

CASE REPORT

Subacute L5 Paresis Following a Capoeira Presentation

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ABSTRACT

A young female suffered minor low back trauma during a capoeira presentation. She was initially diagnosed with an acute episode of uncomplicated low back and radicular pain. She kept training and competing until developing paresthesia and weakness of the right leg six weeks later. Physical examination revealed sensory and motor deficits compatible with L5 nerve root compression. The MRI revealed an L5-S1 disc extrusion compressing the right L5 nerve root. Nerve root decompression and partial discectomy were performed, and seven months later she was competing without restrictions. We present our approach and discuss possible pathological mechanisms that may explain this unusual presentation.

INTRODUCTION

Capoeira is a Brazilian art form that combines elements of martial arts, sports, and dance. It incorporates rapid and complex movements, using mainly power kicks and quick leg sweeps with some ground and aerial acrobatics (Figure 1) (Silva, Souza, & Carvalho, 2012). Some of the movements involve important axial and torsional loads, placing capoeira practitioners at increased risk of compression and torsional injuries to the intervertebral discs. Monkey flips, for example, are back flips performed low to the ground with hyperextension of the lumbar spine, and wheel kicks are sideways rotatory movement of the body with lateral flexion of the lumbar spine. The reader unfamiliar with capoeira may find it useful to know that the loads sustained by the low back in capoeira are somewhat similar to those involved in some types of gymnastics. Acute nerve root compression is usually the result of an acute disc prolapse, with the contents of nucleus pulposus extruding into the spinal canal where they irritate the nerve root (Brukner & Khan, 2012). Case reports of capoeira-associated injuries are scarce in English medical literature. As its popularity is growing, a better understanding of capoeira injury epidemiology and associated mechanisms is warranted.

CASE PRESENTATION

A 32-year-old female patient, with no past complaints of back or leg pain, felt an intense low back pain at the end of a capoeira presentation. She described it as a “deep” ache associated with the immediate onset of “pins and needles” and a burning sensation in the right lower limb. Her capoeira presentation encompassed movements such as monkey flips and wheel kicks. She denied having suffered any trauma. Pain became worse overnight, and she went to the emergency department complaining of lower

limb pain and dysesthesia in the right leg. She was diagnosed with acute sciatica and medicated with ibuprofen (400 mg 3 times daily) and pregabalin (75 mg 2 times daily). The following day she resumed her capoeira training and teaching activities, assuming symptoms would subside. Analgesics were reasonably effective, reducing pain from an initial visual analog scale for pain (VAS Pain) score of nine to a VAS Pain score of four in the upcoming weeks. Symptoms of dysesthesia also responded favorably. Six weeks later she became aware of paresthesia in the L5 dermatomal distribution and weakness of her right ankle and decided to ask for a consultation at our clinic.

She had no relevant personal or family history and denied past history of low back or leg pain. Specifically, she denied having suffered any important low back trauma. She had been practicing capoeira for the last 10 years. The patient's height was 1.55 m, she weighed 53 kg, and her body mass index was 21.78 kg/m². On physical examination, a sensory deficit over the L5 dermatome was noticed and she could not walk on her right heel (dorsiflexion muscle weakness grade 2/5) (Figure 2A). We immediately requested a MRI that revealed a far-lateral L5-S1 disc extrusion compressing the right L5 nerve root (Figure 3). She was submitted to spinal nerve root decompression and partial discectomy. The patient underwent a standard rehabilitation protocol, initially managing pain and inflammation, followed by stretching exercises, especially focusing on the hamstrings to alleviate sciatic pain. Afterward, she began strengthening exercises, which focused not only on the lower back but also on the abdominal, gluteus, and hip muscles. Later she began low-impact cardiovascular exercise, such as walking and swimming before being allowed to slowly reintroduce capoeira practice by the third month after surgery. Seven months later she was competing again without limitations, although still with minor sensory and strength deficits (Figure 2B).

DISCUSSION

Disc prolapse usually occurs between the ages of 20 and 50 years, with L5-S1 being the most commonly affected (Brukner & Khan, 2012). It often affects discs that have previously been damaged by torsional and compression injuries (Brukner & Khan, 2012). Symptoms such as sensory impairment, paresthesias, or dysesthesias are frequent (Ailianou & Fitsiori, 2012). Although the patient did not mention a past history of back/leg pain, it is reasonable to assume that 10 years of capoeira practice may have provoked some asymptomatic fissures to the annulus fibrosus. This explains why an unnoticed minor incident caused such a severe injury.

After new-onset sciatica a complete neurological examination should be performed, both in the acute phase and a few weeks later, to detect emerging neurological deficits. In the first evaluation at the emergency department, only sensory symptoms were elicited. The sustained practice of a sport with significant loads may have provoked disc extrusion, mechanical compression of the nerve root, and/or chemical irritation, which may explain the progressive nature of the paresis. We can only hypothesize that if the patient had completed a period of rest, this clinical presentation would not have developed. An alternative explanation would be that the patient spent those six weeks without noticing the dorsiflexion strength deficit, although it seems quite unlikely given her constant physical demands. The fact that she was able to continue her athletic activities may be attributable to a mix of stoic behaviour and the analgesic effect of the medication. We assumed that a typical herniation mechanism, encompassing lumbar flexion, lateral rotation, and compression was responsible for this injury. A period of rest was necessary as part of the treatment of such a nerve compression injury in the acute phase. Data from the literature support our decision to recommend a period of rest followed by a comprehensive rehabilitation program focused on stretching, restoring range of movement, active stabilization exercises, and core muscle strengthening (Brukner & Khan, 2012; Coulombe, Games, Neil, & Eberman, 2016). An assessment and correction of biomechanical abnormalities and technique factors that may predispose her to recurrence should also be performed.

The emergence of muscle weakness after an acute episode of sciatica should warrant an MRI, as it is the modality of choice when evaluating disc pathology and nerve root injuries. (Wassenaar, Van Rijn, & Van Tulder, 2012). The natural history of leg pain secondary to radiculopathy is usually benign, with most patients improving within months of the initial injury (Bush, Cowan, & Katz, 1992).

CONCLUSIONS

Some important educational messages can be drawn from this case. After trauma-associated new-onset sciatica it is mandatory to monitor the appearance of neurological deficits. Even when such deficits are not detectable in the acute phase they should be systematically assessed during follow-up. Patients should be instructed to report the appearance of red-flags.

The subacute presentation reported in this case may be due to the sustained practice of a sport with significant axial loads to the low back. Return-to-sport in such cases may have to be postponed, guided by medical clearance based on clinical and possibly radiological evaluation.

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Keywords: Capoeira; low-back pain; nerve root compression

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Wassenaar, M., Van Rijn, R., & Van Tulder, M. (2012). Magnetic resonance imaging for diagnosing lumbar spinal pathology in adult patients with low back pain or sciatica: a diagnostic systematic review. *Eur Spine J*, *21*, 220-227.

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Figure 1. Two male athletes in a capoeira presentation. The one on the right is in the middle of a “monkey flip” movement. (Original photo by ©2008 Dale Harvey in Capoeira, South Bank, All rights reserved. From flickr.com/photos/daleharvey/2662315166/in/photostream/)

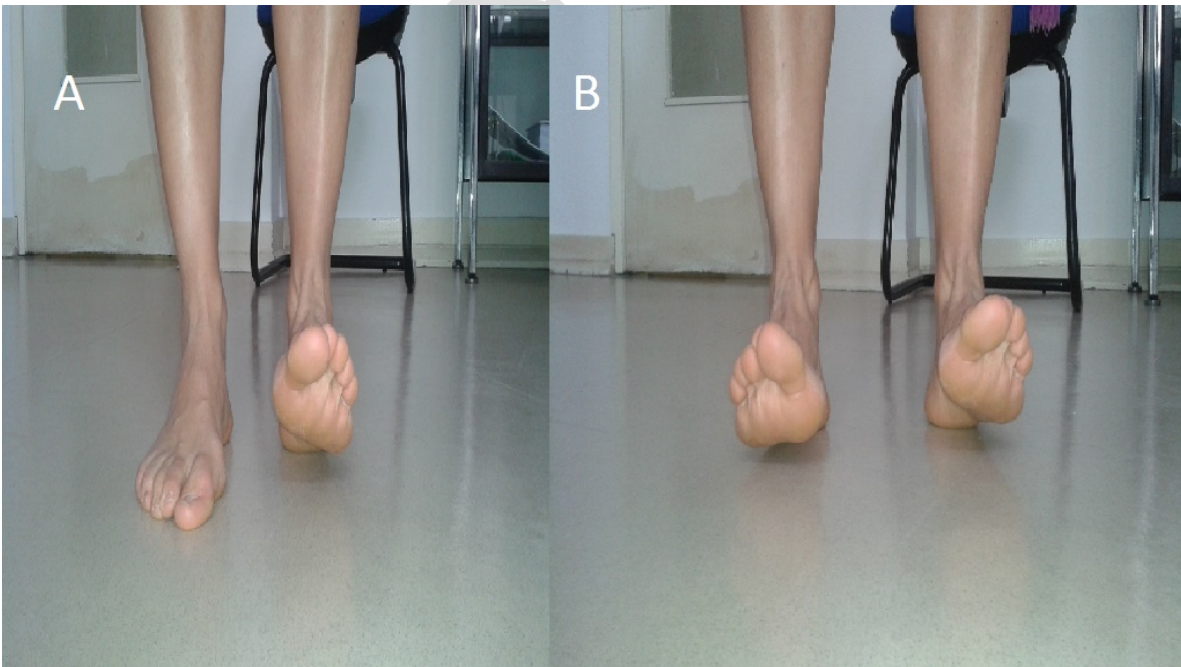


Figure 2. (A) Dorsiflexion weakness at presentation. (B) Seven months after surgery.

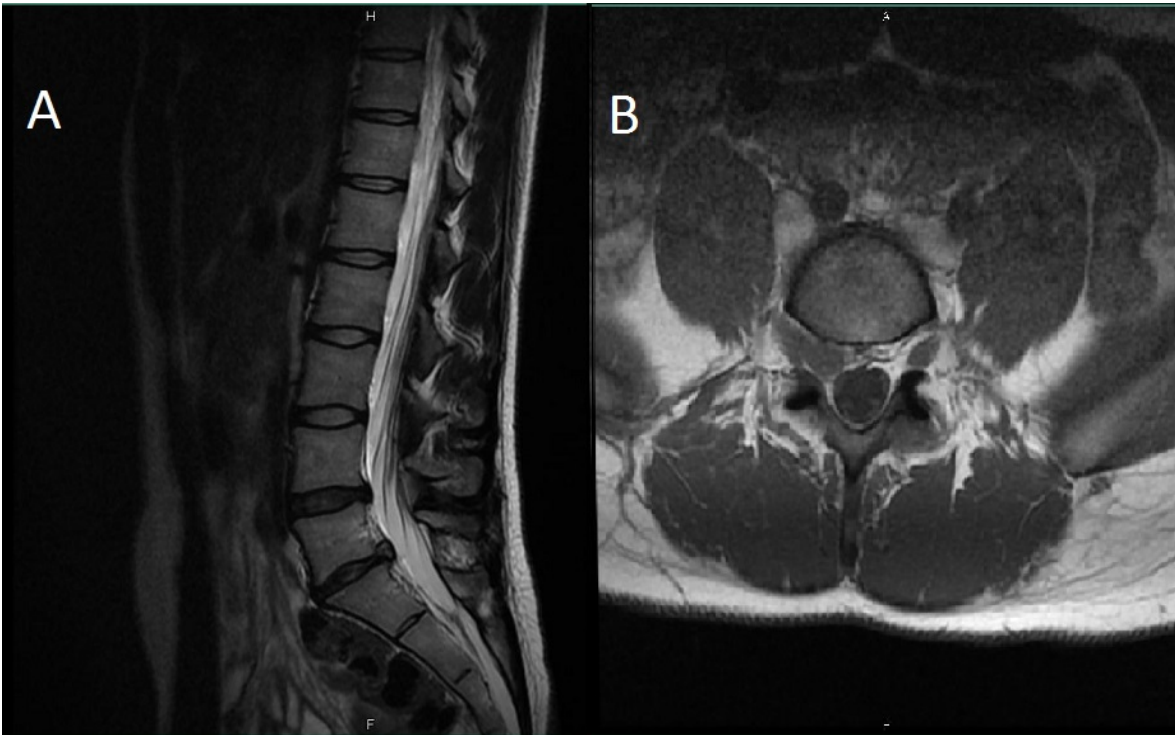


Figure 3. (A) Sagittal T2 MRI demonstrating L5-S1 disc extrusion. (B) Axial T1 MRI demonstrating compression of the right L5 nerve root.