

Case Report

A Case of Work-Induced Carpal Tunnel Syndrome

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Abstract

Carpal tunnel syndrome (CTS) is common in people working in a variety of professions. CTS is caused by frequent, repetitive movements of the upper limb, frequent bending and strain of the elbow, and hand-arm vibrations. Dentists, dental hygienists and dental assistants, soldiers, laboratory workers, and secretaries are some of those at risk due to their occupation. Presently described is a case with the diagnosis of work-related carpal tunnel syndrome. The patient was 46 years old and female. She was referred to the occupational diseases polyclinic for a suspicious lesion on the lungs. She had a complaint of numbness in her hands. She was exposed to repeated hand-wrist movements and hand-wrist force. Testing led to a diagnosis of carpal tunnel syndrome. Musculoskeletal system diseases are common in occupational diseases. Employees are often exposed to various risks in the work environment and frequently systemically affected. This case is a clear reminder of the value and importance of a detailed anamnesis and work history.

Keywords: Carpal tunnel syndrome, work story, occupational

Carpal tunnel syndrome (CTS) is one of the most common musculoskeletal disorders in the working population.^[1] CTS is a disease caused by excessive pressure on the median nerve passing through the wrist carpal tunnel. If CTS is not treated, the patient may develop pain, numbness, loss of strength. CTS can be treated with surgical decompression in the later period. Dentists, dental hygienists and dental assistants, soldiers, laboratory workers and secretaries are at risk due to occupationally.^[3-5] For this reason, we found it appropriate to present a case with carpal tunnel syndrome.

Case Report

The case was 46 years old and female. She was referred to occupational diseases polyclinic because she had suspicious lesion on the lungs. For these reasons, thorax computerized tomography was performed before coming to

the polyclinic. She had complaint of numbness in his hands. When the case's complaints were questioned, there had been a lack of hearing in the ears. There was numbness and tingling on both hands, back pain. The case has done similar work for about 20 years in different tiles factories.

When the business story was questioned, the towels on the wheels had been removed from the oven and the dried tiles had been brought to the worker. The patient was putting these tiles on top of table. She was doing this job 300 times in a day. A tile weighs about 3 kilograms. When the case was doing each job, 2 tiles weighed a total of 6 kilograms were removed.

The case was working in a dusty environment. There was a suspicious lesion in the lung at the periodic pulmonary imaging. Because of this reason thorax computerized to-

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mography was taken. There were multiple pulmonary nodule images on the thoracic computed tomography. There were 4 mm in the anterior cut level of the left lower lobe anteromedial segment, 6 mm in the pleura and 4 mm in the pleura and 3 mm in the diameter of the posterobasal segment at the level of the left lower lobe laterobasal segment of the left lung.

The case was working in a noisy environment. There was complaint of decreased the case's hearing. Pure Voice Audiogram of the case was made; slight hearing loss in both ears was observed to be moderate at 4000-8000 Hz in both ears. Bilateral neurosensory type loss was observed. In the event, hearing loss in both ears was associated with the case's working.

The case had numbness and tingling on both hands and back pain. She had an operation 2 years ago due to carpal tunnel syndrome in her left wrist. She was counseled by physical therapy and rehabilitation. On the physical examination; her joint range of motion, waist and neck were pained. Her lumbar lordose was increased. Her muscle strength was completed. Her deep tendon reflexes were normoactive. She had no pathological reflex. Her phallen test was positive.

In the examinations performed, the lumbosacral and cervical vertebral graphies showed vertebrae heights and disc spaces as normal. Minimal osteophytic sharpness was observed in vertebra corpus corners. Minimal focal central protrusion and dural sac pressure were observed on C2-3 disc by cervical MR. C3-4 disc showed right central weight protrusion and dural sac pressure. C3-4 disc showed right central weight protrusion and dural sac pressure. Diffuse bulging, minimal focal central protrusion and dural sac pressure were observed in the C4-5 disc. Diffuse bulging was observed on the C5-6 disk. Left paracentral protrusion and left postero lateral suprahlytened focal herniation and dural sac pressure were observed in the C6-7 disc. C3-4 disc showed right central weight protrusion and dural sac pressure. Diffuse bulging, minimal focal central protrusion and dural sac pressure were observed in the C4-5 disc. Diffuse bulging was observed on the C5-6 discs. Left paracentral protrusion and left postero lateral suprahlytened focal herniation and dural sac pressure were observed in the C6-7 discs. Findings on the right been more evident, with bilateral advanced carpal tunnel syndrome (sensory and motor axonal degeneration and segmental demyelination) were observed by EMG (Electromyography), also known as ENMG (Electroniromiography).

The case was evaluated with the results and bilateral carpal tunnel syndrome was diagnosed. Orthopedic planned operation for the right wrist. Because of the presence of bilateral carpal tunnel syndrome at the advanced stage, it was

suggested that the wrist does not perform repetitive wrist movements. It was suggested to avoid ergonomic risk factors due to spinal canal stenosis and low back pain. The case is recommended to avoid noise and ototoxic drugs and to have audiometry at 6 months intervals. After 6 months, the chest diseases policlinic application was recommended to evaluate the control thoracic CT.

Discussion

Diabetes, rheumatoid arthritis, hypothyroidism, and pregnancy can cause CT. Gender, age, body mass index and thyroid function affect CTS development.^[7] Female gender has been reported as a risk factor for CTS.^[4] They reported recurrent CTS by reason of connective tissue diseases such as gout.^[2] CTS can be caused by a variety of causes, including inflammatory or non-inflammatory arthropathy, wrist trauma or fractures, diabetes mellitus, obesity, hypothyroidism, pregnancy and genetic factors. The risk of CTS increases by progressive age at premenopausal women.^[7]

The use of vibration tools in the workplace, installation work, food processing and packaging can cause CTS.^[6] CTS has been reported to be associated with repetitive movements in the upper extremity, strong manual forcing, wrist flexion and elbow vibration.^[5] To establish a job-related carpal tunnel syndrome diagnosis; the job story should be related to CTS and the CTS should be recognized by the clinician. Repeated, long-term, hand-wrist movements, hand-wrist strength in the workplace are risk factors for CTS.^[7] For the diagnosis of CTS disease, EMG evaluates the median nerve and assists for the diagnosis.^[8]

Carpal tunnel syndrome should be operated. The general approach is to remove the median nerve pressure in the trap area by the surgical procedure. CTS can be improved by treatment of underlying disease such as pregnancy and mixeudem. Patients may not have surgery if the symptoms are mild for CTS. Medical treatment is given for CTS if there is median paralysis in the future.^[9-10]

Complication rarely develops after CTS operation. However, a case with postoperative epidermal inclusion cyst was reported.^[11] In another case, they reported a neuroma following the median nerve injury after operation.^[12]

Disclosures

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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References

1. Shaffer SW, Moore R, Foo S, Henry N, Moore JH, Greathouse DG. Clinical and electrodiagnostic abnormalities of the median nerve in US Army Dental Assistants at the onset of training. *US Army Med Dep J* 2012;72–81.
2. Lu H, Chen Q, Shen H. A repeated carpal tunnel syndrome due to tophaceous gout in flexor tendon: A case report. *Medicine (Baltimore)* 2017;96:e6245.
3. Butt J, Ahluwalia AK, Dutta A. Incidental finding of a persistent median artery (palmar type) during a routine carpal tunnel decompression: a case report. *Ann R Coll Surg Engl* 2017;99:e204–5.
4. El-Helaly M, Balkhy HH, Vallenius L. Carpal Tunnel Syndrome among Laboratory Technicians in Relation to Personal and Ergonomic Factors at Work. *J Occup Health* 2017 Aug 31, [Epub ahead of print]. doi: 10.1539/joh.16-0279-OA.
5. Mbaye I, Fall MC, Diop SN, Hatim B, Sow ML. Occupational carpal tunnel syndrome: the case of a secretary. *Dakar Med* 2002;47:103–5.
6. Ohnari K, Uozumi T, Tsuji S. Occupation and carpal tunnel syndrome. *Brain Nerve* 2007;59:1247–52.
7. Washington State Department of Labor and Industries Carpal Tunnel Syndrome Guideline 2017. Available at: <http://www.lni.wa.gov/ClaimsIns/Files/OMD/MedTreat/CTSGuideline2017.pdf>. Accessed Nov 13, 2017.
8. Moon PP, Maheshwari D, Sardana V, Bhushan B, Mohan S. Characteristics of nerve conduction studies in carpal tunnel syndrome. *Neurol India* 2017;65:1013–6.
9. Baic A, Kasprzyk T, Rżany M, Stanek A, Sieroń K, Suszyński K, et al. Can we use thermal imaging to evaluate the effects of carpal tunnel syndrome surgical decompression? *Medicine (Baltimore)* 2017;96:e7982.
10. Ulvi H, Yigiter R, Aygul R, Varoglu AO. Diagnosis and Treatment Approaches in Carpal Tunnel Syndrome. *Van Medical Journal* 2004;11:155–60.
11. Park HY, Sur YJ, Kim YV. Epidermal Inclusion Cyst after Carpal Tunnel Release: A Case Report. *J Wrist Surg* 2016;5:67–70.
12. Depaoli R, Coscia DR, Alessandrino F. In-continuity neuroma of the median nerve after surgical release for carpal tunnel syndrome: case report. *J Ultrasound* 2014;18:83–5.