Bir çiftçide uzun süre çömelme nedeniyle oluşan bilateral peroneal sinir paralizisi

Anahtar kelimeler: peroneal paralizi, bilateral tutulum , düşük ayak, çömelmek

Bilateral peroneal nerve palsy due to prolonged squatting in a farmer

Keywords: peroneal palsy, bilateral involvement, foot drop, squatting

Introduction

This paper presents an uncommon cause of common peroneal neuropathy. We reported a case of a 36 year old farmer with bilateral foot drop due to bilateral common peroneal nerve palsy resulting from working at squat position for long hours.

Case

A 36 year old male patient applied with the complaint of inability to push his feet and toes up after working whole day at his farm. He said that he had sifted grain at squat position and he noticed numbness , tingling on lateral aspects of his legs and weakness on both sides while standing up and trying to walk. He had steppage gait, the strength of ankle and toe dorsiflexors and ankle evertors were 2/5 on the right side and 1/5 on the left side. Strength of the plantar flexors and proximal muscles were normal on both sides. Lower two third of lateral side of his cruris and dorsum of his feet were anesthetic bilaterally.

He was prescribed with bilateral ankle-foot orthosis and non-steroidal anti-inflammatory drug and additionaly he was advised to rest. His electrophysiological examination was performed in our laboratory with the Nihon Kohden brand, Neuropack S1-MEB-9400K model electromyograph three weeks after the symptoms were seen. Skin temperature was 33° C during the examination. Sensory nerve conduction study of the superficial peroneal nerve was performed by antidromic method by replacing the recording electrode at ankle level one fingerbreadth medial to the lateral malleolus and stimulating at about 12 cm proximal to the recording electrode along the fibula. Motor nerve conduction study of the peroneal nerve was performed by placing the superficial recording electrode on

the extansor digitorum brevis muscle (EDB) and stimulating from ankle, just distal to the fibular head and popliteal fossa. On the right side: Sensory nerve action potential (SNAP) of the superficial peroneal nerve could not obtained. A compound nerve action potential (CMAP) with normal amplitude (4.3 mV) was taken by superficial recording from the EDB and stimulation from the ankle and also there were >% 50 amplitude loss with stimulation from fibular head (2 mV) and >% 75 amplitude loss with stimulation from the poplitea (1.1 mV). Motor nerve conduction velocities at "ankle-fibular head" and "across fibular head" segments were within normal limits but 6.2 m/s slower at the across fibular head segment than at the distal part (47.9/ 41.7 m/s respectively). In the needle electromyography (EMG) of the tibialis anterior (TA), peroneus longus (PL) and extensor digitorum brevis muscles:

- fibrillation potentials and positive sharp waves were seen at rest,

- proportion of polyphasic motor unit action potential (MUAP)'s were increased and

-recruitment patterns were decreased with full contractions of these muscles. Needle EMG examination of the gastrokinemius, short head of the biceps femoris, vastus medialis and gluteus medius were normal. Sural nerve conduction study was also normal. On the left side CMAPs with very small amplitudes were obtained with the stimulation from the ankle, below and above the fibular head and recording from the EDB (0.48 mV, 0.92 mV and 0.68 mV respectively). Motor nerve conduction velocity was normal at the ankle-fibular head segment (48.2 m/s) but it was diminished at across fibular head segment more than %50 of the velocity at the distal part (20 m/s). Superficial peroneal SNAP was absent and sural nerve conduction study was normal again. Needle EMG examination of the TA, EDB and PL muscles were compatible with acute axonal lesion. Needle EMG findings of the gastrokinemius, short head of biceps femoris and vastus medialis were normal. Based on these findings the patient was diagnosed with bilateral acute, partial peronal nerve lesion at the fibular head.

Two months later, he called us from his hometown, Sanliurfa and said that he could not come to the control examination but he has quite improved.

Discussion

The common peroneal nerve can be injured at any location along the thigh. However the majority of injuries occur about the fibular head. Compressions are the most common cause of these injuries. Habitual leg crossing, debilitated patients with the nerve compressed against a hard mattress or bed railing, coma during general anesthesia or drug induced stupor are the most common causes of the compression (1) . Excessive weight loss is a precipitous factor in patients with compressive peroneal nerve lesion and this condition is called “slimmer’s paralysis” (2). The entrapment site is usually the fibroosseous tunnel between fibula bone and peroneus longus muscle (1).

Occasionally, peroneal nerve palsies were reported in patients who are walking or spending long hours in squat position as part of their occupation. In some of them, the peroneal paralysis occurred after picking strawberries up by walking at squat position therefore the condition was defined as “strawberry pickers’ palsy” (3).

Compressive peroneal palsies seldom occur bilaterally. There are two reports in which cases bilateral peroneal paralysis were related to prolonged squatting from our country. Togrol et al reported three cases related to prolonged squatting which of one healed with conservative treatment, the other one healed with surgical release and another one that was suffering for along time and did not heal (4). Yılmaz et al reported a case with bilateral peroneal paralysis that was resulted from squatting for 6-7 hours about 10 days. His paralysis on the right side improved spontaneously within three months and the one on the left side improved after surgical release within six months and completely recovered after 3 years bilaterally (5). Natural childbirth in squat position is also a cause of peroneal paralysis (6,7)

The differential diagnosis spectrum for a patient with foot drop is quite wide. Electroneuromyographic (ENMG) examination significantly contributes localizing the lesion. L5 radiculopathy, sciatic neuropathy, lumbosacral plexopathy and motor neuron diseases can be differentiated by an ENMG examination.

There was a predominantly conduction block type neuropathy on the right side of our patient. Because by recording from the EDB, a CMAP with 4.3 mV was obtained with ankle stimulation and a CMAP with 2 mV was taken with fibular head stimulation and the amplitude of the CMAP with popliteal stimulation was 1.1 mV. Some axonal loss was accompanying to the conduction block. Because fibrillation potentials and positive sharp waves were seen in the needle EMG of the related muscles. Motor nerve conduction velocities were 47.9 m/s and 41.7 m/s at “fibular head- ankle” and “knee-fibular head” segments respectively. These velocities were within normal limits but the velocity at the knee-fibular head was more than 6 m/s slower than at the distal segment. It was reported that if there is a velocity decrease of 6-10 m/s at fibular head- knee region than ankle-fibular head region, it can be said for this lesion to be a conduction block (8). On the left side the axonal damage was more severe. The CMAP amplitudes with the stimulation from the ankle, the head of the fibula and the poplitea were 0.68 mV, 0.92 mV and 0.48 mV respectively. Whereas the motor conduction velocity at the fibular head-ankle segment was 48.1, it was measured as 20 m/s at across fibular head segment. Therefore the neuropathy on the left side was both axonal lesion and conduction block types. This type of peroneal neuropathy is the most commonly seen type at fibular head lesions. (1)

Motor nerve conduction criteria commonly used to localize the lesion across the fibular head are:

1. NCV across the fibular head below the normal range and NCV below the fibular head within the normal range

2. NCV across the fibular head slower than the distal NCV by more than 6-10 m/s, although both values are within the normal range, or the distal NCV is slightly slow
3. Conduction block or abnormal temporal dispersion across the fibular head (8,9,10)

The diagnosis of our patient was distinguished from L5 radiculopathy by not obtaining the superficial peroneal SNAP and by normal needle EMG findings of the muscles that are innervated by L5 root and by peripheral nerves other than peroneal nerve such as gastrokinemius and gluteus medius. A sciatic neuropathy was excluded by normal needle EMG findings of the short head of the biceps femoris. The clinical signs of our patient were not compatible with a motor neuron disease and SNAPs of the peroneal superficial cutaneous nerve could not be obtained bilaterally.

Prognosis of demyelization type neuropathies is good. They usually recover spontaneously and almost fully within a few weeks-months. The recovery prolongs in axonal damage and may not be full in direct proportion to the severity of the damage. At the telephone call done with our patient 3 months after the beginning of the paralysis, the patient said that he has almost recovered. Since he could not come to control examination his clinical and electrophysiological findings could not be reported here.

An ankle-foot orthosis should be carefully prescribed. The proximal retaining strap should be properly fitted to the right place unless it can further compress the peroneal nerve to the fibular head.

In conclusion, the people working at squat position especially the workers in agriculture and construction sector should be warned about not to stay at squat position for a long time and to change their position immediately when the first symptoms of the compression-tingling, pins and needles etc.- appear.

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