

Transient bone marrow oedema of the femoral head in pregnancy - case report

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Summary

We report a case of transient oedema of the femoral head without signs of osteoporosis, and with spontaneous resolution after delivery. Magnetic resonance imaging is essential to differentiate between a traumatic necrosis and bone marrow oedema.

Key words: Bone marrow oedema; Pregnancy; Avascular necrosis.

Introduction

Debilitating pain in the region of the hip joint during pregnancy can have different causes such as non-traumatic avascular necrosis of the femoral head or transient osteoporosis (bone marrow oedema) of the hip.

We present a case of bone marrow oedema syndrome during pregnancy.

Case report

The patient was a 28-year-old, gravida 1, para 0. She had no known history of orthopaedic problems. Her singleton pregnancy was uneventful until the gestational age of 30 weeks. From that time on she progressively developed more debilitating pain in the region of the right hip joint. There was no identifiable trauma and no risk factors for avascular necrosis such as the use of corticosteroids or alcohol abuse were present.

At clinical examination there were no specific signs and passive movements at the hip joint were not limited. There was some pressure pain over the femoral head. Restriction of activity relieved exacerbations of the pain, but even during rest the underlying hip pain persisted.

Magnetic resonance imaging (MRI) of the hip was performed (Figure 1). This demonstrated fluid accumulation in the hip joint and a diffuse edematous aspect of the right femoral head without focal lesions. There was no evidence of avascular necrosis and the diagnosis of transient edema of the femoral head was made.

The patient was advised to avoid physical activity such as running as much as possible and she was prescribed paracetamol orally 1 to 4 g per day. She went into spontaneous labour at 39 weeks of gestational age and had a spontaneous vaginal delivery. A healthy baby boy was born weighing 3,570 grams. Soon after delivery the pain diminished and had completely disappeared at six weeks postpartum.

Two years later the patient had a second uneventful pregnancy, and there was no period of hip pain.

Discussion

Pain in the region of the hip joint during pregnancy can have a variety of causes including musculoskeletal pain, regional migratory osteoporosis, inflammatory arthritis, septic arthritis, avascular necrosis, stress fracture of the femoral neck, synovial disorders and even neoplasia. The two disorders most specific to pregnancy are avascular necrosis and bone marrow oedema syndrome. Bone marrow oedema syndrome has also been termed "transient bone marrow oedema syndrome" and "transient osteoporosis".

Early differentiation between these two conditions is important because transient bone marrow oedema syndrome is a self-limited disorder usually necessitating only conservative management. Avascular necrosis on the contrary is a progressive disorder, resulting in destruction of the hip. If no appropriate medicine is taken it can result in total hip replacement [1, 2].

On nuclear MRI bone marrow oedema is characterised by diffuse low signal intensity on T1-weighted images and high signal intensity on T2-weighted images; focal lesions are absent.

Transient osteoporosis was first described by Curtiss and Kincaid in 1959 in pregnant women during the third trimester [3]. Many theories about the etiology have been proposed including a non-traumatic form of reflex sympathetic dystrophy, a transient ischemic insult to the bone, amniotic fluid embolism and late pregnancy increase of free cortisol and body weight. In cases occurring outside of pregnancy it has been suggested that bone marrow oedema is actually an early form of femoral head necrosis [4]. However this concept is no longer accepted as more recent studies have demonstrated that bone biopsies of patients who have transient oedema reveal no osteonecrotic regions in either the bone trabeculae or the bone marrow tissue [5].

Bone marrow oedema syndrome typically spontaneously results after delivery. Resolution may take up to four months. In almost all cases no other treatment than protected weight bearing and mild analgetics have been proven necessary. In extremely severe cases biphosphonates have been used during pregnancy [6, 7].

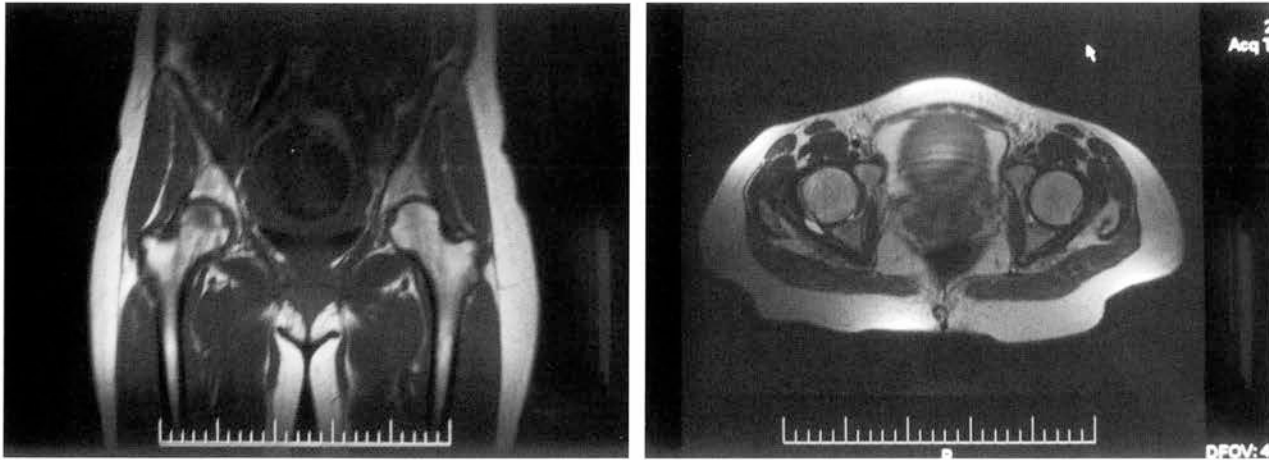


Figure 1. — Magnetic resonance images of the hip demonstrating fluid accumulation. An oedematous aspect of the bone of the femoral head with no evidence of focal lesions is present on T1-weighted images low signal intensity (coronal section, left image) and on T2-weighted images high signal intensity (transverse section, right image).

Differential diagnosis with avascular necrosis of the femoral head can be made on MRI as the focal lesions of avascular necrosis are absent. In case of transient oedema of the femoral head during pregnancy risk factors for osteonecrosis such as trauma, use of corticosteroids, alcohol abuse or sickle cell anaemia are absent.

Conclusion

In cases of severe hip pain during pregnancy, MRI should be performed to differentiate between vascular necrosis and bone marrow oedema syndrome.

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