ETIOPATHOGENIC VALUE OF THE ASSOCIATED PATHOLOGY IN CARPAL TUNNEL SYNDROME

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ABSTRACT

The present study focused on highlighting the pathology associated with carpal tunnel syndrome. Carpal tunnel syndrome is a susceptible neuropathy of the upper limb, its appearance being favored by the coexistence of other chronic pathologies.

The study group consisted of 163 patients treated in the Plastic Surgery Clinic of the Emergency County Hospital in Constanța, men and women of adulthood. The only exclusion criteria was non-compliant patients.

The results were consistent with other studies published in the literature, with an over three times higher incidence of female sex.

The decades of age most prone to the disease were the fourth, fifth, and sixth.

Approximately one third of patients experienced bilateral carpal tunnel syndrome.

A particularly important presence of the triad was found: high blood pressure, obesity and diabetes mellitus, at least one of which was present in over 70% of patients.

The etiopathogenicity of the carpal tunnel syndrome is becoming clearer, the "Golden Trio" dominating the clinical picture in most patients.

Keywords: carpal tunnel syndrome, etiopathogeny, comorbidities, prevention

Introduction

Carpal tunnel syndrome is a sensory neuropathy of the upper limb, characterized by the chronic compression of the median nerve, with specific clinical manifestations and chronic evolution (1-4).

Locally, the pathophysiology of the carpal tunnel syndrome results from the play of two variables: the increase in volume of the carpal tunnel content and / or the reduction of the capacity of the container (3,5,6).

However, the chronic compression of the median nerve must be clearly differentiated from other peripheral nerve suffering, induced

by comorbidities, and especially by diabetes mellitus (1,7-9).

In the last 3-5 decades, the incidence of affection is on a permanent increase, explained on one hand by the increasing average life span and on the other by the increasing incidence of comorbidities whose involvement in the evolution of carpal tunnel syndrome is suggestive: diabetes mellitus, obesity, rheumatoid arthritis, chronic renal disease and, last but not least, advanced age (4-9,11,12).

There is now a quasi-unanimous attitude that all conditions are created to make a direct connection between the occurrence of carpal tunnel syndrome and a series of comorbidities,

and many clinical trials have been published on this subject (6,10-13).

History

The first cases of carpal tunnel syndrome were reported in 1854 by Sir James Paget but those who first recorded in history the association between anterior carpal ligament pathology and compression of the median nerve were Pierre Marie and Charles Foix in 1913 and in 1914, the association of nerve compression with tenor muscular atrophy (the tenar - motor - median nerve ram) was described (2,5,6,15).

In 1938, F.P. Moersch introduced the term "Carpal Tunnel Syndrome".

In the second half of the twentieth century, numerous case studies have been published to discover the etiopathogenesis and treatment of carpal tunnel syndrome, a mission that continues today in the world, with a purpose of early diagnosis and of minimally invasive, effective treatment (3-6,14,16).

Material and method

In order to objectively involve in the etiopathogenesis of carpal tunnel syndrome the various comorbidities, we performed a retrospective study on a group of patients who presented themselves in the Plastic Surgery Department of „Sf. Apostol Andrei” County Emergency Clinical Hospital with the diagnosis of carpal tunnel syndrome, in the surgical phase.

The study was conducted over a period of 10 years, namely 01.01.2008 - 31.12.2018, for the completion of the study group we have set criteria for inclusion / exclusion in order to benefit from the most conclusive scientific results.

Inclusion in the study was not restrictive, accepting patients of both sexes, of any age and regardless of the background. Also, patients have been accepted with any associated pathology, with emphasis on its notation and its highlighting in medical records (observation sheets, consultation papers, etc.).

Exclusion criteria target non-compliant patients, as the study required postoperative follow-up, considering that the associated diagnoses were sought at the time of medial

nerve damage.

Data processing from the study was processed in Microsoft Excel.

Results

The group surveyed included a total of 163 patients, both sexes, aged 33 to 74, in rural and urban areas with primary, secondary, and university education.

The statistical analysis of the studied patient group showed the following results:

Figure 1. Gender distribution of patients (38 males, 125 females).

The incidence of carpal tunnel syndrome is significantly higher in female sex, the affection being over three times more common than in male.

The explanation can also be found in the fact that much of the comorbidities are more common in women (rheumatoid arthritis, diabetes, etc.).

Figure 2. Distribution by age and gender of patients.

Classification based on age and gender supports the predominance of female gender

at any age, with an ascending trend from third decade to fourth, then static to fifth decade, followed by the sixth consecutive year to be double. In the seventh decade, the number of cases drops drastically for both sexes.

Figure 3. Distribution of patients according to unilateral or bilateral damage.

Over a third of patients in this study developed bilateral carpal tunnel syndrome, which forces us to send an alarm signal on this condition. The impact is particularly important in those cases where untreated carpal tunnel syndrome can cause serious complications that lead to functional hand impotence and further to poor socialization and poor quality of life.

It should be remembered that the bilateral relapse is not obligatory in the same evolutionary phase in both hands (approximately 10% of our study had carpal tunnel syndrome in the bilateral surgical phase at the same time).

Figure 4. Diseases associated with carpal tunnel syndrome.

Over half of the patients experienced obesity, high blood pressure and / or diabetes.

Approximately one quarter, rheumatoid arthritis and a lower number, chronic renal failure.

Figure 5. Relationship between patients associating other pathologies and patients who developed idiopathic carpal tunnel syndrome.

Figure 6. The ratio of the „gold trio” presence (high blood pressure / obesity / diabetes mellitus).

Discussions

The presented study reveals in relatively equal proportions the association of diseases - most often systemic - with those published to date in the literature.

A special remark for the association of high blood pressure - diabetes - obesity and carpal tunnel syndrome, which in the present study accounts for 68% of co-morbidities (which we call the "golden trio").

Increasing incidence of obesity is also among patients with compressive neuropathy, being probably the entity that increases the risk for the development of most diseases. On the simple side, locally, can increase the pressure on the median nerve at the carpal tunnel, but also through numerous mechanisms that act at the

systemic level, predisposes to the occurrence of neuropathy (6-9).

Chronic renal failure is associated with carpal tunnel syndrome in a smaller number of patients, but with the aging population, this number has growth potential and therefore this pathology requires increased attention from the population due to its picture clinically silent that hides irreversible changes (2,6).

Diabetes mellitus is one of the comorbidities commonly found in carpal tunnel syndrome etiopathogenesis, its mechanism of intervention is not yet fully elucidated (its association with obesity, peripheral nerve sensitivity to compression induced by specific neuropathy) (10-12).

Conclusions

In the etiopathogeny of the carpal tunnel syndrome, the "golden trio": high blood pressure, diabetes, obesity accounts for 72% of comorbidities.

Diagnosis of carpal tunnel syndrome is relatively simple, based on clinical sufferings, but its objectivity requires complex paraclinical explorations (MRI, nervous driving speed, etc.).

Prevention and correct treatment of comorbidities is the way to reduce the incidence of Carpal Tunnel Syndrome.

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