Pregnancy related carpal tunnel syndrome

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Research Article

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Abstract

Hand and wrist disorders are common during pregnancy. Most of these problems develop during the third trimester when hormonal changes, fluid retention, and weight gain are maximum. This review study aimed to discuss pregnancy-related carpal tunnel syndrome, and provide an overview of pathology, clinical presentations, clinical examinations, and treatment options. Pregnancy-related carpal tunnel syndrome may remain undertreated and reduce pregnant women' quality of life. Non-surgical treatments are usually effective for pregnancy-related carpal tunnel syndrome. In general, pregnancy-related carpal tunnel syndrome has a good prognosis and usually resolve after childbirth.

Keywords: Hand and wrist disorders; Pregnancy; Carpal tunnel syndrome; Tinel's sign; Phalen's test; Durkan's test

INTRODUCTION

Carpal Tunnel Syndrome (CTS) is common disorder during pregnancy. Hormonal changes, fluid retention, and weight gain may exacerbate or precipitate carpal tunnel syndrome during pregnancy. Patients may complain of specific and non-specific problems, which may decrease daily activity of pregnant women. Any treatment should consider the risks to the fetus against the benefit might get by the mother [1].

CTS is the second most common musculoskeletal problem during pregnancy after low back pain. The reported prevalence of CTS is higher in pregnant women compared to the general population. The severity of symptoms and functional impairments of CTS in pregnant women are relatively mild compared to that in non-pregnant women; so, these conditions may be overlooked by healthcare providers and remain underdiagnosed and undertreated [2]. The prevalence of electrophysiological median neuropathy during pregnancy has been reported to be 7%-43%; however, 31%-62% of them complain from CTS symptoms during pregnancy. The pregnancy related CTS is usually bilateral and mostly develops in the third trimester of pregnancy. The developed CTS in the first or second trimester usually aggravates in the third trimester [3].

The presenting symptoms of pregnancy related CTS are similar to those in non-pregnant patients. The pregnant patient describes numbness and paresthesia along with the distribution of the median nerve, wrist pain, night awakening, decreased two-point discrimination, as well as thenar muscle atrophy at the later stages [4]. Tinel's sign, Phalen's test, and Durkan's test may be positive. The electrophysiological criteria used for the diagnosis of median nerve neuropathy at the wrist in pregnant and non-pregnant women are similar (a sensory latency>3.5 ms and a motor latency>4.5 ms) [4].

Pregnant females with CTS have higher levels of fluid retention, compared to pregnant females without CTS [5]. Risk factors for pregnancy-related CTS [6,7]:

- Gestational hypertension and preeclampsia.
- High body mass index.
- History of smoking and alcohol consumption.
- Non-Caucasian ethnicity.
- Alteration in glucose metabolism and diabetes.
- Increased maternal age.
- Tenosynovitis, and CTS symptoms during the previous pregnancies.
- Dpression.

Pregnancy-related CTS usually has a benign prognosis and symptoms usually resolves few weeks after childbirth, and is strongly correlated with loss of the weight gained during pregnancy; however, electrophysiological changes may take a longer time to return to normal limits [5]. The repetitive hand movements required for nursing and caring a newborn, along with the residual fluid retention and hormonal changes, may delay complete relief of symptoms and some pregnant women still complained of CTS symptoms for one year or even three years after child birth [3].

Activity modification, edema control measures, and wrist splinting keep the wrist in a neutral position provide symptomatic relief of pregnancy-related CTS. Steroid injection may provide temporary symptom relief in a majority of patients. Steroids can be used safely during pregnancy and lactation, provided there are not contraindicated due to other systemic disorders [4]. Surgery is rarely indicated and considered when the symptoms and functional impairments are severe, nonsurgical treatments are ineffective, and significant nerve compression is detected in the electrophysiological study. Carpal tunnel surgery under local anesthesia is a safe procedure for the mother and fetus [5]. The Wide-Awake Local Anesthesia No Tourniquet (WALANT) technique may be used in some cases for whom surgery is needed [8].

Pregnancy-related CTS may decrease pregnant women's quality of life. However, this condition are benign, self-limited, and temporary with expected resolution following pregnancy. Most pregnancy-related CTS develop during the third trimester of pregnancy, when the hormonal changes, fluid retention, and weight gain reaches the maximum. Non-surgical treatments are usually effective. In general Pregnancy-related CTS has a good prognosis and usually resolve after childbirth. However, some problems may persist during the postpartum period. This work aimed to describe the pregnancy-related carpal tunnel syndrome and provide an overview of pathology, clinic presentations, clinical examinations, and treatment options.

METHODS

Prospective analytic study was conducted in Basrah governorate between January 2013-January 2014. Pregnant women attended the Primary Health Care Centers and the Gynecological and Obstetric Outpatient Department of the central and peripheral Basrah hospitals were randomly selected disregarding their age, the

gestational age, number of pregnancies, and the presence of CTS. The pregnant women were asked about any symptom of CTS during the present pregnancy.

Biosocial data obtained through the questionnaire included maternal age, gestational age, gravidity, parity, occupation and residency. Variables relating to the pain obtained included site, onset, frequency, duration, character, severity, radiation, aggravating and relieving factors, associated symptoms and physical dysfunction experienced during the painful episode as well as the treatment options sought for the relief of pain further information was also collected regarding past medical, surgical history and drug history.

Special test includes Phalen's test, reverse Phalen's test, Tinel's test and carpal tunnel compression test hands was performed for every patient. Height and weight were measured and body mass index was calculated for every patient with pregnancy related CTS. No investigation was done and there was no follow up of patients.

A total 500 pregnant women with complete data were recruited. Statistical analyses were performed using SPSS version (21) statistical software tool, prevalence and frequency were calculated using standard techniques.

RESULTS

Fifty-four (54) out of five hundred (500) pregnant women attended the Antenatal Care in Primary Health Care Centers and Gynecological and Obstetric Outpatient Department of the central and peripheral Basrah hospitals between January 2013-January 2014, had pregnancy related CTS during their present pregnancy with overall prevalence (10.8%). Thirty-eight patient (70.4%) had bilateral CTS, twelve patients (22.2%) had right side CTS, four patients (7.4%) had left side CTS. sixteen patients (29.6%) were <20 years, (25, 46.3%) presented between (20–30) years of age, (12, 22.2%) presented between (31–40) years of age and (1, 1.9%) were >40 years of age.

Five patients were in 1st trimester (9.2%), (11, 20.4%) patients were in 2nd trimester and (38, 70.4%) patients were in 3rd trimester. Eleven (20.4%) patients were nullipara, (37, 68.5%) patients were multipara and (6, 11.1%) patients were grand multipara (seven or more pregnancy).

Two hundred twenty-five patients were house wives (85.7%), (20, 7.6%) patients were teachers, (5, 1.9%) patients were typists, (3, 1.2%) patients were accountancy, (3, 1.2%) patients were students, (2, 0.8%) patients were Lab. Workers, (2, 0.8%) patients were nurses and (2, 0.8%) patients were pharmacist.

One hundred fifty-eight patients (60.8%) were from rural area while (102, 39.2%) patients were from urban area. One patient with BMI <18.5 (0.4%), (50, 19.2%) patients with BMI (18.5-25) and (209, 80.4%) patients with BMI >25. Most patients with CTS had bilateral involvement (70.4%) as shown in (Table 1).

Table 1. Pattern of CTS.

		No.	%
Valid	Bilateral	38	70.4
	Right side	12	22.2
	Left side	4	7.4
	Total	54	100.0

RELATION BETWEEN CTS AND AGE OF THE PATIENT

Most patients with CTS presented between (20-30) years of age (46.3%) as shown in the (Table 2).

Table 2. Relation between CTS and age of the patient.

		No.	%
	<20 years	16	29.6
	20-30 years	25	46.3
	31-40 years	12	22.2
	>40 years	1	1.9
Valid	Total	54	100.0

RELATION BETWEEN CTS AND GESTATIONAL AGE

Most patients with CTS presented in 3rd trimester (70.4%) as shown in the (Table 3).

Table 3. Relation between CTS and gestational age.

		No.	%
	1st trimester	5	9.3
	2nd trimester	11	20.4
	3rd trimester	38	70.4
Valid	Total	54	100.0

RELATION BETWEEN CTS AND PARITY

Most patients with CTS were multipara (68.5%) as shown in the (Table 4).

Table 4. Relation between CTS and parity.

		No.	%
	Nullipara	11	20.4
	Multipara	37	68.5
	Grand multipara	6	11.1
Valid	Total	54	100

RELATION BETWEEN CTS AND BODY MASS INDEX

Most patients with CTS had BMI >25 Kg/m^2 (79.6%) as shown in the (Table 5).

Table 5. Relation between CTS and body mass index.

		No.	%
	2	11	20.4
	3	43	79.6
Valid	Total	54	100

DISCUSSION

Pregnancy can be joyful time and exciting anticipation but this feeling can be disturbed because of structural and hormonal changes that involved the hands and related structures of joints and nerves during period of pregnancy

[9].

This study showed that (54) pregnant women had CTS during their current pregnancy with overall prevalence (10.8%).

These results can be discussed from social aspect as majority of women in our locality performed nearly all the house duties like preparation of food, washing of clothes, rearing of children, house decorating and shopping; they were often multipara with short interval between pregnancies and most of them are overweighted before the pregnancy and have poor antenatal care; these factors together illustrate the high incidence of pregnancy related CTS in our locality.

Most t patients with pregnancy related CTS presented between (20-30) years of age (25) (46.3%), in 3rd trimester (38) (70.4%) they were multipara (37) (68.5 %) had BMI >25 kg/ m^2 (43), (79.6%). A similar results obtained by study performed by Shadab et al. [10] which revealed that the incidence of pregnancy related CTS was (22.3%), and CTS was bilateral in (68%) of cases. Other studies [11] showed that most cases of pregnant women that had CTS were in 3rd trimester(49%), the most age group of women that clinically had CTS was (25-50) years (76.6%) and association between CTS and parity was insignificant and this is in contrast with the findings of our study which show strong association between CTS incidence and parity.

This finding can be attributed to the fact that CTS is common in young patients because they are physically more active and most of cases were presented in the 3rd trimester as CTS is mostly asymptomatic in the early stages of pregnancy and become more evident as the pregnancy advanced due to exaggerated physiological changes that mediated by hormonal level especially soft tissue edema.

CONCLUSION

The pregnancy related CTS is second most common disorder after low back pain. The pregnancy related CTS for some women can be problematic disorder with considerable disability and distress during pregnancy. Most of the pregnancy related CTS can be identified early and treated with good antenatal care. Restricted use of medication especially non-steroidal anti-inflammatory drugs among our patient's despite of their sever complaint. Good antenatal care at primary health care center during early stage of pregnancy as early identification and treatment of pregnancy related CTS provide the best opportunity for good results. Further research to further evaluate the problem. Advice pregnant women to avoid positions of median nerve compression as much as possible.

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