

Carpal Tunnel Syndrome in Pregnancy

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ABSTRACT

Objective: To determine the frequency, severity and prognosis of carpal tunnel syndrome (CTS) in pregnancy.

Study Design: Descriptive Cross-sectional study

Place and duration of Study: This study was conducted in Gynae "B" Unit of Khyber Teaching Hospital, Peshawar from Apr 2012 to Mar 2013

Materials and Methods: During the study period, pregnant women presenting to Antenatal Outpatient Department of Gynae B unit were randomly assessed for carpal tunnel syndrome. If present, severity of CTS and its relation to age, trimester of pregnancy, weight gain during pregnancy, parity and any underlying medical problem was made. Treatment was advised and response to treatment was assessed. Patients were followed up for outcome.

Results: Of 1000 Pregnant women assessed, 22.3% had symptoms and signs suggestive of CTS. Bilateral (68%) paresthesia (82%) and pain (60%) in third trimester of pregnancy were the most frequent presenting symptoms. It was more common in >30 years old multigravidae and with a weight gain in pregnancy of more than 15kg. Majority (95%) of patients responded to splinting of wrist at night.

Conclusion: Carpal tunnel syndrome is common during third trimester of pregnancy especially in multigravidae who gain more weight during pregnancy and are above 30 years of age. CTS severe enough to warrant surgical treatment occurs infrequently in pregnancy and generally responds to conservative treatment.

Key Words: Carpal tunnel syndrome, Pregnancy.

INTRODUCTION

Carpal tunnel syndrome (CTS) refers to the complex of symptoms and signs brought on by compression of the median nerve as it travels through the carpal tunnel.¹ Pregnancy is the most common physiologic condition associated with CTS.^{1,2} Pregnancy-related CTS is likely due to a combination of hormonal fluctuations and fluid retention, which lead to local edema in the carpal tunnel resulting in ischemia of the nerve.²

Reported rates of CTS in pregnant women vary widely from 0.8% to as high as 70%.^{3,4} Pregnant women with pre-eclampsia, hypertension, excess weight gain, and edema are at increased risk of developing CTS.⁴ Most cases of pregnancy-related CTS present by the third trimester.^{3,4,5} CTS is primarily a clinical diagnosis based on patient history and physical examination; imaging studies and electro diagnostic tests may be helpful when diagnosis is uncertain.^{5,6}

Patients with CTS typically complain of pain, numbness, and tingling of the fingers.⁷ Some patients experience an aching sensation over the ventral aspect of the wrist or loss of grip that results in dropping things.^{6,7} Symptoms are commonly intermittent and associated with certain activities (e.g., driving, reading the newspaper, painting).^{7,8} Clinical Signs used for the diagnosis of CTS are: The Hoffman-Tinel sign (i.e., tingling in response to gentle tapping over the median nerve in the carpal tunnel region) and/or the Phalen sign (i.e., tingling induced by full flexion of the wrist for 60 seconds).^{8,9} The carpal compression test (i.e., applying

firm pressure over the carpal tunnel for 30 seconds) and/or the hand elevation test (i.e., elevating the hands above the head for one minute) may induce symptoms.⁹ Most pregnant women with CTS can be managed conservatively with wrist splinting (to keep the wrist at a neutral angle, thereby reducing pressures within the carpal tunnel) and psychosocial support; ultrasound therapy and use of specialized ergonomic equipment (e.g., computer keyboards, wrist supports) may also provide some relief.^{10,11} Researchers also report that conservative management are safe and effective for treatment of pregnant women with CTS.¹² Injection of corticosteroid into the carpal tunnel may be warranted for patients who do not respond to splinting.^{12,13,14} Some women with severe symptoms may require surgery (i.e., sectioning of the transverse carpal ligament to release pressure on the median nerve, but this is generally delayed until after delivery).^{15,16,17} Most women with pregnancy-related CTS experience a reduction in symptoms within the first 2 weeks postpartum, with complete resolution within the first 1–3 years after delivery.^{18,19,20} Those who do not improve are at risk for permanent disability if untreated.^{21,22,23,24} This study aims to determine the frequency and severity of Carpal tunnel syndrome in pregnancy. The prognosis of CTS in relation to its response to treatment and its resolution after delivery was also assessed.

MATERIALS AND METHODS

It was a descriptive cross sectional study done in outpatient Antenatal department of Gynae "B" Unit of

Khyber Teaching Hospital from April 2012 to March 2013. All pregnant patients presented to Antenatal department during the study period were included in the study. About 10 patients were randomly selected per day, on the two designated OPD days of the unit per week. At the end of study period a total of 1000 patients were assessed. All the selected patients were assessed for the presence of carpal tunnel syndrome (CTS). A detailed history was taken from each patient including parity, duration of symptoms, comorbid conditions like obesity and diabetes with special emphasis on the presence of symptoms of CTS. Severity of CTS was assessed with Boston Carpal Tunnel Syndrome Questionnaire. Detailed Physical examination was carried out. Help of the second author was taken in eliciting the clinical signs of CTS. When in doubt nerve conduction studies were done to support the diagnosis. Management was done according to severity of the problem. Patients with minimal symptoms were reassured and were followed up for worsening of symptoms, while patients with moderate and severe symptoms were prescribed splinting of wrist. All the patients were followed up to document their response to treatment. Patients with persistent symptoms despite splinting were administered steroid injection in the wrist by the second author; however surgical intervention even if indicated was delayed till delivery. All the patients were followed up till complete resolution of symptoms. CTS frequency was calculated. Mean and standard deviation were calculated for age, parity, period of gestation and weight gain during pregnancy.

RESULTS

A total of 1000 pregnant women were assessed during the study period. Carpal Tunnel Syndrome was diagnosed to be present in 223 (22.3%) women. All the observations were made for these 223 patients. Mean age was 32 ± 2.2 SD with a range of 18-40 years. There were 80 primigravidae and 143 multigravidae. Mean parity was 3. Mean period of gestation was 34.2 ± 1 weeks. Eighty two percent patients were in third trimester of pregnancy. Mean weight gain during the index pregnancy was 15.5 ± 0.5 kg. Nine (4.03%) patients were having gestational diabetes and two were Type 2 diabetics. There were 20 (8.96%) patients with pregnancy induced hypertension and 2 (0.89%) were pre-eclamptic. Forty (17.9%) patients were having edema.

One hundred and eighty two (81.6%) patients were having paresthesia and tingling sensations as their presenting symptom. Bilateral CTS was present in 68.1% patients. In 92 % patients symptoms were aggravated at night. The Tinel sign was present in 95%. Sixty three percent patients had mild symptoms while 34% had moderate symptoms. Only 7 patients had severe symptoms. Mean duration of symptoms was 5 ± 3

weeks. None of the patients had received any prior treatment for their condition. Only five patients had nerve conduction studies performed.

Table No. 1: Characteristics of patients with Carpal tunnel syndrome (n=number of patients)

Age (years)	Mean = 32 ± 2.2 SD
Period of Gestation (weeks)	Mean = 34.2 ± 1 SD
Primigravidae	n=80
Multigravidae	n=143
Weight gain during pregnancy (kg)	Mean = 15.5 ± 0.5 SD
Gestational Diabetes	n=09
Pregnancy induced Hypertension	n=20
Edema	n=40

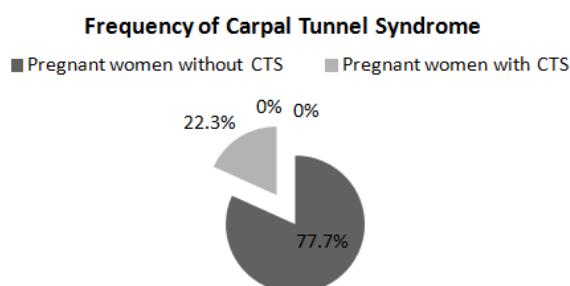


Figure No. 1: Frequency of Carpal tunnel syndrome in 1000 Pregnant women

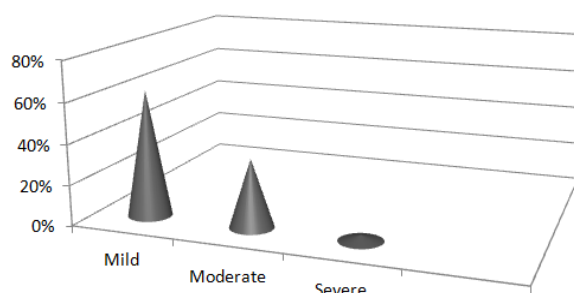


Figure No. 2: Severity of symptoms

Ten patients were given no treatment as the gestation was advanced and expected date of delivery was close. Rest of the patients was offered splinting of wrist and 95 % patients responded well to this treatment. Five patients were given steroid injection and the response rate was 92 %. Only one patient had to be operated after delivery for debilitating symptoms.

DISCUSSION

In our study CTS was diagnosed in 22.3% of pregnant women which is close to that reported by Gary G. Nicholas et al¹⁸ However the incidence of CTS in pregnancy is reported variously in different studies.^{4,7,14} probably because of the difference in populations being studied. Furthermore CTS is under reported as pregnant

women often disregard the symptoms of this disorder, unless specifically asked and looked for by the doctor.

We found bilateral paresthesia and tingling to be the most common presenting symptom and tincl sign was the most prevalent sign. This correlates with Stolp-Smith et al.²² Carpal tunnel syndrome was more frequently diagnosed in third trimester of pregnancy. Same was the observation made by J.S. Wand.⁶

We found CTS to be most prevalent in multigravidae which contradicts the findings of Gunvor Ekman-Ordeberg.²¹ However, their study sample comprised of more primigravidae whereas the 1000 pregnant women that we assessed were having more multigravidae. To determine the true frequency of the problem, studies need to be done separately in primigravidae and multigravidae or the sample needs to have equal number of primigravidae and multigravidae.

In our study majority of patients responded to simple conservative measures like wrist splinting. This fact has been elucidated in a number of studies.^{10, 11} Since CTS is a physiological manifestation of fluid retention that occurs normally in pregnancy, interventions like steroid injections and surgical release should never be offered in first place. If pregnancy is near term, it is wise to wait till delivery. In majority of cases the condition remits after delivery in the postpartum period as soon as edema and fluid retention subsides, and increased weight of pregnancy is shed off. This has been proven in a number of studies.^{5,13,21,22}

Steroid injection into the wrist is very effective for the relief of symptoms¹². It is indicated when conservative measures fail and as a last resort in patients having debilitating symptoms. It is safe and free of any hazards for the mother or fetus. Surgical management wherever possible, should be done only when symptoms fail to improve after delivery.

Our study had several limitations. We randomly assessed pregnant patients presenting to the antenatal department irrespective of age, parity and period of gestation. Our sample of 1000 patients was having more patients who were multigravidae and were already in third trimester of their pregnancy, because of the fact that most of pregnant women come for antenatal checkup at an advanced gestation. Splinting of wrists although advised was not strictly followed by the patients. Furthermore electrophysiological studies were not done in all patients due to this being costly and not widely available.

CONCLUSION

Carpal tunnel syndrome is a common physiological condition seen in pregnant women. It presents as paresthesia in both hands and mostly during the third trimester. The condition is often mild and not life threatening and responds well to simple measures like wearing wrist splints. It follows a natural benign course of gradual spontaneous remission after delivery.

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