Carpal Tunnel Syndrome is a common problem affecting the hand and wrist (fist); is located on the dorsal face of the wrist, and consists of the bones of the hand on one side, and the transverse carpal ligament on the other[1-3].

The Carpal Tunnel is a narrow structure, like a tunnel - at the wrist. The bottom and side walls of this tunnel are formed from the carpal bones. The upper part of the tunnel is covered by a strong band of connective tissue called the Carpian transversal ligament. The bones of the carpal form a pit, and the ligament turns this trench into a canal. The median nerve passes through the Carpian tunnel, and reaches the palm region. The median nerve crosses the fist joint in an osteofibrosal tunnel which carries on the wall the bones of the carp (the scapular tuber, the trapeziun, the pisiform bone, and the apophysis of the hook bone) and the other the transverse ligament of the carp (anterior ring). In this space are tendons superficial and deep flexors of the fingers, long leg flexor and median nerve. The median nerve controls the sensations on the side of the pointer, the index finger, and the third finger. The nerve also controls the muscles around the base of the thumb. The fingers of the fingers also pass through the carpal channel [4-6].

Mechanical nerve compression is achieved by three mechanisms: deformation or swelling of the carpal mass, thickening or inflammation of the transverse ligament of the carp, and inflammation of tendon and synovial tibia of the flexors.

When carpal tunnel syndrome develops, the heredity of carpal tunnel syndrome contributes: heredity - carpial tunnels are lower in some people, and this trait can be transmitted hereditary, excessive use of the hand, hormonal changes related to pregnancy, age, disease occurs more frequently in the elderly; medical conditions, including diabetes mellitus, rheumatoid arthritis and thyroid gland imbalance. In most cases of carpal tunnel syndrome, there is only one[7-9].

The causes of carpal tunnel syndrome are: arthritis, diabetes, gout, hypothyroidism, pregnancy, females, contraceptives, menopause, size of the wrist (thick muscular wrists), obesity, some antidepressants, low temperature. There are wrist deviations that affect the median nerve through the use of static instrumentation[10-12].

Some studies show that muscle tendons and pain in the upper areas of the human body may be associated with the adoption of a position with the neck, shoulders and muscles of the arms in isometric contraction, allows the diagnosis of carpal tunnel syndrome, the duration of professional exposure should be significant. This syndrome
occurs when the tissues surrounding the flexor tendons become inflamed, increase in size and put pressure on the median nerve; tissues are called synovial dots. The synove lubricates the tendons and makes it easier to move the fingers. Inflammation or thickening of the synovial narrows the limited space of the carpal tunnel, and in time affects the nerve. The median nerve is compressed at the flexoral joint. The compression of the median nerve manifests through various symptoms in the area of sensitivity of this nerve[13-15].

Inflammation is a complex biological process represented by homeostatic phenomena of the body’s reaction to aggressions of non-immune (physical, chemical, infectious) or immune (autoimmunity, allergy, etc.); is a defense reaction essential to the body’s survival (in the presence of pathogens and tissue damage), but in some cases escapes from rigorous control, it becomes a pathological phenomenon, a real disease[ 16-18].

In other cases, Carpal Tunnel Syndrome can occur when the synovial membrane thickens from irritation or inflammation. This thickening causes the pressure to build up inside the carpal tunnel, so the median nerve is compressed between the tendons and the transverse carpal ligament. If the pressure continues to increase, the nerve is eventually unable to function normally. When the pressure increases on the median nerve, the blood supply to the outer nerve coating slows down, and can even be stopped. Diabetics can report symptoms of carpal tunnel syndrome, which may be from a neuropathy or a real pressure on the median nerve. People with low thyroid function (called hypothyroidism) are more prone to problems with carpal tunnel syndrome. Tumors or cysts in the wrist, tendons, or carpal tunnel can also cause Carpal Tunnel Syndrome. The median experience starts with paresthesia (burns, tingling, stinging) in the eminence of tenar, pollicis, index, medius, and inner half of the ring (median inerted territory) [19-21].

Over time, pain, predominantly nocturnal, tense muscular hypertrophy, and intermetacarpian space I and II interferons occur. Symptoms begin when the medial nervous is compressed inside the carpal tunnel of the wrist, a condition known as depressive neuropathy.

Any condition that lowers the carpal tunnel dimensions or increases tissues inside the tunnel may cause symptoms of carpal tunnel syndrome. Carpal Tunnel Syndrome has received particular attention in recent years, due to the fact that it is related to occupations requiring repeated use of hands such as computer typing or assembling work in dentistry, etc.

Many people develop this affection, no matter what type of work they do.

Doctor examining will consist of: Checking the tone of the muscles of the skull, forced palmar flexion can trigger numbness in the hand, pressure exerted on the wrist median nerve to see if it causes a numbness or tingling sensation, finger sensitivity testingElectrical testing of the median nerve function (EMG) is often done to help confirming the diagnosis and evaluate the best treatment option. Radiography will be required if the movement of the wrist is limited [22-24].

Clinical Diagnostic Tests required in Carpal Tunnel Syndrome: The Tinel Sign, the wrist medial percussion in the wrist causes paresthesia in the sensitive nerve distribution area; Phalen test, symptomatology evoked by persistent hand flexing on the forearm at 90 degrees; Reversed Phalen test, symptoms that occur when the maximum hand reach is maintained. The diagnosis is suspected on the basis of the signs described, by exacerbating the accusations of compression, percussion or application of the sphygmonanometer on the wrist (Tinel sign), by the presence (sometimes) of swelling of the carp in the palm region(fig.1).

Confirmation is obtained by an electromiogram (EMG) of the interbones excited by the median. The etiological variants of carpal tunnel syndrome are: rheumatoid arthritis, gout articular fist, arthritis of the fist, strong trauma with carpal articular hematoma, fibroses with ligament hypertrophy, traumatic or inflammatory tenosynovitis of the flexor, mixeded [25-27].

Therapy consists in the decompression of the median nerve by the treatment of the basic disease (rheumatoid arthritis, gout, mixeded, etc.) to which are added diuretics, anti-inflammatory, anti-inflammatory Roentgenotherapy, infiltration with corticoids under the carp transversal ligament.

Electromiography is the neurophysiological technique of other nerve damage, confirms the site of the lesion and helps determine the severity of the lesion, guiding the indication of surgical decompression. Sometimes, to decompress the medial nerve, surgery is necessary - cross section of the carp transversal ligament - but this type of intervention should be avoided or postponed.

For the ulnar (cubital) nerve, a compression syndrome (Guyon canal syndrome) is also described, but it is exceptionally rare.

Guyon canal syndrome is a compression of the ulnar nerve, when passes through a tunnel in the wrist. This tunnel is called Guyon’s channel. This problem is similar to carpal tunnel syndrome in the case of the median nerve.

The ulnar nerve starts at the base of the neck, where the individual nerve roots come out of the vertebral column, through small spaces between the vertebrae.

The nerve roots join together to form trunks that rise to then pass through a tunnel or the vertebral column, through small spaces between the vertebrae.

The nerve roots join together to form trunks that rise to then three main nerves that go down on the arm to the palm, and one of these is the ulnar nerve [28-30].

After leaving the side of the neck, the ulnar nerve passes through the axilla and then through the arm, hand and fingers. As they pass through the wrist, the ulnar nerve and the ulnar artery circulate through the tunnel known as the Guyon Canal. This tunnel is formed between two bones (pisiform and hammock), and the ligament that connects them. Once it passes through the canal, the ulnar nerve branches up to provide a feeling in the little finger and half of the finger ring. The branches of this nerve also innervate the small muscles of the palm and the muscles that pull the thumb to the palm. The pain can progress to a pain like a burn in the wrist and hand, followed by low sensitivity in the small toe ring. The hand can become clumsy when the muscles controlled by the ulnar nerve become weak. Weakness can affect the small muscles of the palm, and the muscles that pull the thumb into the palm. The
progressive weakness of these muscles makes it difficult to split your fingers and finger prick. Finger flexion is possible due to the greater force of the flexors, but its extension can only be achieved passively through a sudden recoil as a spring [30-33].

Experimental part

The study includes a group of 75 dentists from Galati county, selected following the inclusion criteria referring to the presence of signs and symptoms characterizing carpal canal syndrome during 2014-2016. The demographic data (age, gender, environment of origin, years of professional activity) were analyzed and the ergonomic way of delivering the professional act as well.

Results and discussions

Carpal tunnel syndrome (CTD) occurs in the form of cramps in the palm and fingers, reaching pain, loss of control, weakness (dropping objects from hand) unable to work, even to ankylosis local compression of the ulnar tendon local parties. The median nerve passes through the carpal tunnel along with the flexor tendons of the hand. Fast fingers and prolonged activity cause inflammation of the tendons, decreasing the amount of synovial fluid and secondary compression in this narrow space of the median nerve, while pain occurs similar to the perceived pain. The most common pain spots are on the forearm, elbow, wrist, thumb. Pain in the carpal syndrome are often more intense at night. If the activity is reduced or interrupted in the onset of pain as a first symptom, the phenomena are reversing sustained activity leads to the occurrence of irreversible changes in the median nerve. Changing hand using methods and avoiding certain positions can alleviate symptoms.

Carpal tunnel syndrome can be treated without surgery by early diagnosis and treatment. If the diagnosis is uncertain, the doctor will always try a simple treatment: the throat or the rest of the orthosis.

The fist splint holds the wrist in a neutral position. This prevents midnight irritation of the middle nerve, which occurs when the wrists are held in forced positions during sleep. Splints can also be worn during various activities that overload the fist joint (fig.2).

A wrist elastic waist feature will lower the symptoms from the incipient phases of Carpal Tunnel Syndrome by keeping your wrists in a resting position. An orthosis can be especially useful at night, thus avoiding the folding of the hand during sleep and thus relieving nocturnal pains and numbness. Anti-inflammatory drugs can help reduce the symptoms of carpal tunnel syndrome. If these simple measures do not help to control the symptoms, an injection of a cortisone preparation in the carpal tunnel can improve, but often only temporarily. The decision to intervene surgically is largely based on the severity of the symptoms but also on the lack of response to non-surgical treatment.

The majority of dental practitioners with a history of activity are digital hyperextension with hypermobile joints. The main cause of the carpal tunnel syndrome is the inappropriate positioning of the dental unit depending on the stage of work, so that it has to lift its shoulders and arms, lasting activity, without pauses, lack of armrests or inappropriate construction: too long, too narrow, of hard or slippery materials; the wrist should not be bent. If the static instrument is used, the wrist pain may occur if it is too heavy and there is a tendency for it to move between thumb and forefinger.

Factors favoring the occurrence of carpal tunnel syndrome are: arthritis, diabetes, gout, hypothyroidism, pregnancy, female gender, contraceptives, menopause, size of the wrist (thick, wrist), obesity, some antidepressants, low temperature and muscle pains in the upper areas of the human body can be associated with the adoption of a position with the neck, shoulders and muscles of the arms in isometric contraction. Only the onset of pain does not allow the diagnosis of a carpal canal syndrome, the duration of the professional exposure should be signified.

The basis of the study was a series of clinical and paraclinical (ultrasound) and therapy elements: inclusion criteria (characteristic signs and symptoms), exclusion criteria; (physiotherapy) (flexion-extension, internal-external rotation, relaxation techniques, alternative mobilizations, repetitive mobilization of flexion, extension and opposition of the policeman, training with strength, toning, coordination techniques). The study group of dentists selected after application of the inclusion criteria
presented ages between 30-65 years, 45 women and 30 men.

Mechanical aggression, repeated for a long time, leads to the occurrence of carpal canal syndrome (pain, paraesthesia, decrease in muscle strength). The presence of tall lying amyotrophs that have been marked with absent or present qualities was observed.

The modulation of the sensitivity in the middle nerve was compared with that of hypotension eminence. In paraclinical terms the driving speed was motorized on the median nerve and the carpal region. The ultrasound exploration was performed over the soft tissues and joints being considered a valuable extension of the physical examination; 78% showed morphological nerve damage, the presence of a zone edema and changes in the dimensions of the fibrous ring that closes the carp tunnel. Carpal tunnel syndrome is a neglected presence in the field of dental medicine. The ergonomic principles must be respected over the entire range of professional gesture. Physical therapy has been shown to have an important contribution in preventing and reducing the symptoms of irritation or compression of the median nerve.

Non-steroidal anti-inflammatory drugs (NSAIDs) with a variable chemical structure.

It is a class of drugs that contain many active substances with a varied chemical structure but which have common effects: analgesic, antipyretic, antiinflammatory.

The chemical diversity of NSAIDs results in a wide range of pharmacokinetic characteristics; from this point of view, NSAIDs possess some common general properties: almost all compounds are weak organic acids; most are digested well and foods do not substantially change their bioavailability; most NSAIDs are hepatically metabolized in high proportion, renal excretion being the most important route of elimination; all NSAIDs can be found in the synovial fluid after administration of the NSAID anti-inflammatory repeated action.

An incompletely known antiinflammatory mechanism for NSAID, comprises the reduction of PG biosynthesis by inhibition of cyclooxygenase (COX-1, COX-2) and is an extremely important mechanism; inhibition of COX-2 explains the effects: anti-inflammatory, analgesic and antipyretic;

Nonsteroidal anti-inflammatory drugs (acetylsalicylic acid, ibuprofen, diclofenac, nimesulide, celecoxib, etc.) and steroidal anti-inflammatory drugs are also known as corticosteroids (prednisone, hydrocortisone, dexamethasone etc). Synthetic derivatives of natural corticosteroids, hormones secreted by adrenal glands produce prostaglandins (PGs), which are responsible for effects on blood vessels, nerve endings.

Cyclooxygenase has two isoforms: COX1 (homeostatic action) and COX2 (enzyme that occurs during inflammation and appears to facilitate inflammatory response).

Table 1
A NEW CLASSIFICATION OF NSAIDS WAS MADE IN 1999 BY T. WARNER, CLASSIFICATION MADE IN THE SPIRIT OF THE CONCEPT COX1 / COX2

<table>
<thead>
<tr>
<th>Clasa</th>
<th>Properties</th>
<th>Exemple</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>NSAIDs inhibitors for COX-1 and COX2 but low selectivity.</td>
<td>Aspirin, diclofenac, fenoprofen, flurbiprofen, indomethacin, ibuprofen, ketoprofen, acid mefenamic, naproxen, piroxicam, sulindac</td>
</tr>
<tr>
<td>2</td>
<td>NSAIDs selective inhibitors of COX-2, of the order of 5-50</td>
<td>Celecoxib, etodolac, meloxicam</td>
</tr>
<tr>
<td>3</td>
<td>COX-2 selective inhibitors NSAIDs&gt;50</td>
<td>Rofecoxib</td>
</tr>
<tr>
<td>4</td>
<td>NSAIDs weak inhibitors of both isoforms</td>
<td>5-amino salicylic acid, diflunisal, sodium salicylate, nabumetone, sulfasalazine</td>
</tr>
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The pathway of lipooxigenase leading to leukotrienes (LT), with a strong chemotactic effect on neutrophils, eosinophils, also producing bronchoconstriction.

The following substances are released at the site of the tissue lesion: amines (histamine, serotonin), polypeptides (kinine-bradykinin, kalidina), free oxygen radicals (the superoxide anion is formed by the reduction of molecular oxygen, which eventually leads to the formation of hydrogen peroxide or the hydroxyl radical; the compounds of oxygen interacting with arachidonic acid giving rise to substances that perpetuates the inflammation process.

NSAIDs inhibitory selective or specific COX-2 (generation II) are selective blockers (meloxicam, nimesulide), specific blockers (coxibs celecoxib, parecoxib, etoricoxib, valdecoxib, lumarcoxib).

Due to chemical diversity, NSAIDs have a wide range of pharmacokinetic characteristics. It mainly has the following common properties: most of these are weak organic acids, are well absorbed by the body, and food has little influence on bioavailability, most are metabolized in high proportion, eliminated mainly by the kidneys, but most also enter the enterohepatic circuit, most of them are gastric irritants, the percentage of gastric irritation being proportional to the amount consumed.
Acetic acid-derived anti-inflammatory drugs:

Anti-inflammatory drugs can help relieve pain from carpal tunnel syndrome in the short term. There is no evidence, though, that these drugs can actually improve carpal tunnel syndrome itself. If the results of carpal tunnel syndrome from an inflammatory arthritis such as rheumatoid arthritis, then treating the underlying condition can reduce the symptoms of carpal tunnel syndrome, but this has not been proven.

If the symptoms are severe or persist after trying nonsurgical therapy, surgery may be the best option. The purpose of carpal tunnel surgery is to lower the pressure on your median nerve by cutting the ligament by pressing on the nerve.

Conclusions

Changing the methods of using one’s hand and avoiding certain positions may improve the symptoms. If workplace requirements aggravate symptoms, changing or altering the workplace may slow or stop the course of the disease.

The symptoms of Carpal Tunnel Syndrome become more persistent, then permanent, the patient notices that he or she does not feel the palpable or gripped objects in the hand.

Paresthesias become painful, persistent, initially more pronounced at night, interrupting sleep; it is characteristic that tingling sensations and burns in the hand and fingers improve or disappear when shaking hands.

Simple nonsteroidal anti-inflammatory drugs can help relieve pain. In the case of Carpal Tunnel Syndrome, the rehabilitation of the intrinsic muscle of the hand torn by the median nerve, which may have a strength deficiency as a result of its injury to the fist, occurs.

References