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OCCUPATIONAL ERGONOMIC RISK FACTORS IN CARPAL TUNNEL SYNDROME WITH DRUG THRAPY- A CASE REPORT

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ABSTRACT **Background:** Health problems due to occupational disease spawn by exposure to a work place hazard. Carpal tunnel syndrome is known to be effectuated by the compression of median nerve and the various process associated with it, on its progress through the carpal tunnel meagre space.Carpal tunnel syndrome (CTS) is the most common peripheral nerve entrapment syndrome worldwide and it is the commonest cause of nocturnal hand paraesthesias. It is the direct cost of humans subjecting their hands to repetitive motion lasting for hours of duration.

Case study: This case study is of a subject with 34 years, male, a lab technician diagnosed with CTS. The subject was on long term intake of Ibuprofen for pain relief and after 3 months duration it resulted in initial stage of liver injury. Symptoms such as flapping tremor, muscle weakness resulted with elevated liver enzyme values on laboratorial examination.

Conclusion: Hence the patient was counseled and advised on stopping the intake of Ibuprofen as an Off-label product. Abstention of the task could be of great relief in management of CTS when compared to medical treatments in controlling of symptoms. In addition corticosteroids were added upon for relief of symptoms. The patient was found to respond positively with the therapy followed.

KEYWORDS : Carpal Tunnel Syndrome, Median Nerve, Nerve Entrapment Disorder, Nocturnal Hand Paraesthesias

Introduction

Carpal tunnel syndrome results from compromise of median nerve function at the wrist caused by increased pressure in the carpal tunnel, an anatomical compartment bounded by the bones of the carpus and the transverse carpal ligament.[1]The normal wrists have tissue pressure in the tunnel 2-31 mm Hg whereas for carpal tunnel patients it is about 32 – 110 mm Hg. The Carpal tunnel is a confined space in the wrist is made up of 8 carpal bones, 9 tendons and ligaments. The ligaments and coverings of the tendons in the carpal tunnel swell as a result of repetitive motion causing tenosynovitis. Pressure may be raised by wrist flexion with elongation and finger flexion. 94 mm Hg pressure exists when the wrist is in flexed position and raised to 110 mm Hg while the wrist is extended. Symptoms commonly involve pain with burning experience in the index, middle, medial half of the ring finger and weakness in the thumb, which are innervated by the median nerve. Female susceptibility is increased with increased retention of body fluid, menstrual cycle, smaller wrist dimensions, breast feeding etc., partial or complete disability of the hand may occur if left untreated. Lab technicians are exposed to various ergonomic risk factors affecting their wrist including repetitive movement, including repetitive movement, awkward posture during pipetting, operating microtome's, working with microscopes etc., Many changes prevail in ligaments and surrounding nerves producing alterations in the connective tissue flexibility nature in altered manner, eventually leading to increased pressure[2,3]

Case presentation

A 34 year old male working as lab technician was reported with CTS. He had a history of hypothyroidism for the past 4 years. His symptoms for CTS progressed throughout the season as follows: Shaking of hands, tingling in index and middle fingers, radiating hand pain and numbness. Criteria for evaluation included multi-item semnatic differential scale (symptoms), strength tests (kg/cm^2), Right and left hand grip strength which were measured. Throughout the study the subject was treated with analgesic and multivitamins and wrist constraints at night. Hand grip strength averaged 2.8 kg/cm^2. He was on treatment with Ibuprofen for the past 3 months. His symptoms of pain were relieved with the drug intake. Now the patient was accompanied with symptoms of nausea, vomiting, fatigue for the past 1 week after three months of continuous treatment with Ibuprofen. His general examination revealed icterus, muscle weakness at times, slight flapping coma. Laboratorial examination showed an increase in the SGOT, SGPT, Bilirubin, and other liver enzymes. He was suspected for liver injury due to long term use of Ibuprofen and was admitted for observation with therapy focusing on withdrawal of NSAIDS, fluid therapy, liver regeneration therapy.

Results and Discussion

The patients working habit for the past 8 continuous years with strenuous job efforts has put him to become a victim of CTS. His increased use of NSAIDS such as Ibuprofen as an off-label drug for the relief of pain put him into its ongoing continuous use for a longer period. Increased dose of Ibuprofen, about 3200mg per day was in taken by the patient for the past 1 month. Most of the times increased dose of drug was administered when the persistence of pain was more leading to numbness and tingling sensation in the fingers.

The patient was uprightly counseled to stop making use of NSAIDS without proper instruction from the physician as an off-label drug. Ibuprofen is preferred only for a short term benefit at the lowest dose. Its longs term and unnecessary use could drag the patient into many complications, such as stroke, cardiac problems, GI bleeding, and hepatotoxicity. The subject has also faced such a condition due to the chronic use of Ibuprofen at its maximum dose. He was focused on avoiding further use of NSAIDS for his CTS symptoms and to focus on his withdrawal of strenuous activity which brings great relief to the patients. In addition Corticosteroids were prescribed for the betterment of condition. The patient was found to be benefitted from the therapy and was showing positive results.

Conclusion

Workplace and individual risk factors both contribute to the risk for CTS. Ceasing of the repetitive task leading to CTS is the only way for relief from the condition even when surgery is performed or not. Many people under various categories with such strenuous jobs are at great risk for CTS. Frequent rotation within the work cells is an appropriate means of relief from such conditions.

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COMPLIANCE WITH ETHICAL STANDARDS

Written informed consent was obtained from the patient for publication of the case study, inclusion of the accompanying images. Copies of written consent may be requested for review from the

corresponding author.

CONFLICT OF INTREST

The authors declare no conflicts of interest concerning the content of this case report.

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