

Transient Osteoporosis of the Hip, Complicated by a Femoral Neck Fracture

Case report

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Prezentare propusă are ca scop sublinierea atenției ce trebuie acordată unei gravide în cazul în care aceasta acuză dureri la nivelul șoldurilor în ultimul trimestru de sarcină.

Abstract

Transient osteoporosis of pregnancy (TOP), usually associated with the third trimester, is a rare condition, characterized by an initial osteopenia that can lead to regional osteoporosis involving the hip. This, in turn, can be complicated by a hip fracture, occurring just before delivery. The management of this type of situations is complex, and the decision must involve the obstetrician, the anesthetist and the patient, as well as the orthopedic surgeon. Treatment options must be carefully assessed, due to the fact that the indication of treatment may change from one week to another. Early diagnosis, using imaging techniques, is of utmost importance.

Keywords: osteoporosis, fracture, pregnancy

Introduction

Transient osteoporosis during pregnancy was described for the first time in 1959⁽¹⁾. It is a rare disease, characterised by an initial osteopenia that can lead up to regional osteoporosis of the hip, during the third trimester of pregnancy. The initial diagnostic tool is clinical examination exclusively. The patient describes pain when walking in the lateral part of the hip, on one or both legs. Later, as demineralisation progresses, pain is present at rest, in extreme positions, without prior trauma. This diagnose can be easily missed, as the pregnant woman may have a positive Lassegue sign, that turns the physician's attention towards the lower spine. The Lassegue sign is prompted by the shifting of the weight centre anteriorly, that overloads the spine.

It is difficult to diagnose such a condition, due to several elements. First, the oestrogen level is high, and this should prevent bone demineralisation. Second, the usual vitamin supplements like folic acid and B1 are well-known osteopenia preventers. Any imaging tool, either X-ray or MRI are rarely accepted by both the patient and the obstetrician, because of their alleged side-effects on the foetus, although these effects have been shown to be null in the third trimester^(2,3). That's why the

positive diagnose is usually made after delivery, when a simple X-ray of the hip can be taken, that shows regional osteoporosis, sometimes complicated by a femoral neck fracture. This complication is rarely cited in literature. Our revue has found only 13 such cases, 10 unilateral cases and 3 bilateral cases^(10,11,12).

Case report

A 30-year old patient, in her 34th week of pregnancy with twins checks into the Obstetrics Department, being diagnosed with severe preeclampsy (Blood pressure values of 190/100mmHg). At the same time, the patient complains of right hip pain, that first appeared during the 28th week and has progressed since. At first, pain was intermittent and was worsened by prolonged standing or effort. After 4 weeks, pain has become permanent and at present is accompanied by total loss of lower limb function, without any prior trauma. Due to the associated pathology and mainly due to the preeclamptic syndrome, a C-section delivery is performed. Two premature, but otherwise healthy newborns, one of each sex, are delivered. The next day, a neurological examination shows no radicular nerve impairment. The functional loss of the right hip maintains throughout

the next days. An orthopaedic examination, performed on the 3rd day postpartum reveals a 2,5-3cm shortening of the right leg and a malpositioning in external rotation. The X-ray shows a subcapital right femoral neck fracture secondary to transient osteoporosis (figure 1).

Afterwards, the patient is presented with the therapeutic options, being advised to choose the surgical treatment. She opts for the functional treatment, for the time being. Two months after the diagnose, she checks into the Orthopaedics and Traumatology Department and, taking into account the type of fracture and the delay of treatment, total hip arthroplasty using a cementless prosthesis. The procedure runs its course without any incidents. Due to the poor bone stock conditions, for safety reasons, the metallic cup is supplementary fixed with a screw. The postoperative X-ray is normal and no later incidents are reported (figure 2). Partial weight-bearing is allowed on the second postoperative day and range of motion exercises are performed pain-free. Partial weight-bearing is continued up to 6 weeks postoperatively and at that time, a new clinical and radiological control is

performed (figure 3A and 3B). Afterwards, full weight-bearing is permitted and muscular rehabilitation is recommended⁽³⁾ months after surgery a new check-up shows an excellent result, the patient having a normal gait, negative Trendelenburg sign, normal hip motion and muscular strength (figure 4).

Comments

Pregnancy related osteoarticular pathology is frequently encountered. Its implication on the mother's and/or child's health is more or less important, depending on the physiopathological background. These disorders are amplified by weight gain, modification of the position of the weight centre, by hormonal changes that lead to increased joint and ligamentous laxity or by fluid retention that causes interstitial oedema, determining vascular or nervous compression.

A significant number of pregnant women complain of sacroiliac or lumbar pain, hip pain, or a painful pubic symphysis. Painful hips represent the most delicate of these situations, taking into account the possible pathology and the specific treatment.



Figure 1.
AP view X-ray of
right hip, 3 days after
delivery



Figure 2.
AP view postopera-
tive X-ray of right
hip



Figure 3A. AP view X-ray of right
hip 6 weeks after surgery



Figure 3B. Lateral view X-ray of right hip 6
weeks after surgery



Figure 4. Lateral view X-ray of
right hip 3 months after surgery

Among the painful hips, particular care should be given to transient osteoporosis of the third trimester as it can become complicated by various secondary fractures⁽¹⁾.

The moment when such a fracture occurs is crucial when determining the situation and the therapeutic implications. In literature, there were 13 reported cases, of which a few occurred before the expected date of delivery.

The therapeutic decision shouldn't be left only to the orthopaedic surgeon. First, the moment of treatment should be carefully planned. It is known that any hip fracture may be considered a delayed emergency and dealt with after child birth. Second, the proposed surgical treatment can be changed, taking into account the length of time elapsed after the fracture has taken place.

Surgery is counterindicated before delivery because from the anaesthesiologist's point of view, during general anaesthesia, several substances may cross the materno-foetal barrier causing severe injury to the foetus. Furthermore, if spinal anaesthesia is elected, it can cause a slowing down of the blood flow towards the placenta and the baby. Another factor is the physiological state of hypercoagulation occurring in the third trimester which can induce peri- and postoperative changes with negative impact on the baby. For these reasons, surgery is postponed and the patient is treated with thromboprophylactic drugs such as LMWH and analgesics such as Metamizol, Acetaminophen, etc, without exceeding the doses considered to be safe.

In literature, surgery was in most cases performed at 5 to 7 days postpartum, this being the optimal moment from the point of view of the anaesthesiologist (normalisation of coagulation), of the obstetrician (uterine retraction and cessation of postpartum haemorrhage) and of the orthopaedic surgeon (decreased blood loss and infection rates).

Even in the case of a hip fracture, both types of birth giving are possible: natural delivery, aided by epidural anaesthesia or C-section, regardless of the type of anaesthesia chosen.

When choosing the most suitable treatment, one should consider the length of time elapsed from the time the fracture occurred as well as the type of fracture.

Trochanteric fractures have an excellent outcome when fixed internally with a sliding device (DHS), enable the surgeon to maximally preserve the bone stock. This type of implant is best used in the first 3 weeks after the fracture, when closed reduction is possible. After that, the surgeon must perform open reduction, which is more difficult and prone to more blood loss. Femoral neck fractures are frequently complicated by avascular necrosis. Thus, the technique varies, depending on the type and classification of the fracture. Garden I and II femoral neck fractures are suitable for internal fixation using pins, screws or DHS. Garden III or IV fractures and subcapital fractures are best treated by arthroplasty, using either a total or a bipolar hip endoprosthesis. The cementless types are preferred, due to the patient's young age. The sacrifice of the femoral head is warranted by the high risk of avascular necrosis that will eventually lead to the same therapeutic solution.

Prophylactic antibiotics are administered for 5 days after surgery, blood loss is monitored and the ensuing anaemia is corrected. The wound dressing is changed and checked daily to prevent septic complications and rehabilitation is begun. In cases treated by pinning or screw fixation, full weight bearing isn't allowed until 3 months after surgery, patients treated with DHS are advised towards 6 weeks of partial weight-bearing and full weight-bearing afterwards. Patients with hip prostheses are allowed to fully bear weight the second or third day after surgery, when stable fixation was achieved.

Conclusions

We can conclude that fractures of the hip secondary to transient osteoporosis of the third trimester are rare and that they raise a series of problems, related to their complex management. Extreme caution is advisable when faced with pregnant women complaining of hip pain. They must be thoroughly investigated, in order to sort out possible hip fractures. A simple MRI or even an X-ray can establish the diagnose, without harming the foetus or mother. An early diagnose can help avoid serious complications that can become a threat to the foetus and the patient. ■

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