

BIFOCAL STRESS-FRACTURE OF PUBIC RAMI – A CASE REPORT

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Summary

This case report presents a 50-year-old woman who was diagnosed with a bifocal stress fracture of pubic rami and underwent conservative treatment. After a review of the literature, the clinical picture, diagnosis and treatment are described. The importance of this paper comes from the rarity of finding reports about this kind of injury in the literature.

Key words: fractures, stress, osteopenia, pubic bone

Rezumat. Fractura bifocală de stres a osului pubian - caz clinic

Este prezentat un caz clinic, femeie cu vârsta de 50 de ani, care a urmat un tratament conservator al fracturii bifocale de stres al osului pubian. Este prezentat un reviu al literaturii de specialitate, descrierea tabloului clinic, diagnostic și tratament. Valoarea articolului este determinată de raritatea relativă al acestui tip de patologie și mențiunii în literatura de specialitate.

Cuvinte-cheie: fracturi, stres, osteopenie, pubis

Резюме. Бифокальный стресс-перелом лобковых костей - клинический случай

Представлен клинический случай 50-летней женщины, которой проводилось консервативное лечение бифокального стрессового перелома лобковых ветвей таза. Представлен обзор литературы, описаны клиническая картина, диагностика и лечение. Значение статьи определяется достаточной редкостью данного вида патологии и упоминаний о ней в специальной литературе.

Ключевые слова: перелом, стресс, остеопения, лобковая кость

Introduction. Insufficiency or stress fractures of the pubic rami are common pelvic injuries that are usually associated with postmenopausal, senile, steroid-induced or post-irradiation osteopenia. Insufficiency fractures arise when a normal or physiologic stress is applied to weakened bone with reduced mineralization and elasticity. However, bifocal cases are rather rare and there are very few descriptions in the literature, therefore an insufficiency fracture was suspected. The want of reports on this fracture in the medical-scientific literature, specifically in relation to care staff, was our motivation for producing this study [2, 4, 6].

Case report. The patient was a 50-year-old woman who is a medical carer. She was addressed initially to ambulatory department of Trauma

and Orthopedics, where has been examined and diagnosed with coxarthrosis of the right hip-joint. Initial radiograph of the pelvis was negative (**Fig. 1**). The patient was taken off his physical activities and was started administration of NSAIDs analgesic.

After one week, the patient again started to feel mild pain at the right inguinal region and it goes to department of Trauma and Orthopedic Surgery of Institute of Medical Emergencies, where has been additional examined. At moment of clinical examination, she complained of pain during 3 weeks, in his right inguinal region continuing in proximal thighs, on the medial face, which began insidiously, without any history of trauma, and felt pain on palpation at the pubic superior and inferior rami and on adduction of the leg against resistance and

tenderness on palpation of the pelvis posteriorly. She was positive the Grava test and standing sign of right side. She did not present any previous bone-muscle injuries. In this case history and physical examination were quite typical.



Fig. 1. Right hip joint x Ray antero-posterior (AP) view

Decisions on diagnostic workup and treatment plans are made based on an increased index of suspicion. To differentiate between pathologic fractures due to osteoporosis, metastatic lesion or secondary to osteitis and avulsion fracture of the adductor bone-insertion or hamstring muscles a laboratory tests, xRay or CT-scan and radionuclide examination are necessary.

Laboratory tests (complete blood count, basic metabolic panel, oncomarkers, hormones etc.), AP radiographs and CT of the pelvis and „whole body” mTc⁹⁹-scintigraphy were also requested. Laboratory tests showed normal values. At AP radiograph of the pelvis showed fracture of the right superior and suspected fracture of inferior pubic rami (Fig. 2).



Fig. 2. Plain radiography reveals fracture of superior ramus of pubic bone and suspected fracture of inferior pubic rami

This diagnosis was confirmed by „whole body” bone scanning, which demonstrated areas of increased radionuclide uptake in the right superior and inferior pubic rami and also in the right sacroiliac joint (Fig. 3). Increased radionuclide uptakes in the right sacroiliac joint explain the secondary sacroiliitis due to lateral forces-loading. No other areas of abnormal uptake were demonstrated within the skeleton.

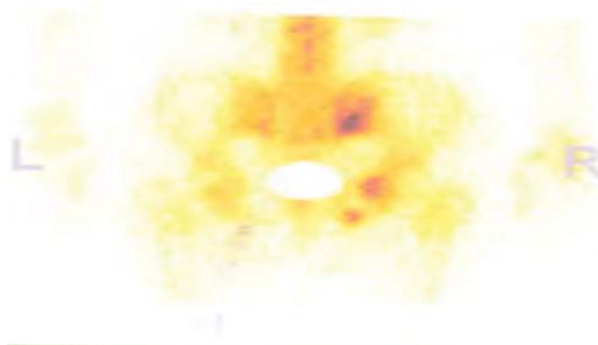


Fig. 3. Bone scanning demonstrates areas of increased radionuclide uptake in the right superior and inferior pubic rami and also in the right sacroiliac joint

The CT examination of pelvis confirmed the fractures without providing arguments for any osteolytic activity, and showed some callus formation around the fracture site of superior pubic rami, indicating bone healing (Fig. 4).

The patient was treated conservatively with NSAIDs analgesics, peripheral myorelaxants and oral bisphosphonate, and an initial period of bed rest in frog position for 6 weeks followed by mobilizing with a frame.

Discussion. Wolff's law states that normal stress placed on normal bone produces normal remodeling of the bone. If sufficient time is allowed for remodeling and the load applied does not exceed the strength of the bone structure, the bone becomes stronger. Excessive and repetitive muscular forces which are beyond the tolerance limit of the bone, force it to damage gradually which further results in a bony stress reaction and continued damage gradually progresses to a stress fracture. Stress fractures are classified into two categories, stress or fatigue fractures, caused by abnormal stresses applied to normal bone and insufficiency fractures that are caused by the effects of normal or physiologic stresses on weakened bone with decreased elastic resistance. Stress injuries in normal bone due to repeated cyclic loading are a well-recognized complication. Common sites affected to stress-fracture in the pelvis include the pubic rami and the sacrum [2-6].

In our case, repetitive physiological compressive forces and tension of the pelvis coupled with



Fig. 4. CT examination of pelvis confirmed the fracture of superior ramus, with some callus formation around the fracture site (a), and the fracture inferior ramus (b) of pubic bone

abnormal loading of the bone, resulted in progressive microcracks. The coalescence of the microcracks resulted in bifocal pubic bone fractures [1, 7].

The delay between the first symptoms and the diagnosis has been noted previously. Patients with insufficiency fractures may present after minor trauma or may have symptoms of low back, pelvic, or groin pain that are often vague and non-specific and do not seem to be related to any remembered trauma. Therefore, in order to avoid a delay in diagnosis, an insufficiency fracture should be considered in all patients who have pain with ambulation or are non-ambulatory, including those patients with a history of cancer. The age of the patient needs to be mentioned because of its importance as a risk factor for stress fractures. Other risk factors are: lack of physical conditioning, osteopenia, metabolic and biomechanical disorders, and female gender. Sometimes the diagnosis is made only when the symptoms failed to settle and radiographs showed some changes [3, 5].

For our case, clinical, laboratory examinations and imaging methods were used, including radiography, CT and bone scintigraphy.

The general principles of treatments for stress fractures can be applied to the pubic bone insufficiency fractures. Movements that might initially intensify the stress in the compromised region should be avoided.

Conclusions. It is also important to remember that insufficiency fractures can occur without a traumatic episode and that the ambulatory status at the initial visit varied from bedridden to standing up with an aid and walking with an aid. This case report proves

that even when x-rays clearly show a suspected stress fracture, additional bone scanner is useful. Treatment consisting of limited weight bearing and activity modification has proven to be successful in resolving symptoms, as has been shown in our case and others reported in the literature.

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