$). A statistically significant association was found between age and the number of sides of carpal tunnel syndrome (chi-square = 16.707, $p < 0.05$). There was also statistical significance in association of sex and the number of sides of carpal tunnel syndrome (chi-square = 10.2398, $p < 0.01$). The association of age, sex and the number of sides of carpal tunnel syndrome found in the study may help the prediction of diagnosis and natural history of the disease.

Key word : Carpal Tunnel Syndrome, Age, Sex, Side

Carpal tunnel syndrome is the most common and most important of all nerve entrapment syndromes[1]. A process of vascular insufficiency is the primary abnormality in carpal tunnel syndrome[2]. The natural history of carpal tunnel syndrome was studied by Phalen[1,3], and many conditions was also reported to be associated with carpal tunnel syndrome[1,3]. The purpose of this study was to identify the association of age, sex and the number of sides of carpal tunnel syndrome in the patients.

MATERIAL AND METHOD

From October 1996 to May 1998, 250 patients with carpal tunnel syndrome were diagnosed by the authors at the out patient clinic, Department of Orthopaedics, Ramathibodi Hospital. Electrodiagnosis was done in all patients to confirm the diagnosis. The age, sex and the amount of sides of carpal tunnel syndrome were recorded in all cases. Statistical analyses of the data were done by the SPSS / Window program.

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RESULTS

There were 250 patients with carpal tunnel syndrome. Twenty-eight of them were male (11.2%). Bilateral carpal tunnel syndrome was found in 142 patients (56.8%). There were 74 patients (29.6%) with right carpal tunnel syndrome, and 34 patients (13.6%) with left carpal tunnel syndrome. The mean age of the patients was 50.868 years (range, 26-82).

In Table 1, from the Levene's test for the equality of variance in both groups of patients, there was no difference of the variance of age of the patients between both groups ($F = 0.686$, $P = 0.408$). The mean age of the patients with bilateral involvement was more than that of unilateral involvement with statistical significance shown by pooled t-test ($t = 2.48$, $p < 0.05$).

The association of the ages of the patients and the number of sides of carpal tunnel syndrome is shown in Table 2. In the third and fourth decades of life, the number of patients with unilateral carpal tunnel syndrome was more than that of bilateral involvement. After the age of forty, the number of patients with bilateral carpal tunnel syndrome was more than that of unilateral involvement. There was statistical significance in the association of age and the number of sides of carpal tunnel syndrome (chi-square = 16.707, $p < 0.05$).

Unilateral carpal tunnel syndrome was mostly found in male patients (71.4%), but 60.4 per cent of the patients with bilateral carpal tunnel syndrome were female. There was statistical significance in the association of sex and the number of sides of carpal tunnel syndrome (chi-square = 10.2398, $p < 0.01$) Table 3.

Table 1. Pooled t-test comparing age means to the number of sides of carpal tunnel syndrome.

the number of sides	number of patients	mean age (S.D.)	t-value
bilateral	142	52.155 (9.115)	2.48*
unilateral	108	49.176 (9.784)	

* $P < 0.05$

Table 2. Chi-square test for the association (number of patients (% by row) of age and the number of sides of carpal tunnel syndrome.

Age (year)	the number of sides		total	x^2
	unilateral	bilateral		
21-30	2 (100%)	0	2 (100%)	16.707*
31-40	20 (58.8%)	14 (41.2%)	34 (100%)	
41-50	46 (48.9%)	48 (51.1%)	94 (100%)	
51-60	22 (28.6%)	55 (71.4%)	77 (100%)	
61-70	17 (47.2%)	19 (52.8%)	36 (100%)	
71-80	1 (16.7%)	5 (83.3%)	6 (100%)	
81-90	0	1 (100%)	1 (100%)	

* $P < 0.05$

Table 3. Chi-square test for the association (number of patients (% by row) of the sex of patients and the number of sides of carpal tunnel syndrome.

sex	the number of sides		total	x^2
	unilateral	bilateral		
male	20 (71.4%)	8 (28.6%)	28 (100%)	10.2398**
female	88 (39.6%)	134 (60.4%)	222 (100%)	

** $P < 0.01$

DISCUSSION

According to Phalen[1,3], the ratio of women to men with carpal tunnel syndrome was 3 : 1. In our series, it was approximately 9 : 1. As in Phalen's series[1,3], more than half of the patients were between forty and sixty years of age. In this study, bilateral involvement was found in more than half of the patients, which was consistent with Kaplan's series[4].

In the present study, the mean age of patients with bilateral involvement was more than that of unilateral involvement ($t = 2,48$, $P < 0.05$). A statistically significant association was found between age and the number of sides of carpal tunnel syndrome (chi-square = 16.707, $p < 0.05$). In conclusion, the number of sides of carpal tunnel syndrome increased consistently with age of the patients.

An explanation for the association of age of the patients and the number of sides of carpal tunnel syndrome is possible. With increasing age, the sensory conduction of the median nerve becomes slower[5,6]. The peripheral nerve in the elderly may be more sensitive to pressure, probably due to decreased reparative ability, alteration in the microcirculation or an increased incidence of proximal

nerve compression[7,8]. Old age is one of the strongest risk factor for carpal tunnel syndrome[9], and age over 50 years is one of the five poor predictive factors in the non-surgical treatment of this disease[4]. Obesity, which is commonly found in the elderly, was also found to be associated with carpal tunnel syndrome[10-12]. All of this evidence may support our findings in the study.

A statistically significant association was also found between sex and the number of sides of carpal tunnel syndrome (chi-square = 10.2398, $p < 0.01$). Unilateral carpal tunnel syndrome was mostly found in males, but bilateral involvement was commonly found in females. According to Comi G[9], female sex was the strongest risk factor for carpal tunnel syndrome which related to bilateral involvement, commonly found in female patients.

The association of age, sex and the number of sides of carpal tunnel syndrome in this study may help the prediction of diagnosis and natural history of the disease. Long term planning after the first diagnosis of one side carpal tunnel syndrome may help prevention of the other side.

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ความสัมพันธ์ของ อายุ, เพศ และจำนวนข้างที่เป็นในผู้ป่วยอาการเส้นประสาทมีเดียนถูกกดทับบริเวณอุโมงค์ข้อมือ

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การศึกษาในผู้ป่วยอาการเส้นประสาทมีเดียนถูกกดทับบริเวณอุโมงค์ข้อมือ 250 ราย เกี่ยวกับอายุ เพศ และจำนวนข้างที่เป็นโรค พบว่าอายุเฉลี่ยของผู้ป่วยที่เป็นโรคดังกล่าว 2 ข้าง สูงกว่าผู้ที่เป็นข้างเดียวอย่างมีนัยสำคัญทางสถิติ ($t = 2.48$, $p < 0.05$) อายุและจำนวนข้างที่เป็นโรคมีความสัมพันธ์กันอย่างมีนัยสำคัญทางสถิติ (chi-square = 16.707, $p < 0.05$) เพศและจำนวนข้างที่เป็นโรค มีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติเช่นกัน (chi-square = 10.2398, $p < 0.01$) ความสัมพันธ์ข้างต้นอาจนำมาใช้ประโยชน์ในการทำนายการให้การวินิจฉัย และการดำเนินของโรคดังกล่าว

คำสำคัญ : ผู้ป่วยอาการเส้นประสาทมีเดียนถูกกดทับบริเวณอุโมงค์ข้อมือ, อายุ, เพศ, ข้างที่เป็น

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