



Transient osteoporosis and pathological fractures in pregnancy and puerperium: a case report and review of literature

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ABSTRACT

Spontaneous pathological fractures of the pelvic bones and the femoral neck occurring during the last three months of pregnancy or immediately after delivery are often underestimated and misinterpreted.

Early diagnosis and a prompt evaluation of symptoms and signs can prevent more serious orthopedical complications and physical limitations of the women in their family and work activities. We describe a recent clinical case under our observation 20 years after the publication of a previous report on the same subject.

Keywords: Pregnancy; pelvic bones; spontaneous fractures.

SOMMARIO

Durante la gravidanza possono verificarsi fratture patologiche spontanee soprattutto a livello delle ossa del bacino e del collo femorale. Queste fratture sono probabilmente più frequenti di quanto si creda perché non vengono diagnosticate o confuse con altre sindromi osteo-articolari. Una diagnosi precoce è invece fondamentale per i necessari provvedimenti impedendo lo sviluppo di limitazioni funzionali che andrebbero ad interessare donne giovani nel pieno delle attività lavorative e famigliari. Descriviamo un caso capitato recentemente alla nostra osservazione come aggiornamento di un medesimo report di circa 20 anni fa.

INTRODUCTION

Orthopaedic problems during pregnancy and puerperium are very frequent but fortunately most are of a benign nature resulting in a complete recovery. We need to consider in particular painful osseous-articular syndromes, which are usually located in the pelvic girdle and spinal column and are related to fetal intra- uterine development, diastasis of the pubic symphysis and sacrum-iliac joints, coccyx lesions, an increase in weight and last but not least, bad body posture. Traumatic musculoskeletal-lesions occurring during labour and delivery have also been described⁽¹⁾.

Of a rarer nature but more insidious, due to possible sequelae, are the spontaneous

pathological fractures of the pelvic ring and of the femoral neck which can occur during the last three months of pregnancy or immediately after delivery. These cases are probably more frequent than believed, difficult to determine and certainly underestimated or misinterpreted^(2,3).

An early diagnosis of this disease at the first sign of premonitory symptoms is essential in allowing us not only to control and treat the symptomatology but also to prevent pathological fractures, bone non unions and possible physical limitations, particularly serious for young women involved in work and family activities. A recent clinical case under our observation has induced and stimulated us to review the international literature and the state of the art 20 years after the publication of a previous report on the same subject⁽⁴⁾.

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CASE STUDY

A 34 year old woman 160 cm tall, weighing 59 kg, primipara in her 3rd pregnancy at 41st week of amenorrhoea, was admitted to the maternity ward of Bentivoglio Hospital at 2.01 am in labour. The course of her pregnancy had been normal, but in the last three weeks she complained of a pain in her left hip when weight bearing. There was no history of any previous trauma.

Blood test levels were normal.

At 2.28 am the patient gave birth to a male weighing 3395gm, Apgar 10-10.

During the first few days after birth, left hip pain and mobility reduction in the lower left limb persisted, so the patient was visited by an orthopaedic consultant and x rays of the pelvis were performed. A compound fracture of the left ileo-pubiscus ramus was evidenced (**Figure 1**).

The consultant advised bed rest for 2 weeks and to walk for small distances with two crutches for a further 20 days until the pain ceased. A complete recovery was reached about 90 days later.

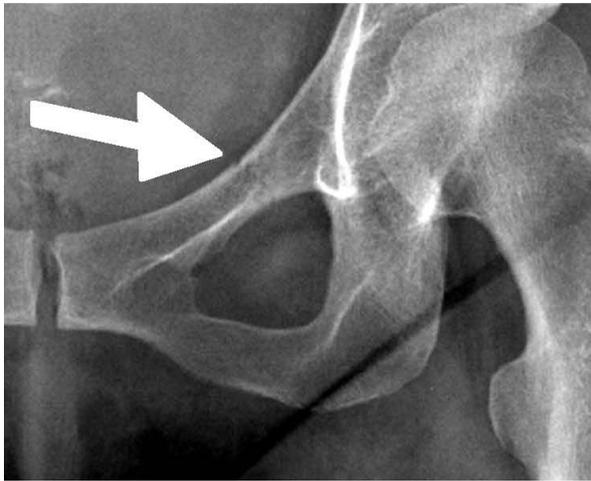


Figure 1.
Compound fracture of the ileo-pubic ramus.

DISCUSSION

Low back pain, lumbar sciatica, hip and coccyx pain are very frequent in the last months of pregnancy and are usually considered to be caused by mechanical events, normal weight increase during the last three month period, a change in posture due to a lumbar hyperlordosis,

or caused at the time of delivery. However hip pain can conceal a bone density reduction, that can lead, fortunately in few cases, to a pathological fracture^(1,2).

Transient osteoporosis before and post partum is a little known clinical syndrome; the event of pathological fractures are certainly more frequent than the small number of cases recorded in the scientific literature⁽⁷⁾. It is interesting to note that in almost 20 years since the ten cases recorded in our previous report, at the present time only twelve more cases have been reported^(5,6,7).

The occurrence of fractures depends on the seriousness of the clinical case and the areas involved and is usually more frequent for the femoral neck, the ribs, the vertebral column and more rarely the ischiopubic rami.

The mother's weight and age, fetal weight and prolonged labour don't seem to be risk factors. The majority of these patients however have a family history of osteoporosis and low levels of calcium and vitamin D intake and low sunlight exposure, even if there is a physiological increase in calcium absorption during pregnancy⁽⁵⁾.

The pathogenesis of this condition however remains unknown, whether described as transient osteoporosis or as algodystrofia.

Anglo-American and French orthopaedic schools have different opinions on these fractures : respectively as a result of a transient osteoporosis occurring during pregnancy and lactation or included in the vast chapter of algodystrophy the pathogenesis of which is only partially understood.

According to these authors, pregnancy and lactation can cause a calcium bone content reduction which varies from 3% to 7% according to fetal and neonatal needs , quickly reintegrated after weaning and not correlated to a future osteoporosis risk in post menopause^(8,9,10).

Most probably more factors are involved such as hormone levels, constitution, posture, body movement and the vascular condition of the patient. Multiple changes in fact influence bone metabolism in pregnancy, such as increase in calcium request by the fetus, especially during the last month of bone mineralization, change in nutritional habits and physical activity, as well as increase in hormone levels in puerperium or clinical pathological diseases in pregnancy resulting in hyperaemia of the pelvis.

Much is still to be studied and understood about the changes in bone structure during pregnancy and if these changes are the direct consequence of pregnancy, or occur due to genetic

factors already existing before pregnancy.

The pain usually sets in a sudden and unexpected way with limping and sometimes reduced hip mobility. The symptomatology depends on the entity of the bone damages; obesity, strong mechanical pain, accentuated by weight bearing and movement, which disappears after rest, must be considered a predictive fracture risk symptom.

Diagnosis is achieved mainly at a radiological and specialistic level, but can involve differential diagnostic problems with a simple overloaded trochanteric bursitis, a tubercular coxitis, a septic arthritis, an idiopathic femoral head necrosis and last but not least, lytic bone metastases.

Rest and reduction in weight bearing are the best course of action in eliminating the problem. The treatment however is not well defined even if calcium, vitamin D and occasionally bisphosphonates are often prescribed.

As in the case presented, positive progress can be obtained and the problem is resolved in 2 to 3 months. The diagnosis of these cases may be hindered by the uncommon use of x-rays during pregnancy, although during the last three months, the possible negative effects for the fetus are reduced.

Other exams, like MRI and ultrasonography, are not dangerous in pregnancy but rarely are a

useful support in diagnosis.

The x-ray shows a typical uniform low density, rarely patchy images of the femoral head and the ischio-pubic rami (a characteristic of algodystrophia). Instead the MRI scans in the study of the hip in its initial stages can be inadequate, with results in common and similar images to avascular idiopathic osteonecrosis. In the event of hip pain in the last three months of pregnancy, a simple suspect or an early diagnosis, that lead to a reduction or elimination of weight bearing can avoid the emergence of pathological fractures leading to successive possible complications such as bone necrosis and bone non unions.

In the presence of pathological fractures, above all concerning the proximal femur, an early diagnosis is mandatory in conserving the femur integrity, whereas in the case of a late diagnosis it is nearly always necessary (as has been described in two of our old cases reported), to proceed surgically with a complete prosthesis⁽⁴⁾, a devastating operation particularly for young patients with high expectancy levels of physical activity and involved in work and family activities.

Therefore, more than in any other fields, there is a need for a continuous interdisciplinary collaboration between obstetric and orthopaedic consultants in order to obtain an early diagnosis and resolution of these cases.

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