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Piriformis Syndrome

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Abstract

Piriformis syndrome is characterised by pain in the distribution of sciatic nerve, dysesthesia/hypoesthesia, positive Lasegue sign and tenderness at the sciatic notch due to entrapment of sciatic nerve as it passes beneath the piriformis muscle. A 38 years old female presented with positive AIF maneuver (adduction,internal rotation and flexion of hip) in addition to the clinical findings. CT scan for piriformis muscle also revealed hypertrophy of piriformis muscle on the side of clinical symptoms. 'H' reflex study using a standard technique was done both in normal anatomic prone position and in AIF position to identify prolonged 'H' reflex latency. However the latency of 'H' reflex was 27 milliseconds in both normal anatomic position and in AIF position. Unlike previously described cases, there was a striking reduction in amplitude of the 'H' potential without any corresponding reduction in amplitude of the 'M' potential in AIF position suggesting a conduction block at sciatic nerve. Decreased amplitude of 'H' reflex potential could be the only objective finding in electrophysiological study for Piriformis syndrome instead of prolonged 'H' reflex latency.

Introduction

Piriformis syndrome first described in the late 19th century is characterised by pain in the distribution of sciatic nerve, dysesthesia (or) hypoesthesia, positive Laseque sign, tenderness at the sciatic notch due to entrapment of one or both divisions of sciatic nerve as it passes beneath the piriformis muscle during its exit from pelvis[1-5].

The incidence of piriformis syndrome was six times more common in female than male. Most patients experience pain while walking or sitting even for a short perioc. Tenderness at the piriformis muscle can be elicited by palpation either by gluteal (or) rectal method [7].

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The symptoms are exaggerated or reproduced by the maneuver of adduction, internal rotation and flexion of the hip. In this postion the inferior border of piriformis muscle gets tightened and exerts pressure over the sciatic nerve as it passes beneath the tendinous portions of the piriformis muscle. This maneuver is described as AIF position. In Frieberg's maneuver forceful internal rotation of the extended thigh in sitting position elicits buttock pain by stretching the piriformis muscle. In Pacr's maneuver active abduction of the thigh in sitting position elicits pain due to contraction of piriformis muslc. In simpler method with the patient in lateral decubitus with painful side up,hip flexed, knee resting on the table, painful extremity is lifted holding the knee several inches off the table, to elicit contraction of the piriformis and there by pain of piriformis syndrome [8,9].

Frieberg and Vinke defined piriformis syndrome as the triad of positive Laseque sign, tenderness at the sciatic notch and improvement withconservative treatment with no other positive signs or laboratory findings. There were attempts to confirm the entrapment of the sciatic nerve at the sciatic notch by scintigraphy, evoked potential study and later by 'H' reflex latency study [9].

Fishman LM et al in their study on "Electrophysiological basis of the piriformis syndrome" used 'H' reflex as an aid for the diagnosis of Piriformis syndrome. Their study emphasized that the objective of reproducing the symptoms of piriformis syndrome by AIF maneuver i.e., the pressure exerted by the piriformis muscle over the sciatic nerve can be electrophysiologically demonstrated by the reversible reduction of conduction by 'H' reflex study. The 'H' reflex latency in anatomic prone position was compared with that of 'H' reflex latency in AIF position to prove the delay in latency by Fishman LM et at [9].

Hypertrophy of the piriformis muscle can also be demonstrated by CT and MRI [2,10].

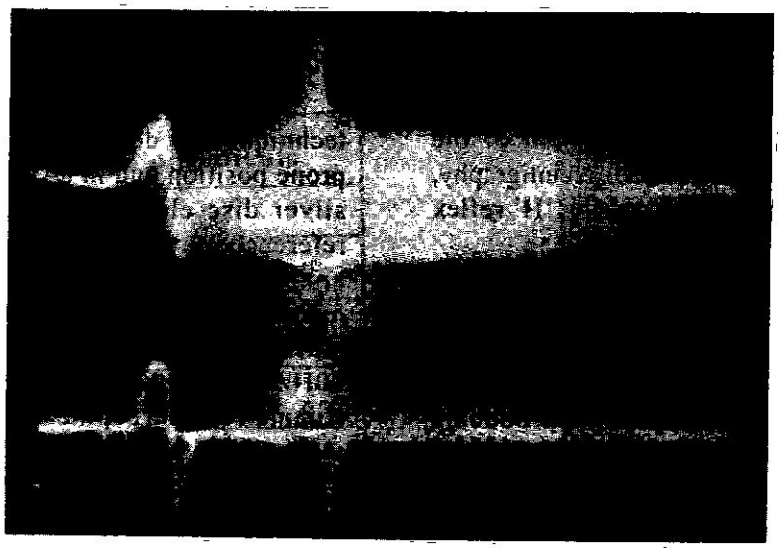
Case Report

A 38 years old female working as a clerk in a bank reported on IstFebruary 1995 with pain in the gluteal region radiating down the back of the thigh for the previous two and half years. She has marked the location of pain in the gluteal region with pen which was corresponding to sciatic notch. The pain was piercing in nature increased by automobile travel. Deep pressure over sciatic notch elicited belching. There was associated frequency of micturition during exacerbation of pain. She was treated with NSAID without any relief of pain. Clinical examination revealedpainful extension of lumbosacral spine, positive Laseague sign, tenderness over the sciatic notch. AIF maneuver reproduced the pain in the distribution of sciatic nerve. There was no neurological deficit. A clinical diagnosis of piriformis syndrome was made.

'H' reflex study using a standard technique was done both in normal anatomic prone position and in (AIF) position. Surface silver disc electrodes both, recording and reference were placed over the soleus 2.5 cms apart. The sensitivity was fixed at 500 microvolt per division and sweep speed at 10 milliseconds per division. Filters were set at 10Hz and 10,000Hz. The tibial nerve was stimulated at the popliteal fossa using a bipolar electrode with the cathode facing proximally. The 'H' reflex was elicited at submaximal stimulus and disappeared on supramaximal stimulus. The wave of 'H' reflex is triphasic with an amplitude of 8000 microvolt and duration of 10 milliseconds. The configuration of the wave of 'H' reflex resembled that of 'M' potential. The 'H' reflex study was repeated in AIF position without changing the position of the electrode. Unlike Fishman's report there was prolongation of latency i.e., the latency of 'H' reflex was 27 milliseconds in both normal anatomic position and in AIF position. However there was a striking reduction in amplitude of the 'H' potential without corresponding reduction in amplitude of the 'M' potential. The amplitude of 'H' potential was 2000 microvolt in (AIF) position in contrast to the amplitude of 8000 microvolt in normal anatomic prone position (Fig.l). It confirms the presence of conduction block during AIF position ascertaining the diagnosis of Piriformis syndrome.

Evaluation of motor conduction velocity of sciatic nerve at the level of thigh, lateral popliteal nerve and tibial nerve revealed normal conduction. EMG of extensor digitorum

Figure. 1



Upper trace: left to right (1) stimulus artifact, (2) 'M' potential, (3) 'H' potential with normal amplitude

Lower trace: left to right (1) Stimulus artifact, (2) 'M' potential, (3) 'H' potential with reduced amplitude

Figure. 2

Hypertrophy of the piriformis muscle on the right side

brevis showed marginal reduction in recruitment without any evidence of neurogenic potentials. EMG of soieus muscle also showed normal motor unit potential with normal recruitment. Correlation of EMG and nerve conduction study with 'H' reflex only emphasizes functional conduction block during entrapment of sciatic nerve in AIF position.

CT scan for lumbosacral spine showed hypertrophy of piriformis muscle on the right side consistent with clinical symptoms (Fig.2)

Discussion

The earliest concept that "Piriformis syndrome is not always accompanied by positive laboratory finding" is no longer true. The entrapment of sciatrc nerve can be objectively demonstrated[1] electrophysiologically by delay in latency of 'H' potential [2]hypertrophy of piriformis muscle by CT and /(or) MRI.

We have reported a case of piriformis syndrome characterised by sciatic pain, tenderness at sciatic notch, positive AIF maneuver and hypertrophy of piriformis muscle in CT evaluation and reduction in amplitude of 'H' potential in AIF position.

Unlike previously reported cases, the only electrophysiological objective finding was diminished 'H' reflex amplitude. It only emphasizes that reduction in amplitude of the 'H' potential also constitute one of the electrophysiological parameters to diagnose entrapment of sciatic nerve in piriformis syndrome.

CT evaluation of piriformis muscle also becomes mandatory in addition to electrophysiological study in every case of sciatica.

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