

Vertebral Fractures Due to Postpartum Spinal Osteoporosis: an Unusual Cause of Low Back Pain

Postpartum Spinal Osteoporozla Bağlı Vertebra Kırıkları:
Bel Ağrısının Nadir Bir Nedeni

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Summary

Postpartum spinal osteoporosis (PPSO) is a rare disease entity presenting with back/low back pain and is characterized by osteoporosis during late pregnancy or puerperium. It generally leads to one or more vertebral fractures. Herein, we present a young female patient who had multiple vertebral compression fractures due to PPSO in the postpartum period. (*Turkish Journal of Osteoporosis 2011;17:21-3*)

Key words: Osteoporosis, pregnancy, postpartum, low back pain, vertebral fractures

Özet

Postpartum spinal osteoporoz (PPSO) sırt/bel ağrısı ile bulgu veren ve geç gebelik veya puerperal dönemde osteoporozla karakterize nadir bir hastalıktır. Genellikle bir veya daha fazla vertebra kırığına neden olur. Burada postpartum dönemde PPSO'ya bağlı multipl vertebral kompresyon fraktürleri olan genç bir kadın hasta sunulmuştur. (*Türk Osteoporoz Dergisi 2011;17:21-3*)

Anahtar kelimeler: Osteoporoz, gebelik, postpartum, bel ağrısı, vertebra kırıkları

Introduction

Osteoporosis (OP) is a systemic disease characterized by increased fracture risk as a consequence of low bone mass and micro architectural deterioration of bone tissue. Osteoporotic fractures are associated with increased morbidity and mortality rates, which establish OP as a major public health care concern (1).

Postpartum spinal osteoporosis (PPSO) is a rare disease entity presenting with low back pain and is characterized by osteoporosis during late pregnancy or puerperium. Pregnancy and lactation lead to the decrease of bone mineral density (BMD), which is related to mobilization of skeletal calcium. It generally leads to one or more vertebral fractures. Back/low back pain and loss of height due to vertebral compression fractures are the most predominant symptoms (2,3). Herein, we present a female

patient who had multiple vertebral compression fractures due to PPSO in the postpartum period.

Case Report

A 22-year-old female patient with severe low back pain was admitted to our Physical Medicine and Rehabilitation outpatient clinic. Patient stated that although her pain started during late pregnancy, it got worse in the postpartum period. She had her first delivery 14 days ago and was breastfeeding her baby. She had short stature and her body mass index (BMI) was 26.8 kg/m². On inspection, a slight increase in the dorsal kyphosis was noted. On physical examination, lower thoracic and all lumbar spinous processes were tender on palpation and lumbar range of motion was severely painful and limited in all directions. Straight leg raising

test was negative. Sacrum and sacroiliac joints were not tender on palpation and sacroiliac compression tests were negative. There was no neurological deficit. Loss of vertebral heights compatible with osteoporotic fractures in thoracic and lumbar vertebrae, mostly in a biconcave manner were seen on radiographic examination. Wedge compression fracture was prominent in T12 vertebrae (Figure 1). Compression fractures were also seen in magnetic resonance imaging (Figures 2 and b). Bone mineral density (BMD) examination obtained with dual energy X-ray absorptiometry (DXA-hologic) revealed that L1-4 t score was -4.0, z-score -3.9, femoral neck t score -1.7, z score -1.6 and osteoporosis was diagnosed according to WHO criteria (4). The patient was reevaluated for the etiology of secondary osteoporosis. On laboratory examination, hemoglobin was 11.7 g/dl, hematocrite 37%, platelet 344000/mm³, white blood cell count 5700/mm³ and ESR was 19 mm/hr. 25 (OH) vitamin D level was 10.2 ng/ml (10-40) and parathormon level was 18 pg/ml (12-69). Blood chemistry and other tests including CRP and thyroid function tests were unremarkable. She was diagnosed as vitamin D insufficiency and PPSO, and vitamin D was given intramuscularly at a dose of 300.000 IU/month (for 3 months) besides calcium supplementation and anti-resorptive treatment (alendronate 70 mg/week) was



Figure 1. Compression fractures of vertebrae are seen on lateral lumbar radiograph, mostly in biconcave manner. Wedge compression fracture was prominent in T12 vertebrae.

started afterwards since she defined that she does not plan to have another child. An exercise programme including dorsal and lumbar extensor muscle strengthening, pectoral muscle stretching, weight-bearing aerobic exercises (walking) and postural exercises were prescribed after pain was decreased. Her complaints resolved completely in approximately 5 months and she is currently using alendronate 70 mg weekly and per oral calcium and vitamin D supplementation.

Discussion

Low back pain (LBP) is a common complaint of pregnant women and is usually as mechanical low back pain due to physiological and biomechanical changes in the pelvic joints, ligaments and muscles. PPSO is a rare reason of low back pain in the postpartum period of unknown cause which can lead to vertebral fractures. Among the idiopathic forms of osteoporosis, the one developing during pregnancy is the least common and scarcely studied. It was found that spinal BMD exhibits a significant decrease from prepregnancy to the immediate postpartum period with a mean reduction in BMD of 3.5% in 9 months. Lumbar BMD was decreased and multiple vertebral fractures were detected in our patient likewise other cases reported in literature (2, 5-11).

The etiology of PPSO is not fully understood. Poor general nutrition, low calcium intake, very-low body weight, a positive family history of osteoporosis and low vertebral BMD appear to be strong risk factors for PPSO. It predominantly affects thinly built, primigravid, lactating women. These patients can sustain vertebral fractures with minimal or no trauma, resulting in significant morbidity (2,12). Our patient had short stature but normal BMI, she had not been evaluated previously for OP, did not define a previous fracture and there was no family history of osteoporotic fractures. Although 25 (OH) vitamin D level was low in our

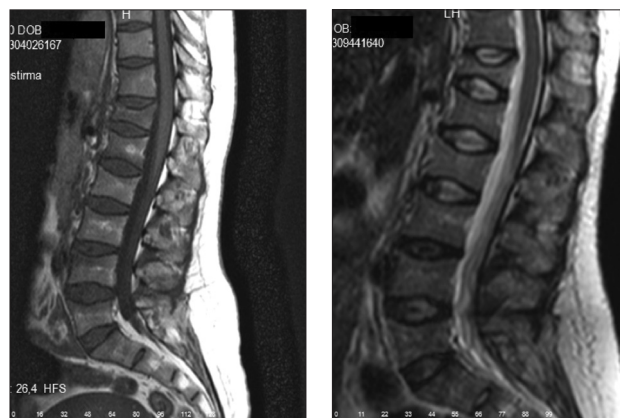


Figure 2. Vertebral compression fractures are seen on sagittal MRI images (a) T1 weighted and (b) T2 weighted images. No extension into spinal channel or cord compression is noted.

patient, PTH and serum calcium, phosphorus and alkaline phosphatase were in normal ranges, so it was considered as new-onset vitamin D insufficiency. Femoral neck BMD was not osteoporotic, but osteopenic in our patient. This was also compatible with PPSO in which spine scores are usually lower than hip scores.

In differential diagnosis sacral stress fractures should also be considered since they are unusual but important causes of LBP and even postpartum radicular pain. Few cases of sacral fractures in the postpartum period have been reported which were also associated with radicular symptoms. Therefore, it is very important to examine the sacral region in patients with LBP in the postpartum period and to perform necessary imaging procedures when needed (13-15).

Postpartum sacroiliitis can also cause radicular LBP. Irritation and injury of spinal nerves can be the presenting signs and can be misdiagnosed as radiculopathy. Both septic sacroiliitis and non-infectious inflammatory sacroiliitis were reported to cause LBP and radicular pain during postpartum period in literature. An elevated ESR, elevated alkaline phosphatase levels, leucocytosis and positive bone scans besides clinical signs of sacroiliitis will support diagnosis. Sacroiliac joints were not tender and compression tests were negative in our patient. There was also no sign of inflammation in laboratory analysis (16-17).

Although the mechanism of action is not fully understood, calcium, vitamin D and antiresorptive agents are recommended in the treatment of PPSO. Cessation of lactation is also recommended as one of the therapeutic interventions to accelerate recovery. We also informed our patient about weaning and advised to stop breast feeding.

Bisphosphonates are among antiresorptive agents which can be preferred in the treatment of PPSO (2,18-21). Bisphosphonate therapy administered soon after presentation substantially increases spinal bone density in patients with PPSO (20). During the prolonged follow-up of patients treated with oral bisphosphonates, vitamin D, and calcium, an improved clinical response with a marked recovery of spine bone mineral density was observed (18). 2-year treatment with i.v. bisphosphonate ibandronate was also used (2 mg every 3 months) besides calcium and vitamin D supplementation and rapid improvement was reported (19). We also administered alendronate 70 mg weekly as antiresorptive drug in addition to calcium and vitamin D supplementation in our patient.

To conclude, although PPSO is a rare condition, it should be considered in differential diagnosis in patients with back/low back pain during or immediately after pregnancy in order to avoid a delay in diagnosis and to allow proper treatment.

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