ORIGINAL ARTICLE

A CROSS-SECTIONAL STUDY ON CARPAL TUNNEL SYNDROME AMONG PREGNANT WOMEN

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Background: Carpal tunnel syndrome (CTS) is triggered by compression of the median nerve as it passes through the carpal tunnel. The main cause of CTS is the raised pressure inside the carpal tunnel. The common early symptoms of CTS consist of discomfort, numbness, and paresthesia's that particularly impact the first three digits and the outermost portion of the fourth digit **Objective:** To evaluate the frequency of carpel tunnel syndrome in pregnant women. **Methodology:** A cross-sectional study was carried on 165 pregnant patients presenting with wrist pain from November 2023 to May 2024. We determined the frequency of carpel tunnel syndrome in these patients. **Results:** Mean age of 165 patients was 28.28±5.94 years. Carpel tunnel syndrome was diagnosed in 59 (35.8%) patients. CTS was higher in patients in their third trimester 39 (66.1%), the association between CTS and trimester was notable (P = 0.0001). **Conclusion:** We conclude that 35.8% patients in this study were suffering from carpel tunnel syndrome while majority were in their third trimester.

Keywords: Carpel Tunnel Syndrome, Pregnancy, Trimester, Frequency

Citation: Ali T, Khan MN, Shah M, Iqbal RU. A cross-sectional study on carpal tunnel syndrome among pregnant women. J Ayub Med Coll Abbottabad 2024;36(3):684–6.

INTRODUCTION

Carpal tunnel syndrome (CTS) is triggered by compression of the median nerve as it passes through the carpal tunnel. The main cause of CTS is the raised pressure inside the carpal tunnel. The common early symptoms of CTS consist of discomfort, numbness, and paresthesias that particularly impact the first three digits and the outermost portion of the fourth digit [1]. The symptoms of CTS can vary, with pain occurring at the wrist, affecting the entire hand, and perhaps spreading through the forearm or extending past the elbow [2]. The pain related to CTS usually does not radiate to the neck. As the condition progresses, individuals may develop hand weakness, reduced precision in fine motor skills, lack of coordination, and ultimately wasting away of the thenar regions [1,3, 4]. The estimated incidence of CTS in the overall population varies between 1% and 5%. CTS exhibits a higher incidence in females compared to males, with a female-to-male ratio of 3:1. Obese individuals have twice the risk of acquiring CTS, and is rare in youngsters and commonly presents in adults between the ages of 40 and 60 [5-7].

CTS is a frequently occurring problem observed in pregnancy. The median nerve is impaired in nearly all pregnant women, particularly in the third trimester, even if there are no symptoms present [8]. However, many individuals may still experience some difficulties for at least three years following delivery and will need to continue wearing immobilizers [9]. Fluid retention causes edemas, hormonal fluctuations, increased nerve sensitivity, and changes in glucose levels, all of which contribute to the development of symptoms in pregnant women [10].

CTS can be attributed to many factors including as pregnancy. Considering that the majority of women experience multiple pregnancies, studying the impact of pregnancy on the development or worsening of CTS can be advantageous. Common symptoms reported include paresthesia, dysesthesia, and hyperalgesia in the region innervated by the median nerve [11, 12]. According to a study, conservative management was proved to be more efficacious and less risky in pregnant women [13]. Another study reported the incidence of carpal tunnel syndrome in pregnant women was 34% [14], and 34.3% of women experienced intense pain [14].

During pregnancy, the body experiences physiological changes that can increase the chance of developing CTS. These changes include fluid retention, hormone shifts, and an increase in blood volume. Although it is a frequently observed phenomenon, there is still insufficient research on the exact prevalence, risk factors, and influence on the quality of life of pregnant women. Gaining a comprehensive understanding of CTS in this specific population is essential for formulating efficient management approaches and delivering precise

therapies to reduce symptoms, boost maternal well-being, and optimize the overall pregnant experience. The study is conducted to address the current lack of understanding by undertaking a thorough examination of CTS in pregnant women. This will provide significant insights for clinical practice and maternal care standards.

MATERIAL AND METHODS

This cross sectional study was conducted at gynecology department from November 2023 to May 2023 after taking ethical approval from our hospital. We selected one hundred and sixty five pregnant patients having age 18 to 40 years in their first, second and third trimester. These patients were presented with complaints of wrist pain, hand pain and numbness. Diabetic patient and patients with hypothyroidism were not included. Carpel tunnel syndrome was diagnosed in these patients by clinical examinations, discomfort, altered sensation, and functional restrictions in the wrist joint. All the data was recorded on a pro-forma.

Data analysis was carried out using SPSS 24. Chi Square test was applied where applicable by keeping value of P significant at < 0.05.

RESULTS:

Mean age of 165 patients was 28.28±5.94 years while their mean BMI was 28.24±1.13 kg/m^2. We observed that 76 (46.1%) of our patients were educated while 89 (53.9%) were uneducated. Occupation distribution showed that 98 (59.4%) patients were housewives, forty (42.2%) had teaching job while 27 (16.4%) had office job. Most of the patients were in their third trimester (Figure 1). Carpel tunnel syndrome was observed in 59 (35.8%) patients (Table 1). Table 2 presents the severity of carpel tunnel syndrome, majority of the patients were presented with mild CTS followed by severe. In patients with CTS, right wrist was effected in 10 (16.9%) patients, left in 15 (25.4%) patients while bilateral CTS was observed in 34 (57.6%) patients (Table 3). Frequency of CTS was higher in patients in their third trimester 39 (66.1%). We observed a notable association of CTS with trimesters (P = 0.0001) (Table 2).

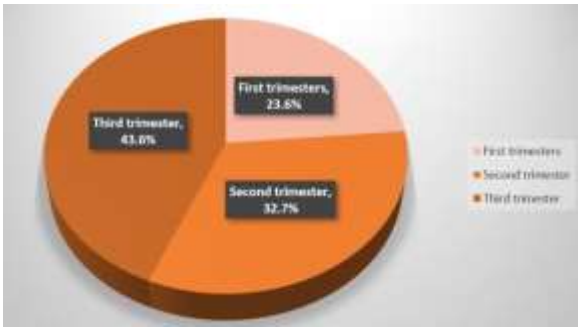

Figure-1: Trimester

Table 1:Frequency Of Carpel Tunnel Syndrome

Carpel tunnel syndrome	Frequency	%
Yes	59	35.8
No	106	64.2
Total	165	100.0

Table 2: Severity of Carpel Tunnel Syndrom

Severity of carpel tunnel syndrome	Frequency	%
Mild	28	47.5
Moderate	13	22.0
Severe	18	30.5
Total	59	100.0

Table 3: Side Of Wrist

Side of wrist	Frequency	Percent
Right	10	16.9
Left	15	25.4
Bilateral	34	57.6
Total	59	100.0

Table 4: Association Of Carpel Tunnel Syndrome With Trimester

		Trimester			Total	P value
		First trimester	Second trimester	Third trimester		
Carpel Tunnel Syndrome	Yes	8	12	39	59	0.0001
		13.6%	20.3%	66.1%	100.0%	
	No	31	42	33	106	
		29.2%	39.6%	31.1%	100.0%	
Total		39	54	72	165	
		23.6%	32.7%	43.6%	100.0%	

DISCUSSION

After low back pain, carpal tunnel syndrome (CTS) is the second- most frequent musculoskeletal issue that pregnant women experience. In comparison to 40 non-pregnant females, Baumann et al. discovered that the sensory conduction characteristics of the median nerve in 69 pregnant females were aberrant. Additionally, four patients acquired electrophysiological median neuropathy later in pregnancy or after giving delivery, making up eight (11%) of the patients with this syndrome. The scientists came to the conclusion that

aberrant median nerve hypersensitivity and pressure susceptibility had been brought on by pregnancy.[15]

When compared to the general population, the reported incidence of CTS during pregnancy is greater and more varied. Because pregnant women's CTS signs and functional limitations are less severe than those of non-pregnant women, these disorders may go undiagnosed and untreated, leading to a potential shortage of healthcare professionals[16]. 31%–62% of individuals self-reported having CTS symptoms during pregnancy, despite reports that the incidence of electrophysiological median neuropathy in maternity ranges from 7%–43%. Pregnancy-related CTS is typically bilateral and peaks in the third trimester at the time of greatest weight growth and bodily fluid retention. Usually, the third trimester is when the CTS that began in the very first or second trimester gets worse.[17] The initial signs and symptoms of CTS in pregnant patients are comparable to those in women who are not pregnant. Along with the dispersion of the median nerve, wrist pain, night awaking, impaired two-point discrimination, and later on, thenar muscle atrophy, the pregnant patient also reports numbness and paresthesia[18].

We conducted our study on 165 pregnant patients who were in their 1st to third trimester presenting with wrist pain complains. We observed that highest number of patients were in their third trimester. This has been reported by a local study which showed that the frequency of pregnant women in their third trimester was higher than 1st and 2nd trimester.[19] Out of these 165 patients we observed the frequency of carpel tunnel syndrome was 59 (35.8%). The aforementioned local study reported that the frequency of CTS in their study was 30%.[19] Another local study also reported that 80 out of 200 pregnant patients had CTS[20]. To our observation the frequency of CTS was higher in patients in their third trimester as compared to first and second, this association was notable (P = 0.0001). Similar results have been reported by the aforementioned studies, they found that patients in their third trimester had higher frequency of CTS.[19, 20]

CONCLUSION

We conclude that 35.8% patients in this study were suffering from carpel tunnel syndrome while majority were in their third trimester. We recommend that patients in their third trimester having wrist pain, hand pain and numbness should be advised for nerve conduction tests for early diagnosis of CTS.

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