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Case reports

A case report of an uncommon neuropathy : posterıor femoral cutaneous neuropathy

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Abstract

Isolated posterior femoral cutaneous neuropathy is rarely encountered. Electrophysiological documentation has only been made in a few cases. We present a 73 year-old male patient who underwent a coronary angiography procedure which was performed on his right femoral artery 2 months prior of referring to our electromyography (EMG) laboratory. After this event, he had an operation in order to evecuate the hematoma formed in the right inguinal region during the procedure. In the postoperative state he began to complain of a pain and numbness in his right posterior thigh ; which had radiated towards his right hip and popliteal fossa. In addition to routine electrophysiological nerve conduction studies contucted in lower extremities ; we performed posterior femoral cutaneous nerve conduction using the method described by Dumitru and Nelson. While normal response can be obtained easily on the left side ; no potential could be obtained from the right.

Key words : Electromyography ; nerve conduction studies ; posterior femoral cutaneous neuropathy ; uncommon neuropathies ; isolated mononeuropathy.

Introduction

Posterior femoral cutaneous (PFC) nerve arises from the rami of S1, S2 and S3 of the sacral plexus and passes through the sciatic foramen adjacent to the sciatic nerve below the piriformis muscle where then it passes deeply through the gluteus maximus muscle and comes out at its inferior border. It supplies the skin at full length of the posterior thigh ; from the inferior posterior buttock at the top ; to the popliteal fossa at the bottom (Netter 1997).

Isolated PFC neuropathy is very rarely. Only 3 cases of PFC neuropathy were documented clinically by electrophysiologic testing so far (Arnoldussen, Korten, 1980 ; Iyer, Shields, 1989 ; Tong, Haig, 2000). Our case will be the second case which has been evaluated using the technique described by Dumitru and Nelson.

Case report

A 73 year-old male patient complained of a numbness and dysesthesia in his right buttock and posterior thigh. He had a coronary angiography procedure which was performed on his right femoral artery 2 months prior of referring to our EMG laboratory because of an unstable angina pectoris. After this procedure, a hematoma occurred in the right inguinal region. The hematom did not resolved with compression and one week later he was opereted in order to evecuate the hematom. After the operation ; he began to complain of a severe pain and numbness in the posterior region of his right thigh. Pain was especially sensitive to touch. He was referred and evaluated in our EMG laboratory for his sensory complaints.

Patient had a diagnosis of arteriosclerotic coronary heart disease. He had no history of anemia, diabetes mellitus, thyroid disease or any other associated acute illness or trauma. Review of systems was positive only for angina occurring from time to time and pain and numbness in his thigh. He was cooperative and his pysical and neurological examination was normal. He had full stregnth in his extremities with symettrical and +2 reflexes in both upper and lower extremities.

Methods

Nerve conduction studies were performed using a Dantec/Cantata electromyography machine, with a filter setting of 20 Hz to 10 kHz using an analysis time 50 ms. For the recordings Dantec 13K60 surface recording electrodes were used.

Studies were performed in a warm room, with the extremity skin temparature of 32˚C at the side where nerve conduction velocity measurament was done.

Nerve conduction studies were performed orthodromically in right peroneal and posterior tibial nerves and antidromically in sural nerve with the standard methods described (Oh, 1993). A mono-

Table 1

Nerve conduction studies of our patient

	Nerve conduction		
	Distal latency (msec)	Velocity (m/sec)	Amplitude (μV)
N. Perenous Comminis	5,7 (5.8)*	42,3 (40.9)*	4,9 (3.6)*
N. Tibialis Posterior	5,3 (5,8)*	43,3 (39,6)*	5,5 (3,6)*
N. Suralis	3,62	34,5 (33,8)*	7,3 (5,0)*

* Numbers in parentheses represent normal values of our laboratory.

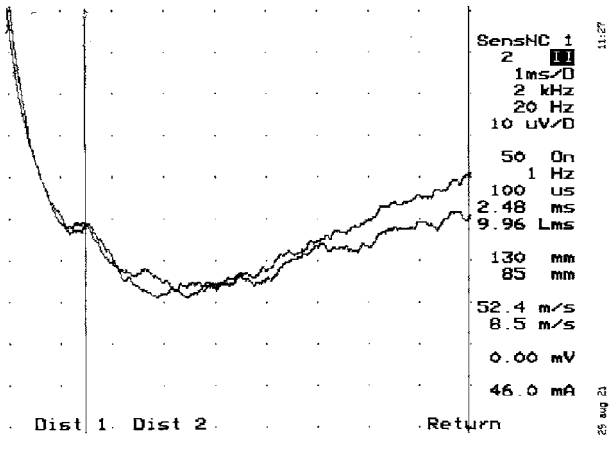

FIG. 1. — Left posterior cutaneous nerve conduction study

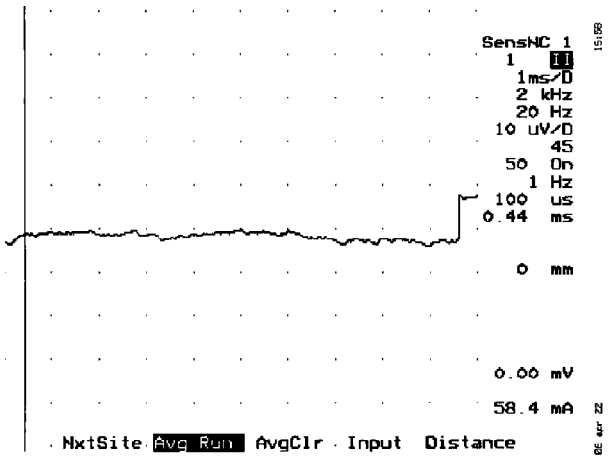

FIG. 2. — Right posterior cutaneous nerve conduction study

polar concentric needle electrode was used to examine right tibialis anterior, medial gastrocnemius, perenous longus, vastus lateralis and L3-L4-L5-S1 paraspinal muscles.

Patient was prone and his lower extremities were relaxed. Bilateral nerve conduction study of PFC nerve was performed antidromically with using the technique proposed by Dumitru and Nelson (Oh, 1993). An active surface electrode was placed at the midline of the posterior thigh 6 cm proximal to the popliteal crease and stimulation was performed 12 cm proximally. Distal latency was measured from negative peak and amplitude was measured from peak to peak.

Results

Nerve conduction studies performed using the standard techniques of posterior tibial, peroneal and sural nerves were within normal limits (Table 1). Needle EMG examination of right tibialis anterior, peroneus longus, vastus lateralis and L3-L4-L5-S1 paraspinal muscles demonstrated no abnormality. In motor nerve conduction studies of right and left femoral nerve ; distal latencies and amplitudes were within normal limits. In sensory nerve conduction of left posterior femoral coutaneus nerve, negative peak distal latency was 2.48 msec, sensory evoked response amplitude was 6.0 μv and nerve conduction velocity was 52.4 m/s (Fig. 1). No response could be obtained from the rigth posterior femoral coutaneous nerve although several different recording and stimulating points were used (Fig. 2).

Discussion

Electrophysiological evaluation of posterior femoral cutaneous neuropathy is rarely performed. So far only one case has been reported. Dumitru and Marquis described an evident decrease in the amplitude of the right posterior femoral cutaneous nerve in comparison with the left side in a patient with right putaminal hemorrage in 1988 (Dumitru, Marquis, 1988). In 1989, Iyer and Shields reported an isolated posterior femoral cutaneous neuropathy occurring after an injection to the buttock (Iyer, Shields, 1989).

Dumitru and Nelson have tested PFC nerve conduction in 40 healthy subjects bilaterally in order to improve their own techniques. The first case was reported by Tong and Haig, who used the method described by Dumitru and Nelson (Tong, Haig, 2000). It was a mononeuropathy of PFC nerve which has occurred after an injection to the right buttock.

Isolated PFCN can occur as a result of injections, falls onto the buttock, pressure from prolonged bicycle riding, and tumors in the presacral region. In our case, neuropathy symptoms began

immediately after the occurrence of the hematoma and the hematoma failed to resolve early in its course. Our patient was very thin and a large hematoma developed after performing angiography procedure in right femoral region. Prolonged compression was done by cardiologists for homeostasis. In this case, this rare neuropathy may have resulted from the anterior compression of the intrapelvic course of the PFC nerve by the hematoma. However, compression of the posterior femoral cutaneous nerve between femoral hematoma and hard couch may also have been the cause of this neuropathy. We believe our case will be the first case reported with this etiology.

Standard electrodiagnostic techniques using nerve conduction studies and needle electromyography are often adequate for identifying pathology involving most commonly tested peripheral nerves. However in evaluating the uncommon peripheral mononeuropathies, special electrophysiological methods should be performed in order to achieve a more accurate diagnosis.

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