

Osteo-arthritis of the hip joint

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Abstract

Osteoarthritis is degenerative joint disease increasing linearly with age. The hip joints are part of the spectrum of involvement with its weight bearing functions. This was worsened with excessive weight of our patient who was evaluated with conventional radiography, computed tomogram, and magnetic resonance imaging.

Key words: Disc, Hip joint, Magnetic resonance imaging, Osteoarthritis

INTRODUCTION

Osteoarthritis (OA) is a degenerative disorder of synovial joints. It arose from break down of the collagen of the joint cartilages. It could be primary or secondary. The primary type is typically seen in the elderly, whereas the secondary OA is a sequel of an inciting etiology. It is invariably seen in young people. OA is seen typically at small joints like distal inter-phalangeal joints as well as large joints like the knee and hip joints.^[1] It's main presenting complaint is pain, especially on weight bearing leading to functional disabilities.

Aim

To present a case report of excruciating hip joint pains due to OA of the hip joint confirmed by conventional, computed tomography (CT), and magnetic resonance imaging (MRI).

CASE REPORT

Mr E O is a 63-year-old male Cameroonian (weighing 99 kg) with chronic hip joint pains for a year. This is associated with paraesthesia of the lower limb. His mobility is now supported with crutches. Pain is unresponsive to analgesics, which provokes

abdominal pain. Traction applied 3 months before presentation did not relieve the pain. Patient is hypertensive, but not diabetic. X-ray of the hip joint [Figure 1] and lumbar spine showed features of lumbar spondylosis and OA of both hip joints. This was confirmed with CT of the hip joints [Figure 2]. This shows that the right hip OA is worse than the left. A repeat of the CT was done following worsening pain. MRI of the hip joints [Figure 3] was ultimately requested. This showed both femoral heads were contained within the acetabular cavity, with preservation of femoral heads. There is bilateral sub-articular T1-weighted hypointense round foci in femoral heads measuring about 16 mm in diameter typical of geodes. The right labrum acetabuli is thin measuring 3.7 mm thick compared with 5.7 mm of the left cartilage. There is also bilateral acetabular dysplasia and widening. The right acetabular margin is scalloped with loose bone debris interposed between left femoral head and acetabulum. The prostate was enlarged measuring 52 × 48 × 43 mm with volume of 56 ml but no suspicious focus. A diagnosis of severe bilateral OA of the hip joints with osteochondritis dissecans of the left hip joint and benign prostatic hypertrophy were made. Patient was managed on nonsteroidal anti-inflammatory drugs and physiotherapy. He opted for overseas treatment for possible hip replacement surgery.

DISCUSSION

Osteoarthritis is the most common type of joint disease. It has a direct relationship to aging. Its prevalence increases from 50 years with 80-90% of cases seen at 65 years. Female to male ratio is 12:1 because of the hormonal influence.^[1] Hip joint OA is less frequently in Chinese, but OA occur more commonly in male than females.^[1]

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Figure 1: Conventional radiograph of the pelvis. This shows narrowed hip joint spaces with right worse than left. Note associated right acetabular dysplasia



Figure 2: Computed tomogram of the pelvis in osteoarthritis with narrowed right hip joint space with scalloped acetabular margin



Figure 3: T1 Weighted MR image. This shows that both femoral heads are within the acetabular cavity. But note cartilage fissuring and narrowed hip joint in osteoarthritis

In terms of pathophysiology, with aging, there is wear and tear of the articulating cartilage. The chemical composition

of the cartilage is collagen and proteoglycan. In OA, there is enzymatic degradation of these proteins, collagen and proteoglycans. This degradation decreases the tensile strength of the cartilage and it becomes less resistant to compressive forces from the bones leading to mechanical failure. This thins and reduce the contact area of the cartilage.^[2] This flaking and fibrillations of the cartilage lead to loss of joint space and denudation of the articulating opposing site. This cause vascular invasion and cellularity of the sub-chondral bone, which is thickened appearing radiologically as eburnation. At nonpressure areas of this sub-chondral bone, osteophytes are formed as osseous metaplasia of the synovial connective tissue or ossified cartilaginous protrusions.^[3] The pressure surface of the sub-chondral bone undergoes cystic degeneration due to chronic impaction or intrusion of synovial fluid. This fluid accumulation in the sub-chondral bone is called geode. This geodes or OA pseudo-cyst when seen in the acetabulum is called Egger cyst. Since primary OA is seen commonly in the hands, a soft tissue swelling at the distal inter-phalangeal joint is called Heberden node whereas at the proximal inter-phalangeal joint is called Bouchard node.^[1]

The radiological investigation of OA of the hip joint includes conventional radiography, CT, MRI and scintigraphy. CT is well suitable in demonstrating OA of the hip joint while MRI will show the cartilages and soft tissues with good resolution.^[4] Ultrasound may in some cases show intra-articular effusion. In radiography, fractured osteophytes result in intra-articular loose bodies called joint mice. In hip joint, greater loss of joint space occurs in weight bearing portion which is laterally with associated supero-lateral migration of the femoral head. In this OA hip, this may cause a flattening of the superior aspect of the femoral head.^[1] In the knee joint, there will be asymmetric narrowing of the tibio-femoral joint compartment and sharpening of the tibial spines. A bony prominence known as Parsian bump may develop anterior to the tibial spines shown on the lateral radiograph. The patello-femoral joint also may be narrowed. However, symmetrical tri-compartmental narrowing of the knee joint is rare.^[1]

In the case of the hand, OA is most common in the distal inter-phalangeal joint. There will be central erosion of the articular surface, while peripheral in rheumatoid arthritis. The edges of the articulating bones of this joint will have a raised lip and with joint narrowing and central erosion forms a gull configuration.^[1] This central erosion is called erosive (inflammatory OA. Chondrocalcinosis can also be seen.

Computed tomography is useful in osteoarthritic hip joint as it will show the calcified joint mice, pseudoankylosis, pathological fracture or dysplastic acetabulum very well. Any preexisting bone lesion, e.g. Perthes disease or avascular necrosis of the femoral head will be shown. However, it requires intra-articular injection of contrast medium to show cartilage or uncalcified joint mice. MRI show sub-chondral changes, osteophytes despite good soft tissue depiction of the cartilages.^[5,6] Fast spin-echo T2-weighted, fat suppression and Gradient echo images are used to show cartilage fissures or ulcerations.

The sign and symptoms of hip joint OA is pain, which radiates to the thigh with associated difficulties in walking.^[5-8] This is worse in fat person like our patient as the excess weight places much axial weight on the hip joints.

Treatment of hip joint OA is with nonsteroidal anti-inflammatory analgesics, intra-articular injection of steroid and physiotherapy. In extreme cases, total joint replacement surgery is done. In conclusion, OA of the hip joint could be a serious concern to the sufferer.

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