International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622

www.gynaecologyjournal.com
2020; 4(1): 30-33
Received: 14-11-2019
Accepted: 18-12-2019

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An epidemiological study of carpal tunnel syndrome among pregnant women at Al-Wahda hospital Derna

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DOI: https://doi.org/10.33545/gynae.2020.v4.i1a.438

Abstract
Carpal tunnel syndrome (CTS) the most common and the most widely known entrapment neuropathy. It is occurs when pressure is exerted on the median nerve that runs from the forearm into the palm of the hand. This leads to progressive pain, numbness and weakness in the palm associated with problems in fine movement and pain on the hand when tapping over the median nerve at wrist. To detect the ecological factors, determine adequate management of CTS among pregnant woman and to recommend suitable preventable measures of CTS.
This descriptive case series study was done among pregnant women admitted to antenatal ward or coming for antenatal visits were evaluated for carpal tunnel syndrome. Carpal tunnel syndrome was diagnosed based on symptomatology and clinical examination.
Among the 74 pregnant ladies diagnosed with carpal tunnel syndrome, the majority of cases were at age of 28-32 years (33.8%), 51.3% were housewives and 17.6% had hypertension. We observed in this study that the majority of cases were in their third trimester 56.8%, 29.7% in blood group A, 31.1% were primigravidae. However, no case underwent surgery.

Keywords: carpal tunnel syndrome, median nerve, physiotherapy, surgery

Introduction
The carpal tunnel is a small passage in the wrist where nerves and tendons pass from forearm into the hand and fingers. In the tightly crowded flexor tunnel the median nerve can be compressed by continued swelling in the synovial sheath [1, 2, 3]. Nerve supply to the hand is by the radial, median and ulnar nerves, which are branches from the brachial plexus [4].
Carpal tunnel syndrome (CTS) is the most common and the most widely known entrapment neuropathy. It is occurs when pressure is exerted on the median nerve that runs from the forearm into the palm of the hand. This leads to progressive pain, numbness and weakness in the palm associated with problems in fine movement and pain in the hand when tapping over the median nerve at wrist [5, 6]. The condition affects approximately 3% of the population, more commonly women. Pregnancy related carpal tunnel syndrome (PRCTS) is the most frequent mono-neuropathy during pregnancy. The reported incidence of PRCTS varies widely and ranges from 0.8% to 70% depending on the diagnostic method and the physician. There are many causes of carpal tunnel syndrome, repetitive stress, rheumatoid arthritis, diabetes, colles fracture, pregnancy, menopause and obesity are the common causes [7]. During pregnancy there is fluid retention, which leads to edema on the ligaments that form the roof of the tunnel this leads to nerve compression [8].
Diagnosis can be by clinical presentation, nerve conduction and electromyography. MRI and blood tests are recommended to determine the underlying condition. The physical diagnostic test is by lightly tapping the wrist to elicit any feeling of tingling or numbness in the fingers and is a reliable test for the diagnosis of carpal tunnel syndrome [9, 10]. Generally, the syndrome tends to pass after birth, on the other hand and according to the literature, PRCS may persist until after breastfeeding ceases and possibly after. Treatment of PRCS is mostly conservative, with local intracarpal injection of steroids if conservative approach fails. Intracarpal injections have demonstrated a significant decrease in symptoms and low recurrence rate with no fetal or maternal risk [11, 12]. Surgical intervention is rarely indicated during pregnancy.
Physiotherapy has a role in the treatment of PRCS by applying packs, wrist splint especially at night to keep the wrist straight, and the use of massage and gentle exercise to provide muscle-pumping action [13, 14, 15].

Surgery for decompression is sometimes necessary and is generally successful [16, 17].

Objectives

To detect the ecological factors of carpal tunnel syndrome among pregnant woman, to determine the adequate management of CTS and to recommend the suitable preventative measures for CTS.

Methods

This descriptive case series study was done in department of obstetrics & gynecology at Al-Wahda hospital and in an antenatal private clinic from 26/4/2018 to 27/6/2018. Pregnant women admitted to antenatal ward or coming for antenatal visits were evaluated for carpal tunnel syndrome. 74 pregnant women presented with carpal tunnel syndrome and were included in our study. Carpal tunnel syndrome was diagnosed based on symptomatology and clinical examination. Data was collected from by questionnaires. Questionnaire included age occupation, blood group, gravidity, parity and gestational age estimated either by last normal menstrual cycle or by early ultrasound. Medical history was taken regarding diabetes mellitus, hypertension rheumatoid arthritis, renal disease, history of trauma, obesity, family history of CT syndrome, relieving factors like rest, elevation, splint, exercise ice packs, massage, home physiotherapy, medication and surgery.

Results

Seventy-four pregnant women with CTS were included in the study. The age of pregnant women were range from 18 to 42 years old. The majority age from 28-32 years (33. 8%) followed by age of 33-37 (32.4%) the least are at age of 18-22 years (6.8%).

According to occupation the majority of cases were housewives (51.3%) followed by teachers (25.7%) and the least are engineers (1.35%) and nurses (1.35%). Among 74 cases with CTS (52.7%) were obese, (17.6%) were hypertensive, (8.1%) diabetic, 2.7% with rheumatoid arthritis, (2.7%) with renal disease, (16.2%) without medical disease, and no cases with chronic cardiovascular disease, hepatitis or HIV.

Among 74 cases with CTS the majority were in the third trimester (56.8%), (18.9%) in second trimester, (12.2%) in first trimester while (12.2%) unsure of date.

Regarding to blood group in patients with CTS the majority of case are either group A account for (29.7%) or group B account for (28.4%), group O account for (24.34%), group AB account for (14.9%).

Among 74 cases of CTS (44.6%) are gravid 2 to 4, (31.1%) are primigravidae and (24.3%) are more than gravidae 4.

Most cases improved by home physiotherapy (79.7%), (20.3%) improved by medications and no case underwent for surgery.

The majority of cases had symptomatic improvement by massage (37.8%), (28.4%) by rest, (14.9%) elevation, (2.7%) splint, (12.2%) ice pack and (4.0%) improved by exercise.

Table 1: Sociodemographic characteristics of pregnant women

	No	Percentages
Age		
18-22	5	6.80%
23-27	11	14.9%
28-32	25	33. 8%
33-37	24	32.4%
38-42	9	12.1%
Occupation		
Housewife	38	51.3%
Teacher	19	25. 7%
Employer	9	12.2%
Doctor	3	4.05%
Student	3	4.05%
Engineer	1	1.35%
Nurse	1	1.35%

Table 2: The obstetrics and medical factors among pregnant women

	Number of case	Percentages
Trimester		
First trimester	9	12.2%
Second trimester	14	18.9%
Third trimester	42	56.8%
Non certain L.M.P	9	12.2%
Blood Group		
A	22	29.7%
B	21	28.4%
AB	11	14.9%
O	20	27.02%
Gravidity		
Primigravidae	23	31.1%
Gravid 2 to 4	33	44.6%
Gravid >4	18	24.3%
Medical Disease		
Obesity	39	52.7%
Hypertension	13	17.6%
Diabetes	6	8.1%
Rheumatoid arthritis	2	2.7%
Renal disease	2	2.7%

Table 3: Distribution of medication

Treatment	Number of case	Percentages
Home Physiotherapy	59	79.7%
Medication	15	20.3%
Total	74	100%

Table 4: Distribution beneficial from home physiotherapy

Type of physiotherapy	Number of case	Percentages
Massage	28	37.8%
Rest	21	28.4%
Elevate	11	14.9%
Ice pack	9	12.2%
Exercise	3	4.0%
Splint	2	2.7%
Total	74	100%

Discussion

Carpal tunnel syndrome is common during pregnancy, particularly in the third trimester. Many studies have been performed about epidemiology of carpal tunnel syndrome in women in different countries however there is no study done in Libya.

Carpal tunnel syndrome (CTS) is the most common and the most widely known entrapment neuropathy, 74 pregnant ladies presented with carpal tunnel syndrome were included in this study in two months duration of the study. The majority of case are at age of 28-32 years, were housewives, obese, at third trimester, multigravida, few with hypertensive and most of them with blood group A&B.

In the present study, most of the pregnant women with carpal tunnel syndrome were in the third trimester this is similar to other studies done [18]. It is justified by the fact that there is increase in water retention, which leads to edema, and most women present in the third trimester.

Our results are similar to another retrospective study done on 40 women with carpal tunnel syndrome that developed in pregnancy with 18 cases of carpal tunnel syndrome in the puerperium. All the cases that developed in pregnancy occurred in the third trimester and resolved after delivery [19].

Atroshi (1999) [20] and Bland (2005) [21] found association between obesity and CTS, which is similar to this study result.

The majority of cases improved by home physiotherapy; with massage and rest, no case in our study underwent surgery.

- To note, Matthew J Page *et al*., (2012) [16] concluded that patients should be informed of the limited evidence of effectiveness and safety of exercise and mobilization interventions.

Another study revealed higher incidence of persistent pain in pregnancy-related CTS in both primigravidas as well as multigravidas. However, the onset of symptoms was in the first or second trimester in 11 women, the third trimester in 12 women [19].

A Limitations of this study are the absence of nerve conduction studies. The small number of cases with short duration of our study. Therefore we recommend repeating this study on a larger sample and for more prolonged period of time.

In conclusion, carpal tunnel syndrome is the most common entrapment neuropathy in which the body's peripheral nerves are compressed. In our study the majority of cases were obese, in the third trimester and were housewives. Regarding treatment modality, the majority of cases found symptomatic improved by home physiotherapy.

We recommend reducing weight before pregnancy and avoiding repetitive tasks that can aggravate CT syndrome. Early treatment and education will help reduce treatment time, optimize function and prevent recurrence.

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