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Topics in Diagnostic Imaging

Bilateral Idiopathic Osteonecrosis of the Femoral Head: A Case Report With an Emphasis on Differential Diagnosis, Imaging, and Treatment

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Abstract

Objective: The purpose of this case report is to describe a patient with bilateral idiopathic osteonecrosis of the femoral head (ONFH), provide a discussion of differential diagnosis for anterior hip pain, imaging, and treatment recommendations for ONFH.

Clinical features: A 34-year-old man was initially treated by a chiropractic physician for low back pain. At the end of a three week trial of care, the patient's low back pain resolved. However, he reported a new complaint of mild left anterior hip stiffness. After re-examination, a homecare exercise program was prescribed. The patient returned 1 month later with substantial left anterior hip pain and walked with a noticeable limp. Radiography of the left hip demonstrated advanced ONFH. Magnetic resonance imaging of both hips demonstrated the extent of involvement of the left hip while incidentally revealing ONFH on the right.

Intervention and Outcome: A total hip arthroplasty was performed on the left hip and the right hip is being monitored without intervention.

Conclusion: Osteonecrosis of the femoral head is a challenging clinical problem with non-specific and wide-ranging signs and symptoms requiring clinicians to engage a cautious and comprehensive differential diagnosis. Prompt recognition ensures that appropriate treatment can be initiated in a timely manner and optimal patient outcomes achieved.

Introduction

Anterior hip pain is a common musculoskeletal complaint with a broad differential diagnosis (Fig 1). Pain in the inguinal region (groin) is synonymous with

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anterior hip pain and is most commonly the result of intra-articular hip pathology such as osteoarthritis or labral tears.[1] In the appropriate clinical setting, osteonecrosis of the femoral head (ONFH) should also be considered in the differential of anterior hip pain.[1] ONFH has an annual incidence in the United States between 10 000 and 20 000.[2] Previous trauma, long term corticosteroid use, and alcohol abuse are the most common risk factors for development of ONFH; however, idiopathic, or primary ONFH in which the patient has no known risk factors is not an infrequent finding.[3] The underlying pathophysiological mechanism is reduction in blood flow to the subchondral bone of the femoral head. There is resulting bone death and collapse of the articular surface.[4] The clinical presentation of ONFH is vague and can range from mild anterior hip pain to marked reduction of hip range of motion with severe pain.[1] Radiography should be the first diagnostic imaging modality performed in suspected cases of ONFH or in cases of chronic hip pain that is non-responsive to therapy.[5,6] Radiography is classically insensitive for the early detection of osseous pathology and magnetic resonance imaging (MRI) is ordered when radiographs are negative, but hip pathology is suspected.[5,6] Staging the severity of ONFH is best done by combining clinical findings, including the presence of risk factors, with the radiographic and MRI findings.[4] Accurate staging of ONFH is critical to select the best treatment option, and advanced disease almost always requires total hip arthroplasty.[7] Considering that most patients with ONFH are diagnosed in their 40s, hip replacement at this relatively young age is problematic since multiple revisions are likely, given a life expectancy approaching 80.[2]

There are only four previous reports of diagnosis of ONFH published in the chiropractic literature.[8–11] A better understanding of the diverse clinical manifestations and risk factors, appropriate imaging recommendations, current treatment strategies, and future research objectives of ONFH for clinicians who evaluate hip pain are needed. Therefore, the purpose of this case report is to describe a patient with bilateral idiopathic osteonecrosis of the femoral head (ONFH), provide a discussion of differential diagnosis for anterior hip pain, imaging, and treatment recommendations for ONFH.

Case Report

Informed consent was obtained by the patient to publish his health care information. A 34 year-old Hispanic male presented to an integrative chiropractic-allopathic medicine clinic with a chief complaint of

Intra-articular
— Arthropathies (most common = osteoarthritis)
— Labral pathology
— Femoroacetabular impingement
— Anterior inferior iliac spine/subspine impingement
— Iliopsoas impingement
— Stress fracture (most common = femoral neck)
— Transient synovitis
— Septic arthritis
— Osteonecrosis
— Loose bodies (ie osteochondral fragments)
— Synovial disease (ie pigmented villonodular synovitis; synovial (osteo)chondromatosis)
— Capsular laxity/hip instability
— Osteomyelitis
— Tumor and tumor-like conditions of bone
Extra-articular
— Osteitis pubis
— Adductor longus/rectus abdominis conjoined tendon pathology
— Inguinal and femoral hernias
— Pelvic fracture (acute or stress)
— Spinal disease/upper lumbar radiculopathy
— Avulsion injury of the anterior inferior iliac spine
— Referred visceral pain (cystitis, urethritis, prostatitis, epididymitis, pelvic congestion syndrome)

Fig 1. Sources of anterior hip pain.[1,28,29]