

Bordeianu I.¹, Baltatescu Gabriela Izabela², Iordache I.V.¹, Bratu I.C.¹, Caraban B.M.³, Bosnac Nida⁴, Ivanov B.¹, Podac C.¹

Histopathological Confirmation Etiopathology in the Carpal Tunnel Syndrome

¹ Faculty of Medicine, University "Ovidius" of Constanta

- ² Clinical Service of Pathology, Emergency County Hospital "Sf. Apostol Andrei", Constanta
- ³ Plastic Surgery Department, Emergency County Hospital "Sf. Apostol Andrei", Constanta
- ⁴ Anesthesia Intensive Care Department, Emergency County Hospital "Sf. Apostol Andrei", Constanta

ABSTRACT

The authors present a retrospective clinical study on a total of 39 patients of both sexes aged between 38 and 76 years with idiopathic carpal tunnel compressive syndrome that surgically excised the anterior carpal ligament by a process custom classic which they examined histologically.

Histopathological examination of objectified as a percentage of 71.79% previously carpal ligament structure is invaded by striated muscle fibers.

Based on histopathological findings as the similarities between functional and embryological origin carpal ligament and anterior aponeurosis palm authors propose introducing embriogenetics etiopathology in compression carpal tunnel syndrome or inclusion in this category suffering from Dupuytren diathesis.

Keywords: Etiopathogenesis, idiopathic carpal tunnel compressive syndrome, embriogenetics etiopathology.

Ionut Valentin Iordache

Bvd. 1st December 1918, No. 37, Bl. L21, Sc. A, Ap. 15, Constanta, Romania

email : iordacheionutvalentin@gmail.com phone: +40 721000052

Introduction

If until recently pathology compression of the peripheral nerves represent for plastic surgery chapter abstract the last two decades have appeared in the literature, a series of papers on the evaluation and exploration of neuropathies compression and also critical studies therapeutic, in order to establish a diagnosis as early as specifying the degree injury headquarters its view of appropriate treatment.

Median nerve is the most voluminous of the brachial plexus nerve (C5 n.medianus -T1) with two roots (radix lateralis and radix medialis) which join previously and lateral axillary artery.

The path passes through or medial bicipital groove, under expansion among biceps and round pronator origins; then passes under the arch of origin of the superficial flexor of the fingers and long flexor of the thumb.

In the distal part of the forearm becomes more superficial is placed (usually) under radial flexor tendons of the wrist and palmaris longus (lower) and passes under the flexor retinaculum (the carpal tunnel) previously against superficial tendons of the fingers,

Note that palmar branch of the median nerve (branch tenariana) leaves the flexors retinaculum proximal and innervating the skin of thenar eminence on the hand. [1]

Nerve compression syndrome is a set of signs and symptoms of induced "incarceration" of a peripheral nerve in a space inextensibil.

Carpal tunnel syndrome is the most common compression neuropathy of the upper limb. [2]

Chronic compression of the nerve leads to axonal demyelination combined with degeneration due to mechanical deformation, neural blockade and local ischemia. [3,4]

Observed focal demyelination of nerve compression syndromes seems to be a direct consequence of mechanical pressure.

Carpal tunnel is defined previously retinaculum flexor stretching from hamate bone and pyramid (on the ulnar) to the scaphoid bone and the trapezoid (in the radial) and although it is open at both ends (proximal and distal) he realizes a level own (specific) tissue pressure and has the smallest diameter in average to 1/3 and here are the median morphological changes in patients with carpal tunnel syndrome. [5,6]

Carpal tunnel syndrome is, at least in recent decades, a syndrome very fervent and occurs most often in women, having routinely as factors ethiopathogenic: rheumatoid arthritis, hypothyroidism, diabetes, acromegaly, amyloidosis and pregnancy (swelling in the carpal tunnel), various activities and crafts but often can not be detected apparent cause (idiopathic carpal tunnel syndromes).

Electrodiagnostic tests remain the most common form of objectification of suffering nerve. [7]

Surgical treatment of carpal tunnel idiopathic is indicated in all cases where conservative treatment remained unsuccessful and manifests itself suffering through electrodiagnostic (denervation) and it was first described in 1934 by Herbert Galloway in that it found that sectioning transverse carpal ligament of increase anteroposterior dimensions of carpal tunnel exchanging normal ovoid shape with circular one volume increases on imaging studies by about 24%. [8]

Material and Method

A prospective clinical trial was conducted on casuistry hospitalized and treated in specialized clinic in Constanta SCJU in the range January 1, 2012 -31 December 2014 for idiopathic syndromes compression of the median nerve in the carpal tunnel.

Inclusion criteria:

-experienced patients of both genders regardless of age, profession or social environment in which besides specific clinical signs and objectification had electromyographic mentioning "indication for surgery" or "surgical phase";

-experienced patients with idiopathic carpal tunnel syndrome which oversaw conservative treatment has not led to improvement after at least 6-9 months;

-experienced patients who accepted surgery after informing classic

-experienced patients with idiopathic carpal tunnel syndrome uni or bilateral.

Exclusion criteria:

-experienced patients with carpal tunnel syndrome that could be included in a category known ethiopatogenic up the above mentioned;

-experienced patients who refused surgical treatment after informing

-experienced patients with recurrent carpal tunnel syndrome but without concrete results and evolutionary

-experienced patients with psycho-behavioral disorders that could compromise compliance and assessing postoperative results.

To note that the Service is committed to classic surgical treatment (has less chance of incidents / accidents during surgery and performs better growth anteroprosterior of carpal tunnel diameter and are made from direct view associated with intraoperative palpation).

But relief classical technique is modified, adapted (customized) in that dissection and previously carpal ligament resection is performed entirely (not done a simple longitudinal incision).

After highlighting his (fig.1) anterior carpal

ligament is incised proximodistal on its cubital edge then ligament up as a "veil" (fig.2) and resected then from the radial edge (at sight) to preserve tenarian ramus of the median nerve (fig.3).



Figure 1 Highlighting anterior carpal ligament.



Figure 2 Incised anterior carpal ligament on its cubital edge then ligament up as a "veil".



Figure 3 Preserving tenarian ramus of the median nerve.

Excised ligament thus was sent to all cases studied the histopathological examination.

End of decompression surgery is completed by visual examination and probe (pulp index) of distal opening of the carpal tunnel where, in most cases may be omitted portions that achieve further compression.

In all cases made by this process we had no intra or postoperative complication (postoperative hand immobilized intermediate position for 10-14 days but encourage active mobilization of the fingers).

The study group consists of 39 patients received injectable vitamin therapy (vitamin B group) for a period of 7-10 days postoperatively.

Results

The study did not follow complex data regarding idiopathic carpal tunnel syndrome and we was particularly interested in the result of histopathological examination of previous carpal ligament excision.

The lot consists of 39 patients included 27 women (69.23%) and 12 men (30.76%) between the ages of 38-68 years for women and 51-76 years for men.



Figure 4 Distribution by gender of all patients.



Figure 5 The age distribution on both gender.

Appreciate - and electromyographic objectified as in all cases yielded the symptoms and signs in the first 72-96 hours and we believe an important to reduce any recurring element is the fact that resection technique - NOT INCISING – anterior carpal ligament but - EXCISE - .

Surprise trial was represented by that of the 39 pieces submitted for histopathological examination, a total of 28 (71.79%) showed "the material included fully identify dense connective tissue ordered (tendon) striated muscle fiber type skeletally normal histologic structure and also adipose tissue with hyperemia of blood vessels" and for 11 cases histopathological result was specific (28.10%).



Figure 6 Presence of dense connective tissue ordered (tendon) striated muscle fiber type skeletally normal histologic structure and also adipose tissue with hyperemia of blood vessels



Figure 7 Repartition of cases with muscular tissue elements and specific results.

Of the 28 cases with histopathology confirmed the presence of striated muscle fibers 19 (67.8%) were women and 9 (38.2%) men.



Figure 8 Distribution by gender of cases with striated muscle fibers.

Mention that all cases studied were clinically monitored every 7-10 days for 3 months and have benefited for objectifying result of electromyographic examination at 3, 6 and 9 months postoperatively.

Discussions

Given that both anterior carpal ligament and palm aponeurosis have common embryological origins and functions very similar (essentially the role of mechanical protection of anatomical elements noble underlying) and adding to this the fact that Dupuytren's disease ethiopathogenie is criminalized and ebriogenetics etiopathogenesis (DIATHESIS DUPUYTREN) can appreciate as in idiopathic carpal tunnel syndrome ethiopathogeny can be addressed and this ethiopathogenic variant.

It mentioned that a large number of authors consider miofibroblasts as a hallmark of Dupuytren diathesis; miofibroblasts were described in carpal tunnel syndrome and stenosing tendonitis even (in our casuistry of stenosing tendinitis we met such situations).

Ethiopathology is also supporting by a significant percentage target (71.79%) in our study cases especially as both histopathological appearance is virtually identical to that described in Dupuytren's disease.

It is certain that include ethiopathology embriogenetics in ethiopathogenie of carpal tunnel will be supported by other clinical trials but we believe this study is a good start.

The rest of our study data overlaps essentially over those published so far in literature and the ratio female/male it is in favor of women; age most commonly incriminated being between 45 and 50 years.

Conclusions

- Etiopathogenesis of compressive carpal tunnel syndrome is complex and diverse although the pathophysiological point of view is achieved an increase in pressure inside the channel with initial suffering of the median nerve that leads in its final compromise.

- Classical decompression surgery is a lifesaver if operative indication and surgical technique were observed.

- The present study suggests that the carpal tunnel etiopathogeny be included etiopathogeny embriogenetica or introducing this clinical syndrome Dupuytren in diathesis.

- We believe that in all cases in which an predicts embriogenetica etiology of carpal tunnel syndrome compression of effective therapeutics remains the only indication that surgical excision of the anterior carpal ligament.

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