Femoral nerve entrapment. Azuelos A, Corò L, Alexandre A. Source European Neurosurgical Institute, Treviso, Italy.

Key Words: femoral nerve, entrapment, nerve conduction block, functional electrodiagnosis

To our knowledge, this is the first reported case of positional entrapment neuropathy of femoral nerve at the inguinal ligament. This case also illustrates the novel approach of dynamic electrodiagnostic testing to identify the entrapment. It is noteworthy that the patient sat with left hip and knee in full extension. He had already undergone extensive diagnostic studies, including bone scan and electrodiagnostic (EDx) testing, with no abnormal results. However, considering the positional nature of reproduction of the patient’s symptoms, EDx testing was repeated and performed in sitting and supine positions, focusing on the left femoral nerve above and below the inguinal ligament (Figure 2).

A 63 year old male with 8 month duration of left anterior-medial leg burning pain, radiating to the ankle, which was relieved with lying flat or upon standing and worse with sitting. It was not exacerbated with walking nor associated with weakness. Upon physical exam, the skin was intact without trophic changes, erythema, or swelling around the area of interest. There was no tenderness or allodynia on palpation, and motor and sensory exam was normal with symmetric deep tendon reflexes.

The femoral nerve can be compressed anywhere along its course, but it is particularly susceptible within the body of the psoas muscle, at the level of the iliopectineal groove, and at the inguinal ligament. The condition causes weakness predominantly of the quadriceps, which results in difficulty with ambulation and debilitating pain. This case report focuses on positional femoral entrapment neuropathy where the actual entrapment of the femoral nerve can be dynamic in nature and changes with the position of the patient. We demonstrate a novel approach of dynamic electrodiagnostic testing to identify the entrapment.

INTRODUCTION

The femoral nerve is part of the lumbar plexus (Figure 1). It is formed by L2-4 roots and reaches the front of the leg by penetrating the psoas muscle before it exits the pelvis. The femoral nerve leaves the pelvis by passing beneath the medial inguinal ligament to enter the femoral triangle just lateral to the femoral artery and vein. Common causes of femoral nerve mononeuropathy are secondary to direct trauma, compression, stretch injury, or ischemia.

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Case Description

A 63 year old male with 8 month duration of left anterior-medial leg burning pain, radiating to the ankle, which was relieved with lying flat or upon standing and worse with sitting. It was not exacerbated with walking nor associated with weakness. Upon physical exam, the skin was intact without trophic changes, erythema, or swelling around the area of interest. There was no tenderness or allodynia on palpation, and motor and sensory exam was normal with symmetric deep tendon reflexes.

It is noteworthy that the patient sat with left hip and knee in full extension. He had already undergone extensive diagnostic studies, including bone scan and electro-diagnostic (EDx) testing, with no abnormal results. However, considering the positional nature of reproduction of the patient’s symptoms, EDx testing was repeated and performed in sitting and supine positions, focusing on the left femoral nerve above and below the inguinal ligament (Figure 2).

Results

Positional dynamic nerve conduction study (NCS) of the left femoral nerve (Figure 3B) revealed a partial nerve conduction block below inguinal ligament when patient was sitting, with normalization in the supine positioning. The NCS on the contralateral side (Figure 3A) was within normal limits. These findings are highly suggestive of an entrapment of the left femoral nerve at the level of inguinal ligament.

Conclusion

To our knowledge, this is the first reported case of positional entrapment neuropathy of femoral nerve at the inguinal ligament. This case also illustrates the novel approach of EDx testing with the patient in different positions for the diagnosis of this uncommon condition. Posture can be a possible etiology for femoral entrapment neuropathy. During the physical examination portion of the EDx consultation, posture/position should be taken into consideration when developing the plan for the NCS portion of the test. The NCS should be adapted to the patient’s symptoms, especially as related to positional dynamics.

References


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