

Job Related Carpal Tunnel Syndrome

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Abstract

This study include 60 patient had carpal tunnel syndrome sign and symptoms, treated by surgical release of the tunnel after the failure of the conservative management from the period January 2010 –October 2013,all patient managed in alnaja government,40 patient female and 20 patient male, mean age 20 -60 years 12 female patient perform farmer job, 20 female patient perform cosmetic job(female hair clipper), 8patient computer worker, male job 8 patient farmer and 12 patient industrial worker (Drill worker), all these 60 patient included under this study feel their symptomsduring performing their job or after that by some time the symptoms appear more often in the hand used more to perform that job. The most important symptoms, sever pain that may extended from the finger to the shoulder, numbness, tingling, burning sensation and weak grip, on clinical examination30 patient from the 40 female patients had the near muscles atrophy while 15 patients from the 20 male patient had atrophy of the the near muscles. All the 60 patient male and female complain diminish sensation in the distribution of the median nerve (the lateral three and half finger).30 patient from the 40 female patient had weak grip in the affected hand, all 60-patient had positive Tinel sign, positive Phalen test and positive pressure provocative test, all patient refer for neve conduction study all 60-patient diagnosed as sever carpal tunnel syndrome by the nerve conduction study.

INTRODUCTION

Job related carpal tunnel syndromes an important condition which effect the life status of many people because it effect the economic status of the patient 1,2,3 ,Job related carpal tunnel syndrome occur more often in the hand that perform the job⁴,carpal tunnel syndrome is peripheral mono neuropathy of the upper limb⁵,caused by compression of the median nerve as it passes through the carpal tunnel in the wrist, the female patience job included in this study are hair clipper ,farmer and computer user work while the male job included in this study are industrial (drill worker)and farmerjob included in this study consider to be ergonomic risk factor for developing carpal tunnel syndrome because these job including highly repetitive awkward wrist movement, high hand grip pinchforce, and those associated with high vibration^{6,7,8,9,10,11},repetition as risk factor of developing carpal tunnel syndrome defend as (if the job had a repeated sequence of step)¹²that involve awkward wrist movement, in the epidemiological studies , high repetition is defined either by the frequency of the taskor the percentage of time spent of the repetitive work, it is the most recognize risk factor, so the job with high repetitions defined as the job require awkward wrist movement of less than 30 second each time or more than 50 percent of the time spent on performing the same task that involve a repetitive awkward movement. Repetitive work is frequently performed in conjunction with high hand / finger grip force, most of the epidemiological studies investigated hand grip force together with repetition therefore , it is not clearwhether high hand/finger grip force alone can cause job related carpal tunnel syndrome or in conjunction with repetition, there were less clear exposure criteria in defining high hand / finger grip force in the epidemiological studies some investigator used the weight of the tool Silverstein et al defined high force as more than 6 kg, so that job related carpal tunnel syndrome risk factor include high hand / finger grip force with high repetition, vibration is also believed to be an ergonomic risk factor associated with carpal tunnel syndrome 13, fewer studies include vibration in the assessment of job related carpal tunnel syndrome as risk factor, Chatterjee et al used the frequencyof the job between 31.5 -62HZ as criteria in studying rock drillers exposed to high vibration, so the allabove risk factor consider to be contribute to cause injuryto the median nerve or cause edema of the flexor tendon sheath and compress the median nerve to cause the carpal tunnel syndrome signs and syptoms¹⁴.

MATERIAL AND METHOD

All 60 patients with job related carpal tunnel syndrome managed by all type of conservative management without success, so I performed open release of the carpal ligament to decompress the median nerve from January 2010 –October 2012. Mean follow up period was 12 months, we performed the release under Bier's block type of anesthesia, performing the decompression by the volar approach, decompression of the median nerve within the carpal tunnel is one of the most common operations of the hand, two anatomic structures the motor and palmar cutaneous branch of the median nerve, determine how the tunnel is approached both structures vary considerably in the path they take, so unpredictable that blind procedure which are acceptable else were preferred to avoid, the best way is to decompress the median nerve through full incision and under direct vision.

Open surgery involves an incision on the palm about an inch in length, through this incision the skin and the subcutaneous tissue is divided, followed by incision of the palmar fascia and ultimately incising the transverse carpal ligament, the symptoms of carpal tunnel syndrome are relieved when the median nerve in the carpal tunnel is completely decompressed.

RESULT

The mean follow up period 12 months, we find from those 60 patients performed open release of the carpal ligament 70% experienced reduction in the severity of the pain, 75% experienced reduction in the severity of the paresthesia, 72% experienced reduction of the severity of numbness, 45% had improvement in all three symptoms after open release of the transverse carpal ligament.

At clinical review sensory testing revealed that 60% get normal or slightly diminished light touch, 35% get normal static two point discrimination, 90% get negative Tinel's sign, Phalen test and pressure provocative test, 40% they get no scar tenderness, 90% get no persistent thenar muscle atrophy, 92% get normal grip strength and 90% get normal pinch strength. The average time for maximum improvement was 8 months, 70% of the patients in this study experienced good –excellent decrease of the symptoms at the end of the maximum improvement time while 30% experienced poor – fair improvement at the end of the maximum improvement time, in this study we find 80% of the patients under this study get diminish in the severity of the pain post surgery but the pain returns when they return to their job, but with less severity and those who change their job from job with repetitive / strong wrist –hand grip to job without repetitive / strong wrist – hand grip get no pain.

DISCUSSION

The carpal tunnel syndrome is disease aggravated by some jobs which cause either injury of the median nerve or edema of the flexor tendon sheath which cause compression of the median nerve in the carpal tunnel, repetitive flexion and extension of the wrist and grasping motion of the hand are thought to be repeatedly compress the median nerve between the tendons and carpal bones leading to injury of the median nerve, those motion also place the person at risk of tendonitis of the flexor tendon which is associated with edema of the tendon sheath in the carpal tunnel and cause compression of the median nerve, in this study diagnosis of carpal tunnel syndrome in those patient depend on the sign and symptoms and the electrophysiological finding.

Resemble evidence was found that repetitive work increase the risk of carpal tunnel syndrome, there were different studies reporting association between the type of job and carpal tunnel syndrome, Silverstein et al in 1987 in well known and careful survey that include several industries and included video tap job analysis reported association both with repetitive and forceful wrist / hand movement in the patient job. Repetitive work is defined as a cycle of 30 second or 50% of cycle time involved in performing the same fundamental activities, the other important risk factor was vibration, study by Roeselare et al 2008 and Joonyoung Kim et al 2004 supported this evidence, another review done by Keith et al 2006 also supported the repetitive prolonged intensive hand activities, forceful exertion awkward or static posture, vibration and localized mechanical stress associated with carpal tunnel syndrome, so there is many research support our study and from this study that type of activity must be avoided.

CONCLUSION

Job related carpal tunnel syndrome in these day one of the important causes of morbidity among the society of worker, good history and perfect clinical examination and nerve conduction study are important steps in the diagnosis, all patient under this study treated conservatively and they did not benefit from conservative treatment so surgical treatment perform. Repetitive work with forceful flexion / extension of wrist/ hand movement or vibration appear to be an important cause of job related carpal tunnel syndrome and according to this study patient with job related carpal tunnel syndrome in this study get return of the complaint after they return to the same previous job and I advised to change their job to prevent the relapsing of the complaint.

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