

Foot stress fracture due to pregnancy-induced osteoporosis

Abstract

Pregnancy-induced osteoporosis is a rare, although wellknown complication of pregnancy. Fractures may result that can cause invalidating pain. We describe a case of a patient who presented on the 39th week with persistent right foot pain and was diagnosed with a stress fracture of the second metatarsal. After complete work-up and elimination of all other pathologies, the fracture was considered to be due to pregnancy-related osteoporosis. The Patient was managed conservatively with reduced weightbearing and protective footwear. Stress fractures during pregnancy related to osteoporosis though rare, should be easily recognized in order to accelerate recovery and prevent complications.

Keywords: stress fracture, pregnancy-induced osteoporosis, X-ray

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Introduction

Pregnancy-induced osteoporosis is a recognised entity with an unknown pathophysiology that is a diagnosis of exclusion. Fractures occur rarely when predisposing factors are absent. The presence of predisposing factors leads to stress fractures. Causes of stress fractures are excessive exercise, glucocorticoid intake, alcohol abuse, smoking, renal disease, endocrine and hormonal imbalances.¹ In addition, women with extreme weight gain, increase of sport activities during pregnancy, macrosomic infants or assisted vaginal delivery run a higher risk for fractures.²⁻⁵ We present a 34-year-old patient who had none of the previously mentioned risk factors and developed a foot stress fracture in the third trimester. We attribute the fracture to pregnancy-induced osteoporosis.

Case presentation

A 34-year-old Caucasian trigravid patient in the 39th week of pregnancy with a history of two c-sections was admitted for a planned c-section. She originally experienced bilateral foot pain for five weeks and then a sudden stabbing sensation and swelling in the right foot proximally three days before the admission (Figure 1). The patient mentioned that she suddenly had bilateral foot pain without having any kind of accident. The pain was exacerbated with weight-bearing and the patient had to use crutches to alleviate the pain and rest as much as possible at home. Additionally, she used paracetamol for pain relief. On admission, the patient had a total weight gain of 7kilos in the pregnancy and her BMI was 26.1kg/m². The estimated fetal weight on ultrasound was about 2900gr. She did not use any alcohol, tobacco or illegal drugs and did regular exercise for one hour three times a week before getting pregnant. The patient had been using prenatal vitamins and had balanced diet containg 3-4 snacks of milk products per day throughout the pregnancy. She walked for half an hour twice a week since the first trimester did not do any other kind of workout. She had no history of a prior fracture or over use, malignancy, endocrine, gastrointestinal (Crohn's or celiac disease), renal or autoimmune disorder. There was no family history of bone disease. She denied any history of trauma or injuries during exercising.



Figure 1 Anteroposterior view of the right foot. Fracture line in the base of second metatarsal and periosteal reaction.

Discussion

Pregnancy-associated osteoporosis has a prevalence of 0.4/100.000.⁶ Studies shedding light on the pathophysiology have been conducted since the 1950s and support that fractures occur in women with already decreased bone strength.⁷ Genetics are a contributing factor, such as deficiency of calcitonin or its receptor and elevated

levels of parathyroid hormone-related protein enhance osteoclast activation.^{8,9} Another possible mechanism is vascular injury leading to ischemia and marrow edema.¹⁰ The diagnosis can be suspected in case of severe foot pain during pregnancy. Other suspicious areas for fractures are the hips, pelvis and ribs.¹¹ Full laboratory workup should be performed to exclude renal and thyroid disorders, HIV, malnutrition, malignancy and autoimmune diseases and drug-related osteoporosis should also be eliminated.¹² Unfractionated heparin for prevention of thromboembolic disease in case of thrombophilia is also associated with higher risk of osteoporosis.¹³ X-ray is the first radiologic investigation to take place and DXA scan of the lumbar spine and hip is the modality of choice.¹⁴ Drugs suggested for the management of pregnancy-related osteoporosis include calcium and vitamin D, calcitonin, teriparatide and strontium ranelate.^{7,15,16} It has also been supported that bisphosphonates lead to a significant increase in bone density.^{17,18} Nevertheless, as the condition is self-limited and there is a very limited number of data, no intervention is suggested unless the patient suffers from vertebral fractures at a young age.^{19,20} The risk of recurrence in subsequent pregnancies is low and the patients recover usually within a year.^{21,22} However, timely diagnosis of stress fractures due to pregnancy-induced osteoporosis is essential to alleviate the patient from severe pain and facilitate fast recovery.

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None.

Conflicts of interest

The authors declare there is no conflict of interests.

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