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Correlation of Carpal Tunnel Syndrome with Migraine in Randomly Selected Patients with Migraine in Iraq

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Abstract: Carpal tunnel syndrome (CTS) is a neurological disorder that affects nerve transmission across the wrist joint. It varies from mild to severe cases that may impair normal physical activity. Migraine is another syndrome of variable presenting headache associated in most cases with one or more aura features.
The aim of this study: is to find out whether there is any correlation between CTS and the occurrence of migraine.
Patients and method: 217 patients with migraine were included in the study. A nerve conduction study (NCS) was done to prove CTS's presence.
Results: In 93 patients, they were found to have carpal tunnel syndrome, which was statistically significant.
Conclusion: there is a strong correlation between the CTS and the occurrence of migraine.

Keywords: Carpal Tunnel Syndrome (CTS), Migraine, Nerve Conduction Study.

1. INTRODUCTION:

Carpal tunnel syndrome (CTS) is a common medical disorder that results from the compression of the median nerve as it passes across the carpal tunnel in the wrist (1). The most common symptoms include pain, numbness, and tingling in the thumb, index finger, middle finger, and thumb side of the ring finger (2). Symptoms usually appear gradually, and in the middle of the night, the pain may radiate up the arm (3). In addition, weak grip strength may develop, and the thenar muscles atrophy over time (4). The majority of the time, both hands are afflicted (5). Carpal tunnel syndrome affects about 5% of native persons in the United States (6). It usually starts in adulthood, and women are more likely to be affected than men. However, over a year, up to 33% of patients may improve without treatment.
After World War II, carpal tunnel syndrome was thoroughly understood (7). The majority of CTS cases have no known cause. Obesity, repetitive wrist work, pregnancy, heredity, and rheumatoid arthritis are risk factors (8). Hypothyroidism may enhance the risk, according to preliminary studies. Diabetes mellitus has a shaky link to CTS. Working on a computer,

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working with vibrating instruments, and work requiring a strong hand grip are all examples of work that are linked. Trauma, as well as heredity, may have a role (9). Some extrinsic factors (such as outer pressure imposed on the tunnel) include benign tumours like lipoma, ganglion, or some vascular malformations. A common sign of amyloid deposition is severe carpal tunnel syndrome (10).

Migraine is a primary headache disease characterized by moderate to severe recurrent headaches (11). The episodes usually affect one side of the brain, are pulsing, and last anywhere from a few hours to three days (12). Nausea, vomiting, and sensitivity to light, sound, or scent are possible clinical presentations (13). Physical exertion aggravates the discomfort, while regular exercise may offer preventative benefits (14). Up to one-third of those affected experience an aura, a brief period of visual disturbance that precedes the onset of a headache (15).

Aura can occasional

Aura can occasionally appear with little or no headache, but this is not a common symptom (16). A variety of unknown factors cause migraines. They are, however, suspected to be linked to a combination of environmental or genetic factors. They run in families in nearly two-thirds of instances and are rarely caused by a single gene flaw (17). Migraines were originally thought to be more common in those with high intelligence, but this no longer applies. Numerous psychological illnesses, such as depression, anxiety, and bipolar disorder, as well as many biological occurrences or triggers, are linked (18).

Migraine is thought to be largely a neurological illness, while some feel it is a neurovascular disorder in which blood vessels play a vital role, even though current research does not fully support this.

Others believe that both are crucial. For example, one idea links increased cerebral cortex excitability to aberrant regulation of pain neurons in the brainstem's trigeminal nucleus (19).

2. PATIENTS AND METHOD

: this study was conducted from July 2019 to March 2020. A total number of 217 patients firmly diagnosed as a patient with migraine by specialized neurologists ranging from 26-41 years old were involved in this study. Exclusion criteria were devoid, including diabetes mellitus and other spinal or brain abnormalities (MRI for both brain and spinal cord). In addition, a Nerve conduction study was done for upper and lower limb sensory and motor fibres to exclude any other peripheral polyneuropathy and confirm the diagnosis of CTS.

Results: from the total number of patients with migraine, 93 patients got CTS that proved by NCS. Statistical analysis was done by

Using the Q-square method to detect the significance of the association between migraine and the occurrence of CTS as shown in table (1).

Table (1): the association between pre-existing migraine with incidental CTS:

Total	Migraine with CTS	Migraine without CTS	P value
217	93	124	0.00012*

It was demonstrated that there is a highly significant correlation between both conditions (The

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chi-square statistic with Yates correction is 34.7179) with a very considerable *P* value (0.00012).

3. DISCUSSION

: This study is one of the novel studies conducted in Kerbala- Iraq, to show the association between migraine and CTS locally. CTS is the most frequent illness condition within the larger group of compressive neuropathies. Migraine pain, conversely, has never been thought to represent a kind of compressive neuropathy (20). More recent data suggests that nerve compression in the head and neck may be linked to some migraine headaches (21). The exact pathogenesis of migraine headache, like other peripheral neuropathies like CTS, is unknown (22). The fundamental origin of compressive neuropathies such as CTS and cubital tunnel syndrome and CTS and thoracic outlet syndrome is still unknown. Commonly related comorbidity or a common genetic component may contribute, resulting in higher sensitivity to compression in the peripheral nervous system (23).
Dellon et al. revealed in an animal model in 1988 that the nerves in diabetic animals are more vulnerable to compressive neuropathies than nerves in non-diabetic animals (24).
Peripheral neuropathies are increasingly being recognized as having a central nervous system component. In the same way, our knowledge in understanding migraine headaches is expanding to include contributions from the peripheral nervous system to what was commonly thought to be an exclusively central disorder (25). However, we do not suggest that migraine is an entirely peripheral phenomenon, especially since some migraine patients who are free of pain after surgery still have auras (26). Another possibility is that peripheral irritation or compression causes cerebral sensitization (27), which increases the risk of developing peripheral neuropathy in other sites. In addition, migraine is more common in younger individuals (28), and CTS is more common in older ones; migraine pain may sensitize the central nervous system, making it more susceptible to discomfort from subsequent nerve entrapment in the carpal tunnel (29).
Ethical clearance- Taken
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Conflict of Interest – No conflict of interest is associated with this work.

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