



Avascular necrosis of the bilateral femoral head with pregnancy: A case report

Hamilelik döneminde gelişen bilateral femur başı avasküler nekrozu: Olgu sunumu

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Summary

Osteonecrosis or avascular necrosis of the femoral head is a pathologic process due to inadequate blood supply resulting the death of the cells in bone tissue and collapse of joint. Avascular necrosis is a progressive disease mainly affecting adults in middle age and leads substantial loss of joint function. Osteonecrosis of the femoral head during or just after pregnancy is a rare clinical entity. Therefore several causes of osteonecrosis should be well-known, little is known about pregnancy as an etiological factor for femoral head. We present a case of a 30-year-old female with bilateral avascular necrosis of the femoral head that developed during the peripartum period.

Keywords: Avascular necrosis; hip; pregnancy.

Özet

Femur başı osteonekrozu veya avasküler nekrozu, yetersiz kan beslenmesinden dolayı kemik dokusunda hücrelerin ölümüne ve eklem çökmesine neden olan patolojik bir süreçtir. Avasküler nekroz, esas olarak orta yaş yetişkinleri etkileyen ve eklem fonksiyonunda ciddi kayıplara yol açan ilerleyici bir hastalıktır. Gebelik sırasında veya hamilelikten hemen sonra femur başının osteonekrozu nadir görülen bir klinik durumdur. Femur başı osteonekrozun birçok sebebinin iyi bilinmesine rağmen, etiyolojik bir faktör olan gebelik için çok az şey bilinmektedir. Peripartum dönemde gelişen femur başı bilateral avasküler nekrozu olan 30 yaşında bir kadın hastanın olgusunu sunmaktayız.

Anahtar sözcükler: Avasküler nekroz; kalça; gebelik.

Introduction

Osteonecrosis refers to a clinical syndrome in which regional death of the cellular elements of bone typically in a subchondral location leads to trabecular and subchondral collapse with consequent pain, impairment and long term joint damage.^[1] It seems to be most common in men between the ages of 30 and 50 years.^[2]

Although the pathophysiological mechanisms of atraumatic femoral head necrosis have not been conclusively clarified, femoral head ischemia is independent of the etiology. Long-term corticosteroid treatment, excessive alcohol consumption, smoking, hemoglobinopathy, sickle-cell anemia, coagulopathy, myeloproliferative disease, gaucher's disease,

leukemia, pregnancy are the risk factors for atraumatic femoral head necrosis.^[3]

However, osteonecrosis of the femoral head during or just after pregnancy is a rare clinical problem which was first described by Pfeifer in 1957.^[4]

The purpose of this case is to highlight the importance of bilateral osteonecrosis as a cause of groin pain in a pregnant women.

Case Report

A healthy 30-year-old woman presented with right leg and groin pain for 3 weeks before giving birth to a 4,3 kg male baby by caesarian section (Gravida 2, Para 2, Abortion 0) at 40 weeks' gestation. Her weight

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Submitted: 26.05.2018 Accepted after revision: 12.11.2018 Available online date: 19.11.2018

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Figure 1. Anteroposterior radiographs of the pelvis; bilateral osteonecrosis of the femoral head with flattening of the surface and early signs of osteoarthritis.

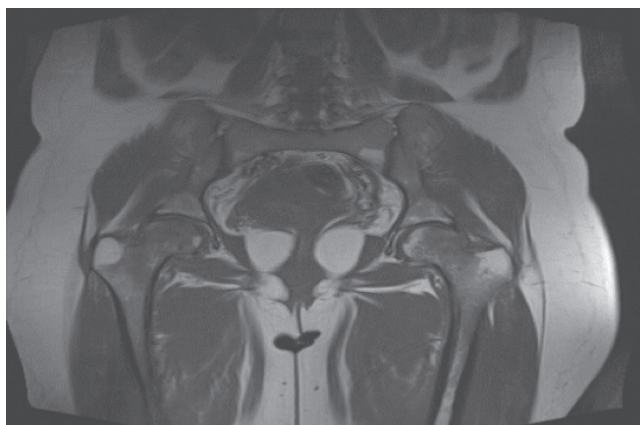


Figure 2. Coronal T1-weighted magnetic resonance imaging of bilateral femoral heads.

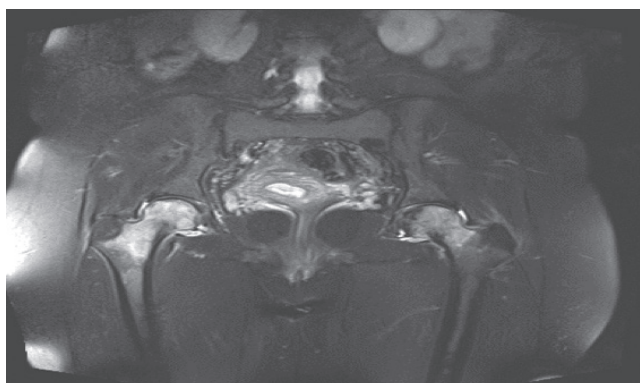


Figure 3. Coronal T2-weighted magnetic resonance imaging of bilateral femoral heads.

gain during this pregnancy was 20 kg (pregnant body weight 80 kg; body height 150 cm; BMI (Body Mass Index) 35.6 kg/m²). Her pain and gait difficulty aggravated immediately following the delivery and made it difficult for the patient to walk. The patient had no history of contraceptive drug use, autoimmune diseases, trauma, coagulation disorders, alcohol drinking, chronic corticosteroid useage, smok-

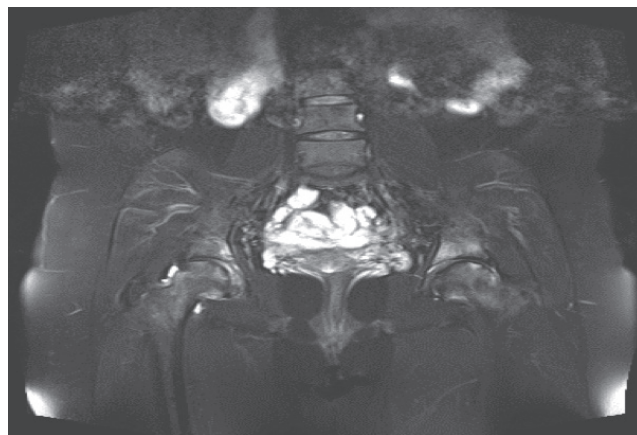


Figure 4. Coronal T2-weighted magnetic resonance imaging of bilateral femoral heads on follow-up MRIs after conservative treatments.



Figure 5. Coronal T1-weighted magnetic resonance imaging of bilateral femoral heads on follow-up MRIs after conservative treatments.

ing or ovarian hyperstimulation syndrome. Results of laboratory tests were as follows: ESR: 25 mm/first hour, WBC: 10.320/mm³ and CRP: 10 mg/l. Rheumatoid factor was negative. Coagulation parameters (antiphospholipid and anticardiolipin antibodies and protein S) were negative, parathyroid hormone was normal range and also normal lipidic analysis except for mild hypertriglyceridemia (216 mg/dl). Her past medical history was only significant for right venous stasis evaluated femoral head blood flow using doppler ultrasonography of bilaterally lower extremity in last trimester. Therefore she was taking enoksaparin sodium 6000 ANTI-XA/0,6 ml sc during 3 weeks before delivery. On physical examination, range of motion was found to be limited with a positive Patrick's (flexion abduction external rotation) test in both side and movement was painful. Pain was measured using a 100 mm visual analogue scale (VAS). VAS score was 90 mm in our patient at baseline. However, she experienced deep

anterior pain in her right hip with terminal flexion. The lower extremity neurologic examination was normal. She had a positive Trendelenburg gait on the left side. Plain anteroposterior radiographs of the hip was nonspecific.

The first MRI of the left hip showed suspicious subchondral fractures in osteonecrosis of the femoral head without collapse and diffuse edema involving the femoral head, neck on T1- and T2-weighted images.

MRI follow-up after conservative treatment was performed as well as regression of the edema extending to the femoral head and neck, progression of the acetabular subchondral edema and focal of areas osteonecrosis in the both femoral heads without collapse.

Results of examinations and magnetic resonance imaging were consistent with diagnosis of avascular osteonecrosis of the bilateral femoral head.

The patient was offered avoiding vigorous exercise and a walker using was recommended for reducing weight bearing. Hyperbaric oxygen treatment was performed two days in a week and medical and physical therapy was started to relief the pain.

Discussion

Aseptic necrosis, known as avascular necrosis, ischemic necrosis, or osteonecrosis, is a pathological process caused by impaired blood supply to the affected bone and resulted in the death of osteocytes and bone marrow cells.^[5] Bilateral aseptic osteonecrosis of femoral head associated to pregnancy is very rare.^[6, 7] The most complaint is mostly unilateral, gradually increasing pain in the groin and radiating to the knee and thigh exacerbated by activity and exercise.

Apart from traumatic forms, the etiology and the pathogenetic mechanism of osteonecrosis of the femoral head associated pregnancy are still controversial and probably multifactorial. Hormonal influences, increased coagulability, mechanical stress or overload by excessive labor and weight gain during the last trimester of pregnancy and impaired venous stasis are some speculative mechanisms that have

been proposed.^[8-10] In our case there was right venous stasis evaluated femoral head blood flow using doppler ultrasonography of bilaterally lower extremity. Her BMI was >30 based on the mother's body mass index in last trimester and she delivered a baby boy weighing more than 4 kg at birth considered larger than average.

In literature many cases were mostly on the left side (excessive compression of the iliac vein on the left side due to the anatomy?), the causation hypothesis is logical and may confirm the theory of excessive compression^[11, 12] of the iliac veins (and particularly on the left side) from the weight of the developing fetus.

Furthermore, many endocrine modifications occur during pregnancy such as parathyroid hyperplasia and the production of estrogen and progesterone by the placenta.^[13] The elevated non-protein bound cortisol and glucocorticoid activity of progesterone can be responsible.^[14] In our patient, the biochemical and coagulation parameters showed no abnormalities except for mild hypertriglyceridemia.

Conservative methods are usually started when there is no evidence of collapse such as restricted weight bearing, physical therapy, medication, hyperbaric oxygen treatment, electrical stimulation, extracorporeal shock-wave treatment.^[15] Joint-preserving operations are performed principally in ARCO stage I and II femoral head necrosis, but can also be carried out in stage III disease, depending on the severity and site of necrosis.^[16] In our patient we performed hyperbaric oxygen treatment and physical therapy to maintain muscle strength and prevent contractures and she had remarkable pain relief and functional progress. After treatment patient's VAS score was 30 mm at 2-month follow-up visit. We defined the change in the VAS that the patient perceived as meaningful.

In conclusion in this case we reported bilateral osteonecrosis of femoral head that developed during the last trimester of pregnancy. Pregnancy-associated bilateral hip avascular necrosis is relatively uncommon and physicians should be aware of this rare entity to establish the diagnosis and appropriate treatment protocol.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

Conflict-of-interest issues regarding the authorship or article: None declared.

Peer-review: Externally peer-reviewed.

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