

Chronic Lateral Compression of the Pelvis

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Pelvic pain is a common problem among athletes, and in many cases the diagnosis is challenging. We present a case of an athlete with an unusual combined pelvic injury developed over a long period of training.

Patient Description

A 34 year old male marathon runner presented with excruciating pain in the right leg. As a professional marathon runner for more than 15 years, his regular training program consists of an average of 190 km/week, which is comprised of three hard sessions a week and recovery runs twice daily on the other days of the week. His yearly running volume is about 8,000/km, which includes three marathon races. In 1996, after 8 years of running, he began to feel pain around the pubis, lower back and right thigh. X-ray examinations were normal. The pain was relieved by treatment with a non-steroidal anti-inflammatory drug and reduction in the intensity of the training. During the next 3 years he had similar episodes of pain but did not stop his training. He found that running on paved roads was not painful, and the pain occurred mainly when he ran on mountain roads. During this period he won the national marathon twice.

In 1999, 11 years after he became a marathon runner, he ran 25 km on a mountain road and felt sudden, excruciating pain in his right sacroiliac joint, which radiated to the lateral aspect of the right thigh. He was forced to walk for several kilometers and at the end of the route could no longer bear weight on the right leg. A physical examination at that point revealed an exacerbation of pain when standing or jumping on the right foot and tenderness over the middle portion of the right sacroiliac joint. X-ray of the pelvis did not reveal any pathologic findings, except

for cystic and sclerotic lesions at the right symphysis pubis [Figure]. A bone scan showed increased uptake at the right sacroiliac joint. A computerized tomography scan of the pelvis confirmed the diagnosis of a stress fracture of the sacrum adjoining the right sacroiliac joint. The patient was advised to rest for a few weeks after which he gradually resumed training. He went on to again win the Israeli marathon in 2000 and had no further pain. Since then, he has won several marathons including the Israel Marathon, and came in 20th place in the Paris Marathon in 2003.

Comment

We present a patient with stress fracture of the sacrum due to anterior instability, following repetitive trauma during athletic training. We believe this represents a chronic lateral compression injury due to anterior pelvic instability.

Professional athletes sustain prolonged physical activity as part of their training, causing repeated minor trauma to the body. Anterior hip pain is a common problem among athletes and is frequently difficult to diagnose. There are many causes for anterior hip pain, including osteoarthritis, hernia, and stress fracture of the hip itself [1]. One of the major causes of anterior hip pain is osteitis pubis, a non-infectious inflammatory condition involving the pubic bone, symphysis pubis and surrounding structures. Osteitis pubis occurs after pelvic infection, pelvic surgery, and excessive pubic mobility as in pregnancy. It also affects professional athletes, whose training exerts an excessive mechanical load on the pelvis, especially



Pelvic X-ray showing osteitis pubis at the right symphysis pubis

runners and soccer, rugby, tennis, and ice hockey players. These athletes usually suffer pubic pain, typically radiating laterally, that increases during and after physical activity [1]. Stress fractures occur due to increased repetitive activity causing abnormal muscle pull on normal bone. Most cases of stress fractures have been described in the lower extremities, but there have been a few case reports of stress fractures involving the sacrum. All the sacral stress fractures occurred in soldiers or athletes undergoing intensive training. They suffered pain in the sacroiliac joint, which increased during activity and improved with prolonged rest [2]. The suggested diagnostic modalities of stress fractures are mainly bone scan, but also CT [2] and magnetic resonance imaging [3].

Our patient developed osteitis pubis during a long period of training. His first pelvic X-rays were normal and he had non-specific pain, but he gradually developed anterior instability as documented in the second X-ray [Figure]. Thus his continued physical training caused non-physiologic loading on the posterior arc of his pelvis. Had he stopped training he might have

recovered fully; but his continued training, which loaded the sacrum, resulted in a stress fracture of the pelvis. In his book on fractures of the pelvis and acetabulum, Tile [4] described the trauma mechanism of the lateral compression to the pelvis resulting in an anterior lesion to the pelvis and substantial damage to the posterior part as well. In this type of injury, the pelvic floor remains intact, therefore there is only rotational instability while vertical stability is maintained. Moore et al. [5] reported two cases of chronic instability of the pelvis. Both patients developed late posterior instability of the pelvis after iatrogenic anterior instability due to resection of the symphysis pubis. Following the resection, there was increased rotational force at the sacroiliac joints. They suffered posterior instability of the pelvis some

years later and had to undergo surgery, this time for posterior fixation of the pelvis. Tile's description is of an acute traumatic mechanism. Moore's description is of a chronic mechanism due to non-traumatic reasons. Our patient presents a case of osteitis pubis as the primary insult caused by repetitive trauma, followed by continued repetitive trauma eventually causing a stress fracture of the sacrum. The prolonged course of his injury has allowed insight into the mechanism and progression of this rare condition.

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