

Postpartum Sacral Stress Fracture: Case Report

Postpartum Sakral Stres Kırığı

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ABSTRACT Stress fractures of sacrum in pregnancy and postpartum are unusual but important causes of low-back and buttock pain. In literature, only a few postpartum stress fractures of sacrum are reported up to date. We are reporting a case of 29-year-old postpartum patient presenting with low-back and left buttock pain. Although direct radiographic examination was normal, computerized tomography and magnetic resonance imaging of the sacrum revealed sacral stress fracture. There were risk factors for fatigue stress fractures such as giving birth to a high-birth-weight baby and significant weight gain during pregnancy. Additionally, the lumbar and femoral bone mineral density studies showed osteopenia which is a risk factor of insufficiency stress fracture. Therefore, the significance of the case presented here is that, the risk factors for both insufficiency and fatigue stress fracture were present in the same patient. With analgesic medication and bed-rest the symptoms resolved completely in 3 months.

Key Words: Sacrum; fractures, stress; postpartum period; pregnancy

ÖZET Gebelik sırasında ve postpartum dönemde sakrum stres kırıkları bel ve kalça ağrısının nadir ama önemli nedenlerindedir. Literatürde, günümüze kadar sadece birkaç tane postpartum sakral stres kırığı rapor edilmiştir. Burada, 29 yaşında, postpartum dönemde, bel ve sol kalça ağrısı ile başvuran bir hasta sunulmuştur. Direkt radyografilerin normal olmasına rağmen yapılan bilgisayarlı tomografi ve manyetik rezonans görüntüleme çalışmaları sonunda hastamızda sakral stres kırığı tanısı konulmuştur. Yorgunluk stres kırığı için risk faktörü oldukları kabul edilen yüksek doğum ağırlıklı bebek doğumu ve gebelikte fazla kilo artışı hastamızda mevcuttur. Ayrıca, hastamızın yapılan kemik mineral yoğunluk çalışmasında yetmezlik stres kırığı için bir risk faktörü olarak sayılan osteopeni de saptanmıştır. Bu nedenle, olgumuz hem yetmezlik hem de yorgunluk stres kırığı risk faktörlerinin birlikte olduğu bir hasta olması açısından önemlidir. Analjezik tedavi ve istirahat ile hastanın şikâyet ve bulguları 3 ay içinde tamamen kaybolmuştur.

Anahtar Kelimeler: Sakrum; kırıklar, stres; postpartum dönem; gebelik

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Low-back and pelvic pain are common during pregnancy and in postpartum period. Usually the cause of the pain is mechanical lesions of the pelvic soft tissues and ligaments.¹ Other rare causes of postpartum low-back pain such as infections of lumbar spine or sacroiliac joints and stress fractures of sacrum are under-diagnosed in most cases.

Stress fractures are either fatigue or insufficiency fractures. Fatigue fractures occur in a bone with normal resistance when exposed to abnormal stresses. However, insufficiency fractures occur when physiological

stresses are applied to a weakened bone with decreased elastic resistance.² These fractures are often unsuspected clinically and unrecognized on radiographic studies. Few cases of sacral stress fractures in postpartum period have been reported up to date.³⁻⁶

Here, we present a case of stress fracture of sacrum during the postpartum period. A written informed consent was obtained from the patient for publication of this case report and accompanying images.

CASE REPORT

A 29-year-old woman with no significant past medical history was referred to our Physical Medicine and Rehabilitation center with the complaint of severe low-back pain and pain in her left buttock. She had an uncomplicated gestational period. She had spontaneous vaginal delivery with epidural anesthesia 5 months prior to the referral to our clinic. The pain started 2 weeks after the delivery. The pain was mechanical in character exacerbated with weight bearing and promptly relieved by resting. The patient was primiparous and the weight gain was 15 kg during her pregnancy (height: 160 cm, weight: 70 kg, BMI: 27.3). Four months after the delivery, at the time of referral, she weighed 61 kg (BMI: 23.8). There was no past medical and family history of osteoporosis. She was a non-smoker and there was no regular alcohol consumption. She had never been treated with corticosteroids or heparin. Daily calcium intake was about 1500 mg during the pregnancy and after the delivery. She denied any pelvic or spinal trauma however, the weight of baby was 4300 gr and the labor was prolonged. The patient has been breast feeding since the delivery.

On her first physical examination, the patient complained about pain in her low-back region radiating to the dorsolateral aspect of the left thigh. There was severe pain in abduction, adduction and internal/external rotations of left hip joint. Laseque test was positive on left side. She experienced pain on lumbar extension. Left sacroiliac joint was tender on palpation. Neurological examination of the lower extremities was normal.

Laboratory findings showed normal calcium (10 mg/dL), phosphorous (4.1 mg/dL), creatinine (0.5 mg/dL) levels. Serum sGOT (37 U/L), sGPT (62 U/L) and alkaline phosphatase (149 U/L) levels were slightly increased. Complete blood count and thyroid function tests were normal. Routine urinalysis and microscopy revealed urinary tract infection. CRP (14 mg/L) and erythrocyte sedimentation rate (ESR) (56 mm/hr) were increased probably due to the coexisting urinary tract infection. Serum 25-Hydroxy-vitamin D3 and parathyroid hormone levels were in the normal ranges (21 ng/mL and 38.2 pg/mL respectively).

Dual-energy X-ray absorptiometry (DXA) showed osteopenia (lumbar T score average: -1.7, femoral average T score: -1.9).

Conventional radiological investigation of pelvis showed no abnormality (Figure 1). Computed tomography (CT) imaging of pelvis showed oblique fracture line extending to the left sacroiliac joint confirming the stress fracture (Figures 2a, b). Magnetic resonance imaging (MRI) of sacroiliac region showed a linear hypointense fracture line extending to the first and second sacral foramen suggesting stress fracture, accompanied by bone marrow edema on the left half of sacrum (Figure 3).

Electroneuromyographic (ENMG) investigation of the lower extremities was performed to see if any neurological complication like radiculopathy



FIGURE 1: Normal conventional radiographic examination of pelvis.



a

FIGURE 2a, b: CT imaging of pelvis showing fracture line extending to the left sacroiliac joint.



b

or cauda equina syndrome were present. ENMG showed no radiculopathy or neuropathy in the lower extremities.

Management consisted of bed rest and paracetamol up to 2 gram daily. Since she was lactating, 1000 mg elementary calcium and 880 IU of vitamin D daily were prescribed for the treatment of her osteopenia. For the treatment of urinary tract infection, amoxicilline and clavulonic acid, 1000 mg twice daily for 7 days were prescribed. ESR and CRP levels dropped to almost normal ranges after using the antibiotics. After 3 months of follow-up, pain subsided and the patient could perform normal activities of daily living. On physical examination, there was no pain on left hip joint motion and the sacroiliac joint was no longer tender. A follow-up CT scan of sacrum revealed sclerosis in the fracture line (Figures 4a, b).

DISCUSSION

In the medical literature, only a few cases of stress fractures of sacrum during pregnancy and postpartum have been published since first described by Lourie in 1982.⁷ Although low-back and pelvic pain are common during pregnancy, sacral stress fractures are underestimated as an etiology since imaging studies cannot be done during this period.

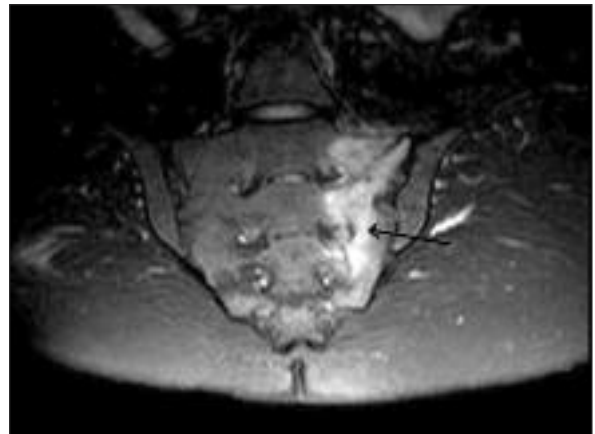
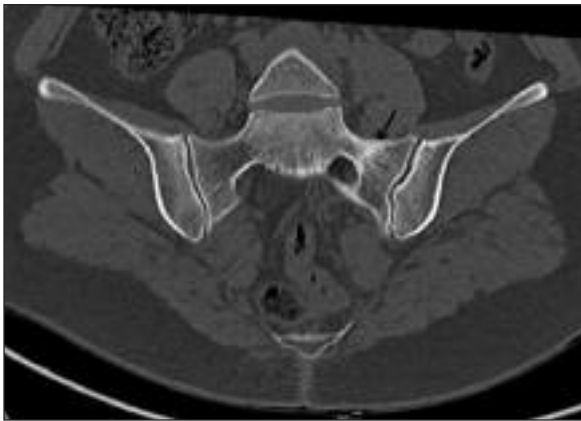
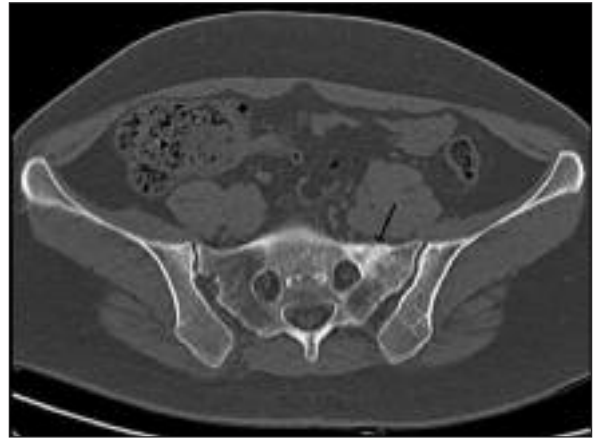


FIGURE 3: MRI of sacroiliac region showing fracture line and bone marrow edema.

Stress fractures are classified as fatigue and insufficiency fractures. Fatigue fractures occur when a mechanical force is applied to a bone with normal elastic capacity. However, insufficiency fractures occur in a weakened bone when exposed to a physiological stress. Many pathological conditions may predispose to insufficiency fractures. These conditions are postmenopausal osteoporosis, secondary osteoporosis (drug induced osteoporosis, radiation therapy, prolonged bed rest, rheumatoid arthritis, Paget's disease, some endocrine disorders, chronic liver diseases, renal failure etc.) and osteomalacia.⁸



a



b

FIGURE 4a, b: CT scan of sacrum revealing sclerosis in the fracture line after 3 months.

In the case presented here, risk factors were present for both insufficiency and fatigue fractures. In our case; vaginal delivery, high-birth-weight infant and weight gain during pregnancy are the risk factors of fatigue fractures.⁴ Additionally, the patient had osteopenia suggesting an insufficiency fracture. In our case, pregnancy was the only risk factor for the osteopenia. Although pregnancy related osteoporosis has been commonly documented in the literature, only few cases of sacral insufficiency fractures revealing pregnancy-related osteoporosis have been published.^{5,9,10}

Regardless of the type of fracture, the most important aspect of sacral stress fractures is the difficulty in diagnosis. There are several reasons for this. First of all, most physicians are unaware of such fractures. Another reason is that plain radiographs usually show no abnormality. Furthermore, the symptoms and the radiological findings in patients with sacral fractures may resemble metastatic bone diseases, osteomyelitis and degenerative diseases of spine.¹¹

In the diagnosis of sacral stress fractures, plain radiographs are usually inconclusive especially in osteoporotic patients. However, if a fracture is detected on radiography, the appearance is characteristic and additional diagnostic studies are not re-

quired.¹² Isotope scanning can be used to detect these fractures but sacroiliitis and metastatic bone disease should be considered in differential diagnosis. MRI is the best technique for detecting the bone marrow edema that results from sacral stress fractures.¹³ Both isotope scanning and MRI are sensitive methods to diagnose sacral stress fractures but their specificities are low. In our patient, MRI imaging of sacrum showed diffuse edema of sacrum. Since ESR and CRP levels were high in our patient, CT imaging was performed to confirm the presence of a fracture line and to exclude an infectious or metastatic bone disease. CT is the gold-standard imaging technique in detecting stress fractures of sacrum. Depending on the degree of healing, fracture lines, sclerotic lines or both can be seen on CT images.¹⁴

Treatment of postpartum sacral stress fractures consists of bed rest, analgesia and progressive mobilization. Rarely neurological complications may accompany sacral fractures and these may require surgical interventions.¹⁴

Sacral stress fractures should be considered in the differential diagnosis of low-back and buttock pain during pregnancy or postpartum period. When a sacral stress fracture is suspected in a patient, risk factors should be carefully questioned.

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