



Case Presentation

Left Hip Pain Caused by Right Hip Osteoarthritis in a Patient With an Incomplete Cervical Spinal Cord Injury: A Case Report

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Abstract

A 70-year-old woman with a right hemisensory deficit caused by an incomplete cervical spinal cord injury presented with left hip pain. The clinical assessment suggested that her left-sided hip pain was attributable to severe right hip osteoarthritis. Her left hip pain resolved completely after she underwent a right total hip arthroplasty. This case is presented, along with a review of the literature on spinal and supraspinal neuronal reorganization after spinal cord injury. This case report suggests the occurrence of central sensory reorganization after an incomplete cervical spinal cord injury, which resulted in a patient perceiving right hip pathology in her left hip.

Introduction

According to the National Spinal Cord Statistical Center, there are 12,000 new spinal cord injuries each year [1]. These injuries can cause complete or incomplete disruption of motor and sensory information from the brain to the periphery and from the periphery to the brain. Changes occur in the neural circuitry after spinal cord injury; these may result in new connections that may restore function or provide novel pathways [2]. This case presentation provides evidence for abnormal reorganization of the pain sensory pathway in an individual with an incomplete cervical spinal cord injury (SCI).

Case Presentation

A 70-year-old ambulatory woman presented with a chief complaint of deep left anterior hip pain without radiation down the limb or to the low back. She had a history notable for an incomplete cervical SCI sustained 6 years before presentation. She sustained her SCI in a ground-level fall. Her initial neurologic presentation was consistent with central cord syndrome in the setting of underlying cervical spinal stenosis and ossification of the posterior longitudinal ligament. No surgery was

performed. She did not sustain a spinal fracture or any other injuries at the time of the fall.

After a period of inpatient and outpatient rehabilitation, she regained a normal gait pattern. Her only residual neurologic deficit was impaired sensation on the right side of her body. Her left hip pain started insidiously 3 years before presentation and had been gradually worsening. The pain was severe and caused her to use a single-point cane for ambulation. With weight bearing, her left hip pain was 8 of 10 in intensity. Her left hip pain was mild when not weight-bearing. She had tried acetaminophen and nonsteroidal anti-inflammatory drugs without adequate pain relief. Several other physicians had evaluated the patient and were unable to identify the pain generator.

On physical examination, her left hip was noted to have normal passive and active range of motion without reproduction of pain. Her right hip had limited range of motion with flexion to 100°, internal rotation limited to 10°, and external rotation limited to 20°. Passive right hip internal and external rotation reproduced her usual left hip pain. She was unable to extend her right hip even to neutral because attempting to do so reproduced severe left hip pain. She was unable to distinguish pinprick from light touch on the right side of her body. Sensation was normal on the left side of her body.

Resistance testing found her lower limb strength to be within normal limits for age, with the exception of manual muscle testing of right hip flexion, abduction and external rotation, which were 4/5 and pain inhibited. Resistance testing of the right hip girdle muscles produced left anterior hip pain. Gait was slow and her right hip remained at least 20° flexed throughout the gait cycle.

Radiographs of the pelvis were remarkable for severe right hip osteoarthritis with nearly complete loss of joint space, marginal osteophytosis, subchondral sclerosis, and subchondral cyst formation. Minimal arthritic changes were observed in the symptomatic left hip (Figure 1). Because of the diagnostic uncertainty, magnetic resonance imaging (MRI) of the pelvis was ordered to assess for occult causes of left hip pain. The MRI confirmed advanced right hip osteoarthritis with only mild degenerative changes in her left hip. The mild degenerative changes seen in the left hip on the radiograph and MRI were not considered to be enough to explain the patient's severe left hip pain and functional limitations.

The patient had a second evaluation in clinic after the MRI, which once again revealed provocation of left anterior hip pain with passive range of motion testing of the right hip. Because there was a clinical suspicion that her left hip pain was caused by the severe right hip osteoarthritis, she was scheduled for a fluoroscopically guided, diagnostic, intra-articular injection of the right hip with 5.0 mL of 0.2% ropivacaine and 1.0 mL of methylprednisolone (80 g/mL).

The right hip injection was performed 5 and one-half weeks after her initial evaluation. Needle entry into her right hip reproduced concordant left hip pain. The day after her steroid injection, the patient reported by telephone that she had no left hip pain for the first time in over a year. At the time of a clinic follow-up visit



Figure 1. Anteroposterior view of the pelvis shows decreased right-sided hip joint space, subchondral sclerosis, osteophytosis, and subchondral cystic changes.

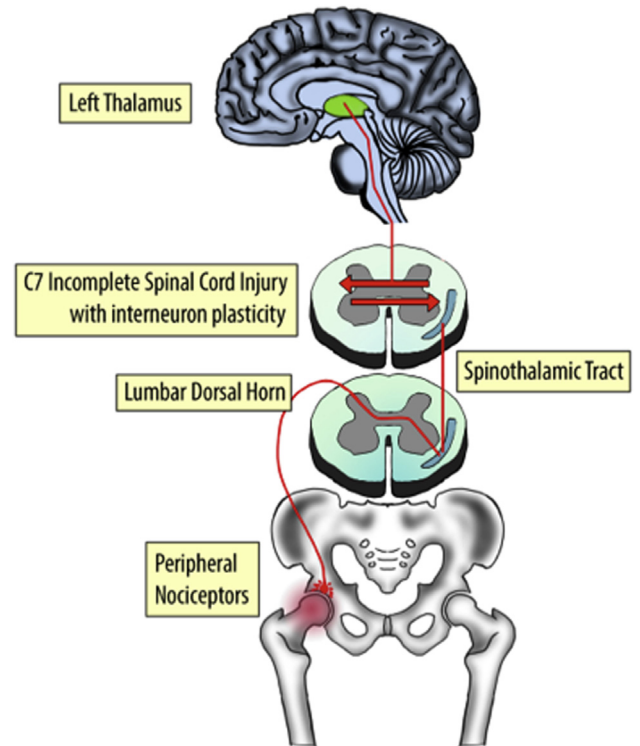


Figure 2. Proposed ascending pain pathway specific to this patient.

2 weeks after the injection, she reported that she had experienced no left hip pain since the injection and that she had improved ability to straighten her right hip and that her gait was improved. On physical examination at that visit, she had a more upright posture and passive right hip internal and external rotation caused very brief, mild pain in the left hip. Unfortunately, her left hip pain gradually returned during a several week period, ultimately returning to the preinjection baseline of 8 of 10 intensity with weight bearing, and was again unresponsive to acetaminophen and nonsteroidal anti-inflammatory drugs.

The patient was then referred to an orthopedic surgeon for consideration of right total hip arthroplasty. She underwent a right total hip arthroplasty 20 weeks after her initial clinic presentation. After the surgical intervention, her left-sided hip pain had resolved at both her 4- and 8-week follow-up appointments with the surgeon. One year after her right total hip arthroplasty, her left hip remained pain free, and her functional status had improved dramatically. She was able to perform all of her usual activities of daily living without pain and was able to walk up to one mile without pain.

Discussion

This case highlights our incomplete understanding of neuroplasticity after SCI. An understanding of nociceptive pathways provides a framework for discussion of possible spinal and supraspinal reorganization after SCI.

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