Carpal Tunnel Syndrom In Uremic Patients Treated With Log Terms Hemodialysis

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Abstract: Long-term hemodialysis (HD) for chronic renal failure began in 1960 with development of the Teflon arteriovenous shunt by Scribner and co-workers at the University of Washington in Seattle. For the next twelve years, the number of patients treated by HD increased only slowly, and dialysis programs were situated mainly in university centers in the United States and elsewhere. Since then, the number of patients has steadily increased in relation to the availability of funding in various countries, and there are now more than a quarter of a million dialysis patients in the United States and more than half a million patients worldwide (1,2,3,4) . Dialysis patients with cardiac disease may need the usual measures to treat cardiac ischemia. In addition to the usual drug therapies, interventions with percutaneous transluminal coronary angioplasty, stenting or bypass surgery is indicated for many patients. The aim of our paper was to verify and record the occurrence of CTS in patients with terminal renal insufficiency treated with hemodialysis in our Department of detection methods and treatment of CTS in a conservative and surgical manner. Material and methods: In-prospective cohort study (,, cross-section ") were included in total N^{O} = 100 (from whom 55 were male with an average age of: 57.80 ± 12.00), female while 45 were girls the average age: 56.90 ± 10.00)). Patients with ESRD and CPS that were treated in the Clinical Hospital of Tetova. Conclusion: In conclusion it can be said that the only way to treat CST in uremic patients is al surgical treatment and correction of renal amyloidosis and aetiological treatment of the disease. Surgical treatment: Surgical treatment is preferred for treating the heaviest forms of CTS when conservative treatment has shown no success and the situation deteriorates.

Index terms: CarpalTunnel Syndrom,ESRD,Hemodialysis.

1 INTRODUCTION

These treatments have a mortality and a frequency of re-stenosis and other complications that are higher than in the general population, but it is unclear how much this reflects selection of higher-risk patients and how much it may relate to the continued presence of other risk factors such as vaskular calcification. β2M amyloidosis is a major cause of the physical handicaps affecting the quality of life of patients who have been on dialysis for ten or more years, and is occasionally life threatening if it results in severe cervical spinal cord compression. Deposits begin to appear within a few months of starting HD, although clinical and radiological findings do not begin to appear for five years or more. Any or all joints may be affected, but especially the sternoclavicular joint and hips. Clinical features characteristically include periarthritis of the shoulders, carpal tunnel syndrome, flexor tenosynovitis of the hands, stiffness, pain and swelling of other joints, deposits beneath the skin and spondyloarthropathy. Systemic deposits affecting visceral organs may occur, but rarely result in symptoms and almost always are found in patients who have been on dialysis for more than fifteen years (5,6) .The pathogenesis of βM amyloidosis is complex and poorly understood. Apart from the usual complications associated with diabetes and aging, the most frequent long-term complications occurring in HD patients relate to cardiovascular disease, β2-microglobulin (β2M) amyloi-dosis, renal osteody-strophy and the effects of maln-utrition. The role of less than adequate dialysis as one factor in the genesis of these problems is something that has become obvious in recent years.Carpal Tunnel Syndrome (CTS) is a medical condition due to the compression of the middle carpal nerve (Medianus n.).Chronic Kidnay Disease (CKD) presents a clinical condition followed by progressive and irreversible damage to kidney and nephron tissue due to the appearance of various diseases and urinary tract (born and acquired), represents a chronic reduction of FG, creatinine clearance, intestine, indoles, phenol, electrolase imbalance, hormonal disorders, dyslipi-daemia, Beta-2 microloglobulin accumulation. He treatment of uremic patients with HD bicarbonate and the use of "High Flux" Biocompatible Membranes has, in recent years, significantly improved and extended their life, but although we have improvements, again during long-term treatment with HD there are also chronic complications of different nature(7-11).Of a large number

of chronic complications (except anemia, metabolic disorders, renal osteodystrophy, HTA,pericarditis and uremic pleurisy, upper ventri-cular hypertrophi, uremic pruritus, etc ...) althoughugh it is a rare complication during HD treatment Long-term chronic renal cell carpal tunnel syndrome (CTS) is also known.CTS is a peripheral peripheral peripheral injury to the radiocarpal node where FAV is involved with radio-carpal ligament, n. median accompanied by restricted node movement and pain. For the first time this syndrome was described by James Putnam in 1880 and then by Paget, Marie, Ramsay Hunt, Phalen and Osler, while in patients treated with long-term HD CTS was described in 1975 by Warren and Oriento scientists. Since 1975 CTS has published many studies on CTS and the incidence of CTS in HDD treated patients is difficult to evaluate due to lack of accurate data and this depends on the criteria based on the diagnosis of CTS through EMG or symptom kilinike. Nescapa profile with co-author. in 1979, documented that the incidence of CTS is increasing with the duration of HD treatment, it found that within 5-6 years of HD treatment CTS symptoms began to appear in 50% of patients(12-17). Symptoms of CTS are manifested by numbness of the hand, tingling, muscle weakness, pain in the hand, especially with increased inethity at night, autonomic nervous weakness with weakened sensitivity especially during the cold, coupled with changes in the color of the skin, the sweat of the hand caught by CTS. CTS manifestations are closely related to systemic diseases, renal amyloidosis (due to the deposition of ß2Microglobulins in the joints), rheumatoid arthritis, peripheral neuropathy, second-dary hyperparathyroi-dism, diabetic compli-cations, local effects of arteriovenous fistula (FAV), frequent thrombosis FAV, venous hyperte-nsion, and most commonly due to long-term HD treatment. The consequences of renal amyloidosis in uremic patients treated with long-term chronic hemodialysis are manifested by the signs and symptoms of Carpal Tunnel Syndrome syndrome (CTS-Carpal Tunnel Syndrome), chronic arthropathy, the presence of subchondral cysts and pathological fracture tenden-pcies. Increased levels of beta-2-microglobulin (BMG) in plasma of dialysis patients play an essential role in renal amyloidosis pathogenesis. Symptoms of renal amyloidosis are more common with the duration of hemodialysis therapy. CTS is the most common complaint during renael amyloidosis caused by pressure on the median nerve from amyloid complexes(18-20).

2 MATERIAL AND METHODS

In-prospective cohort study (,, cross-section ") were included in total N^{O} = 100 (from whom 55 were male with an average age of: 57.80 ± 12.00), female while 45 were girls the average age: 56.90 ± 10.00)). Patients with ESRD and CPS that were treated in the Clinical Hospital of Tetova.

Table no. 1: Presentation of patients by gender and mean age treated with HD (No-100)

Gender	Number of patients	average age±SD
Men	55(55 %)	57.80 ± 12.00
Females	45 (45 %)	56.90 ± 10.00

Table no.2: Presentation of patients according to duration of treatment with hemodialysis

Gender	Number of patients	Duration of HD treatment
Men	55(55 %)	8.00 ± 2.00 year
Females	45 (45 %)	9.00 ± 3.00 year

Table no. 3: Distribution of patients based on primary kidney disease

Basic kidney disease	Total number of HD patients	%

Glomerulonephritis chronica	25	24.0
HTA sec	20	20.3
Diabetes Mellitus	17	13.0
Intersticiopelonephritis chronica	12	13.3
Renal Polycysosis	10	10.0
Unspecified nephropathy	9	8
Uroobstruktive nephropathy	7	6

3 GAINED RESULTS

Table no. 4: Patient Distribution with Carpal Tunnel Syndrom(CTS)

Gender	No-24	CTS on one hand knuckle	CTS on both hands joints
Men	14	9	5
Females	10	7	3

4 DISCUSSION

Cranial Tunnel Syndrome (CTS) is a medical condition due to the compression of the middle lining of the uterus (Medianus n.). The main symptoms are pain, numbness and feeling of drilling on the thumb, index finger, middle finger and hand and arm wound with the disease. Symptoms usually begin gradually and overnight. In more than half of the cases, both sides (both women and men) are affected. Risk factors in the population without IRK include obesity, recurrent hand work, pregnancy and rheumatoid arthritis. There are studies that have verified that hypothyroidism increases the risk of CTS. Diabetes mellitus is closely related to CTS. The use of contraceptive drugs does not affect the appearance of CTS. Types of work related to CTS are computer work and work with vibrating tools. Diagnosis is suspected based on signs, symptoms and specific physical tests and can be confirmed by electro-diagnostic analysis. If the loss of tonus of muscle at the base of the thumb is present, it is likely to have CTS diagnosis. Physical activity reduces the risk of developing CTS. Symptoms can be improved by applying cortico-steroid therapy ampoules to the joints of the wrist. The surgical treatment with the ligament cut is shown to be effective and with better results in a multicentric study compared to non-surgical treatments.The condition known as carpal tunnel syndrome had major appearances throughout the years but it was most commonly heard of in the years following World War II. Individuals who had suffered from this condition have been depicted in surgical literature for the mid-19th century. In 1854, Sir James Paget was the first to report median nerve compre-ssion at the wrist in two cases.The first to notice the association between the carpal ligament pathology and median nerve compression appear to have been Pierre Marie and Charles Foix in 1913. They described the results of a post mortum of an 80-year-old man with bilateral carpal tunnel syndrome. They suggested that division of the carpal ligament would be curative in such cases. Putman had previously described a series of 37 patients and suggested a vasomotor origin. The association between the thenar muscle atrophy and compression was noted in 1914.The name 'carpal tunnel syndrome' appears to have been coined by Moersch in 1938.In the early 20th century there were various cases of median nerve compression underneath the transverse carpal ligament. Physician Dr. George S. Phalen of the Cleveland Clinic identified the pathology after working with a group of patients in the 1950s and 1960s. The carpal tunnel is an anatomical compartment located at the base of the palm. Nine flexor tendons and the median nerve pass through the carpal tunnel that is surrounded on three sides by the carpal bones that form an arch. The median nerve provides feeling or sensation to the thumb, index finger, long finger, and half of the ring finger. At the level of the wrist, the median nerve supplies the muscles at the base of the thumb that allow it to abduct, move away from the other four fingers, as well as move out of the plane of the palm. The carpal tunnel is located at the middle third of the base of the palm, bounded by the bony prominence of the scaphoid tubercle and trapezium at the base of the thumb, and the

hamate hook that can be palpated along the axis of the ring finger. From the anatomical position, the carpal tunnel is bordered on the anterior surface by the transverse carpal ligament, also known as the flexor retinaculum. The flexor retinaculum is a strong, fibrous band that attaches to the pisiform and the hamulus of the hamate. The proximal boundary is the distal wrist skin crease, and the distal boundary is approximated by a line known as Kaplan's cardinal line. This line uses surface landmarks, and is drawn between the apex of the skin fold between the thumb and index finger to the palpated hamate hook.The median nerve can be compressed by a decrease in the size of the canal, an increase in the size of the contents (such as the swelling of lubrication tissue around the flexor tendons), or both. Since the carpal tunnel is bordered by carpal bones on one side and a ligament on the other, when the pressure builds up inside the tunnel, there is nowhere for it to escape and thus it ends up pressing up against and damaging the median nerve. Simply flexing the wrist to 90 degrees will decrease the size of the canal.Compression of the median nerve as it runs deep to the transverse carpal ligament (TCL) causes atrophy of the thenar eminence, weakness of the flexor pollicis brevis, opponens pollicis, abductor pollicis brevis, as well as sensory loss in the digits supplied by the median nerve. The superficial sensory branch of the median nerve, which provides sensation to the base of the palm, branches proximal to the TCL and travels superficial to it. Thus, this branch spared in carpal tunnel syndrome, and there is no loss of palmar sensation. There is no specific treatment for β2M-amyloidosis. Transplantation will lower β2M levels and may halt progression of amyloidosis and ease symptoms but is not readily available to most dialysis patients. Unfortunately, no modality of dialysis can remove more β2M than is generated, although removal is greater with biocompatible membranes and with hemofiltration and hemodiafiltration. The effect on EM production of using ultrapure water to prepare dialysate, thereby reducing endotoxin contamination, is also uncertain, as is the role of the chronic mild metabolic acidosis in stimulating βM production. As a result, the general approach to treatment in those patients expected to survive for more than five years should be renal transplantation whenever possible, and high-flux dialysis using ultrapure water for production of the dialysate.About 5% of people in the United States have carpal tunnel syndrome. [5] Usually begins in adulthood and women are more affected than men. [2] Up to 33% of people can be upgraded without specific treatment for about a year. The carpal tunnel syndrome was first described after the Second World War. The pathophysiologic mechanisms of CTS manifestation are still unknown, but it is only known that CTS manifests with hand injury as a consequence of nerve fiber demyelination and n-axis nerve damage. Median and autonomic motor nerve yams Although the exact mechanism of nerve damage is unknown, but it is assumed that compression or frequent compression at FAV in the hands of patients treated with HD and the suppression of venous blood flowing through the fistula, infiltrations of frequent and FAV swelling, due to nerve ischemia after 5-6 years appear symptoms of CTS. Correlation between the presence of CTS and Hepatitis has not been observed. Which is probably due to the fact that the percentage of patients with positive anti-HCV antibodies depends on the duration of dialysis therapy(21,22).The longer a patient is dialysed, the higher the probability of HCV infection. It can be speculated that this relationship may be due to stimulating the liver from the inflammatory process to produce beta-2-microglobulin, and this in turn plays an essential role in the dialyzed amyloidosis patho-gennesis. In the "Early Erythropoietic Age", hepatitis C infection was common in chronic dialysis patients when blood transfusions were common. CTS developed in 14 patients with AV fistula, in 3 patients with AV fistula on the opposite side and in 23 patients bilaterally (57.5%). The prevalence of CTS on the wrist where the AV fistula was located did not meet the criteria for statistical significance. A relationship between CTS and the fistula AV site has been postulated in many publications(23-26).At a number of uremic patients CTS is idiopathic or depending on other epidemiological factors, genetic predisposition. Profession etc. One of the main causes of CTS is renal amyloidosis due to cumulative b-1 microglo-baculosis in the radiocarpal node in HD treated patients and over time their HD acupuncture treatment increases even more and leads even more to the compression of the nerve fibers of n. median and ligaments of the radiokaraple node causing disabilities of activities. HD treatment also leads to extracellular fluid accumulation, venous pressure increase, FAV acute thrombosis, and volume increase in the FAV's forearm with partial blockage of blood that further increases radiocarpal nose compression and n. median which manifests itself with paresthesia and pain of the hand affected by CTS. According to studies, multicentre epidemiology has been documented that CTS most often suffer male sex (70%) compared to female gender. The decreased percentage of women with CTS in hemodialysis patients is assumed due to common abnormalities associated with terminal kidney failure or due to the fact that these patients do not perform as much movement of hands as possible due to the reduction of physical activity. There was no difference between the incidence of CTS and the sex of the patient in the analyzed patient group. Among patients with CTS, a greater number were diagnosed with chronic glome-rulonephritis. To date, studies on the appea-rance of CTS in uremic patients treated with long-term hemodialysis had no link between the etiology of terminal kidney failure. Schwarz et al, who revealed an increase in CTS incidence in dialysis patients after analgesic nephropathy. As the survival time of dialysis patients lasts, late complications begin to appear. Dialysis-related amyloidosis is one of them. The frequency of clinical symptoms of CTS in patients with chronic hemodialysis varies between 2% and 31% (27-32). Typical manifestations of the illness are: the feeling of being pierced by the needle of the middle finger, the index finger, accompanied by the pain that the patient exacerbates during the night.CTS diagnosis is based on meticulous history, CTS symptoms, b-1 microalbumin concentrations, amyloid, physical examination and physiological examinations including electromyography (EMG) of nerve fibers. These methods are the most preferred examinations and methods for diagnosis and CTS. In the literature, a constellation of CTS diganostatic tests is mentio-ned, such as: (a) the Hoffmann-TINEL test during this test in the wrist region causes a sense of puncture of the needle threading needles; (b) the Phalen

test -and needle puncture index with distribution around the median nerve and complete flexion (or full stretch Phalen handcrank extension which lasts for up to 60 seconds. CTS patients have motor sensory anomalies due to loss of function of the axes (lack or sensory decompensation or neuropathic abnormalities which are classified as heavy CTS) Radio-imaging and MR methods are rarely used, especially in cases with one-sided CTS.CTS treatment of light cases is the conservative method which consists in the use of a wrist prosthesis during the night in the orthosis position or holding the hand at The use of non-steroidal anti-rheumatisms or intraarticular admini-stration of steroids has been shown to be beneficial in treating CTS with a duration of 3-4 weeks. Physical Therapy, Chinese Therapy etc. Patients with severe CTS or within 3-4 weeks have had no mitigating symptoms of CTS by treatment with non-steroidal anti-rheumatic or steroid-treated surgically, with marked improvements in CTS.

5 CONCLUSION

In conclusion it can be said that the only way to treat CST in uremic patients is al surgical treatment and correction of renal amyloidosis and aetiological treatment of the disease. Surgical treatment: Surgical treatment is preferred for treating the heaviest forms of CTS when conservative treatment has shown no success and the situation deteriorates. First Decom-pression. The Nerve Median was made in 1924 by Robert Galoway by expanding the transferring seg-ment of the wrist. With this operation, the carpal tunnel volume has increased by 24%, enabling pulling and compression of the carpal tunnel and healing of the nerve fibers 33,34,35). A large number of studies have documented great success of 81-98% and retardation of the symptoms and pains of the night and within 6 months. we have withdrawal of all symptoms and we have a complete hand reha-bilitation and restoration of all functions in normal .

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