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CASE REPORT

Neurophysiological study in endometriosis: A case report of catamenial sciatica

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ABSTRACT

Sciatic nerve endometriosis is a rare cause of sciatic injury; however, it is important to consider this diagnosis due to the high recognizability of patients with cyclic pain and the availability of specific treatment methods. In addition to the imaging studies, electroneuromyography should be performed to determine the localization, chronicity, and severity of involvement. Herein, we presented the detailed electrophysiological study of a 47-year-old female with sciatic endometriosis who underwent surgery with complaints of cyclic sciatica and sensory and motor deficits compatible with sciatic neuropathy, which showed incomplete improvement after intervention.

Keywords: Electroneuromyography, endometriosis, sciatic nerve, sciatalgia, sciatic neuropathy.

Sciatic nerve endometriosis is a rare cause of sciatic injury and should be considered when a female patient has cyclic posteriorly descending pain from the hip to the foot, as well as motor and sensory complaints consistent with sciatic nerve neuropathy. When the diagnosis of endometriosis is suspected, it is important to distinguish more proximal lesions that may be located on the plexus or sacral nerve root to choose the right method of surgical intervention. Therefore, electrophysiological examination and imaging studies should be performed. Herein, we presented a detailed electrophysiological study for a rare sciatic endometriosis patient who underwent surgery with complaints of cyclic sciatica and sensory and motor deficits compatible with sciatic neuropathy.

CASE REPORT

A 47-year-old female patient was admitted to the obstetrics and gynecology department with cyclic pudendal tenderness, posteriorly descending pain from the right hip to the foot, and weakness in foot movements, particularly in ankle dorsiflexion. Contrast-enhanced dynamic pelvic magnetic resonance imaging (MRI) revealed an endometriosis nodule 3 cm in diameter in the right extraforaminal sciatic nerve trace (Figure 1) and a deep pelvic endometriosis nodule on the Douglas pouch. Nodules were excised and the sciatic nerve was freed with a laparoscopic operation. After the operation and the use of progestin, the patient did not have menstruation and cyclic symptoms, but complaints of milder sciatic pain continued. The new pelvic MRI at readmission was not compatible with a mass lesion but revealed increased thickness of the sciatic nerve with edema. When the patient was referred to our clinic one year after surgery, neurological examination revealed weakness in knee flexion, ankle dorsiflexion, ankle inversion, and ankle plantar flexion, with muscle strength graded 4/5. Achilles reflex was absent unilaterally. Hypoesthesia was noted in the lateral and posterior aspects of the calf, and the posteriorly descending pain from the right hip to the foot persisted,

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Figure 1. Contrast-enhanced dynamic pelvic magnetic resonance imaging; thick arrow indicates the right extraforaminal sciatic nerve and the adjacent endometriosis nodule.

albeit lessened compared to the preoperation. Electroneuromyography (ENMG) revealed that bilateral symmetrical tibial and peroneal motor conduction studies were within normal limits. The right tibial and peroneal F latencies were minimally prolonged. Right sural nerve sensory action potential was a lower amplitude than the left side, and the right superficial peroneal sensorial response could not be obtained (Figure 2, Table 1). In needle examination, there were spontaneous denervation potentials, neurogenic motor unit potentials, and decreased interference pattern in the right tibialis anterior, tibialis posterior, medial head of gastrocnemius, peroneus longus, and the short head of biceps femoris. Needle examination of the muscles innervated by femoral, inferior gluteal, and superior gluteal nerves was normal. The ENMG findings indicated active chronic sciatic nerve injury, in line with the neurological examination. A written informed consent was obtained from the patient.

DISCUSSION

Sciatic nerve endometriosis is a rare cause of sciatic injury and should be considered when a female patient has cyclic posteriorly descending pain from the hip to the foot. In case of sciatic neuropathy, the muscles innervated by the peroneal nerve are expected to be more affected

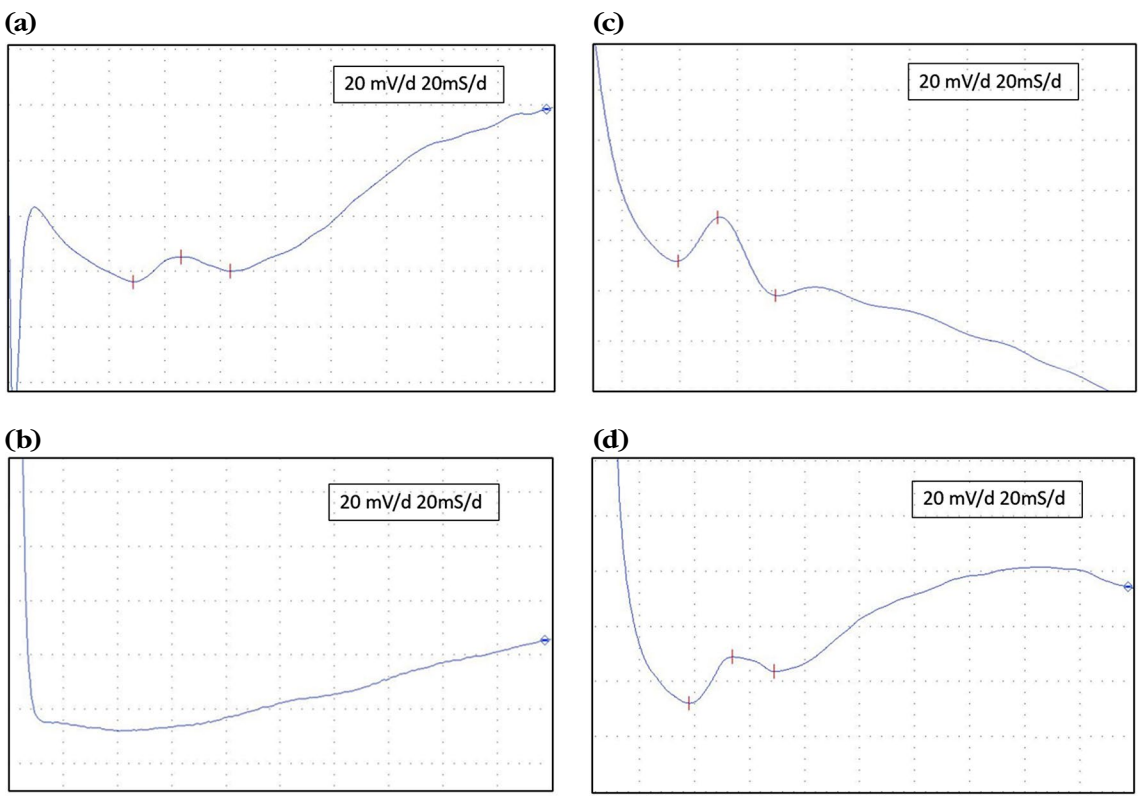

Figure 2. Traces of sensory nerve conduction studies. **(a)** Right sural nerve sensory conduction study. **(b)** Left sural nerve sensory conduction study. **(c)** Right superficial peroneal nerve sensory conduction study. **(d)** Left superficial peroneal nerve sensory conduction study.

TABLE 1
Data of the nerve conduction studies

	Distal latency (ms)	Velocity (m/s)	Distal amplitude (mV)	Proximal amplitude (mV)	F latency (ms)
R-motor tibialis	3.6	53	9.2	6.1	50.4
L-motor tibialis	2.9	45	8.8	8.4	42.8
R-motor peronealis	4.9	54	4.0	3.0	51.2
L-motor peronealis	4.2	42	2.7	2.1	40.9
R-sensory peronealis superficialis		NP	NP		
L-sensory peronealis superficialis		53	11.4		
R-sensory suralis		45	7.2		
L-sensory suralis		56	25.6		

R: Right; L: Left; NP: No potential.

than the muscles innervated by the tibial nerve because peroneal fascicles have less supporting tissue, lie more superficially in the hip and proximal thigh regions, and are numerically fewer compared to the tibial fascicles. Furthermore, they are more vulnerable to stretch injuries because the peroneal fascicles are fixed in the sciatic notch and fibula neck. Therefore, it is not surprising that the peroneal symptoms are more common than the tibial symptoms in sciatic nerve neuropathies.[1-3] Etiological classification of the sciatic neuropathy includes traumatic, compressive, ischemic, neoplastic, and idiopathic causes.[4] Among them, the highest frequency belongs to traumatic and compressive nerve injuries. In more detail, a large case series and a review of studies showed that approximately one-third of the cases were related to hip surgery.[1-3,5] Cases with sciatic nerve damage due to endometriosis accounted for less than 5% in all mentioned series. In addition, according to a literature review conducted in 2022, there were a total of 106 patients reported in PubMed, MEDLINE, Web of Science, and Embase databases.[6] Despite infrequency, it is important to consider sciatic endometriosis due to the high recognizability of patients with cyclic pain and the availability of specific treatment methods. In addition to the imaging studies, ENMG should be performed not only to determine the localization, chronicity, and severity of involvement but also to distinguish other etiologies.[7]

Neurophysiological evidence should be questioned; thus, electromyography is crucial, particularly when the neuroimaging studies are negative. The nerve conduction studies should include bilateral peroneal and tibial motor nerve conductions and F responses, and superficial peroneal and sural sensory nerve conduction studies.[2] In needle examination, at least two muscles innervated by the peroneal nerve, two innervated by the tibial nerve, one innervated by the superior gluteal nerve, and one innervated by the inferior gluteal nerve should be studied. If the study is to be expanded, L5-S1 paraspinal muscles and two muscles without L5-S1 or sciatic innervation can be added to exclude a more extensive lesion.[8] In the needle examination, muscles innervated by the peroneal nerve are found to be more affected than muscles innervated by the tibial nerve. Concurrently, more proximal muscles with L5-S1 root or lumbosacral plexus innervation, which are not innervated by sciatic fascicules, should be normal to exclude radiculopathy or plexopathy. Accurate localization is crucial for the surgical guidance and predicting the prognosis. Although the localization of the lesion was correct and complete in our patient, complete recovery may not occur even after appropriate surgery in some cases. Aside operation-related injury, the presentation of sciatic nerve endometriosis with motor symptoms was found to be a worse predictor for incomplete recovery.[6-9] Even with a poor prognosis, an accurate diagnosis is essential in reducing symptoms for the future, as there are studies to accelerate recovery in sciatic neuropathy.[10]

In conclusion, this case highlighted an electrophysiologically proven sciatic nerve endometriosis with a rare presentation, emphasizing the necessity of a meticulous neurophysiological study in this disease.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

1. Cherian RP, Li Y. Clinical and electrodiagnostic features of nontraumatic sciatic neuropathy. Muscle Nerve 2019;59:309-14. doi: 10.1002/mus.26380.
2. Distad BJ, Weiss MD. Clinical and electrodiagnostic features of sciatic neuropathies. Phys Med Rehabil Clin N Am 2013;24:107-20. doi: 10.1016/j.pmr.2012.08.023.
3. Yuen EC, So YT, Olney RK. The electrophysiologic features of sciatic neuropathy in 100 patients. Muscle Nerve 1995;18:414-20. doi: 10.1002/mus.880180408.
4. Feinberg J, Sethi S. Sciatic neuropathy: Case report and discussion of the literature on postoperative sciatic neuropathy and sciatic nerve tumors. HSS J 2006;2:181-7. doi: 10.1007/s11420-006-9018-z.
5. Plewnia C, Wallace C, Zochodne D. Traumatic sciatic neuropathy: A novel cause, local experience, and a review of the literature. J Trauma 1999;47:986-91. doi: 10.1097/00005373-199911000-00036.
6. Kale A, Baydili KNS, Keles E, Gundogdu E, Usta T, Oral E. Comparison of isolated sciatic nerve and sacral nerve root endometriosis: A review of the literature. J Minim Invasive Gynecol 2022;29:943-51. doi: 10.1016/j.jmig.2022.05.017.
7. Fedele L, Bianchi S, Raffaelli R, Zanconato G, Zanette G. Phantom endometriosis of the sciatic nerve. Fertil Steril 1999;72:727-9. doi: 10.1016/s0015-0282(99)00305-2.
8. Preston DC, Shapiro BE. Electromyography and neuromuscular disorders: Clinical-electrophysiological correlations. 3rd ed. New York: Elsevier Inc.; 2013.
9. Yuen EC, Olney RK, So YT. Sciatic neuropathy: Clinical and prognostic features in 73 patients. Neurology 1994;44:1669-74. doi: 10.1212/wnl.44.9.1669.
10. Fırat T, Ulas N, Kukner A, Gideroglu K, Terzi H. The Recovering effects of methylprednisolone and rapamycin on sciatic nerve injury. Turk Norol Derg 2009;15(Ek 1):183-277.