Bilateral subcapital neck of femur fractures after eclamptic seizures

J. Kause and M. J. Parr*

University of New South Wales, Intensive Care Unit, Liverpool Hospital, Locked Bag 7103, Liverpool BC1871, Australia

*Corresponding author. E-mail: m.parr@unsw.edu.au

A previously healthy female sustained bilateral subcapital femur fractures during an eclamptic seizure. This complication has not been previously described in association with eclampsia.

© The Board of Management and Trustees of the British Journal of Anaesthesia 2004
Clinicians need to be aware of this potential complication and investigate post-seizure hip pain appropriately.

Br J Anaesth 2004; 92: 590–2

Keywords: complications, eclampsia; complications, sub-capital hip fractures

Accepted for publication: November 27, 2003

Subcapital femur neck fractures after ecluspsia

Hip fractures in the third trimester of pregnancy secondary to osteoporosis of pregnancy have been described. These fractures are associated with hip pain and with radiographs showing severe osteopenia.1 2 Hip fractures are uncommon after epileptic seizures but femoral neck and intratrochanteric fractures are described.3 Subcapital fractures in pregnancy are unusual and have not been described in association with eclamptic seizures. The proposed aetiological mechanism of this injury is strong contraction of the hip adductors compared with the hip abductors, causing shearing stress and leading to fracture.

Case history

A previously healthy 36-yr-old lady (gravida 3, para 2) was admitted to hospital with pregnancy induced hypertension for elective lower segment Caesarian section (indication: previous LSCS and multiple gestation). Her prepregnant blood pressure (BP) was 100/60 mm Hg. In the 2 weeks before admission her BP had risen to 140/85 mm Hg. Her previous deliveries were by lower segment Caesarian section (the first was for cephalopelvic disproportion, the second was routine) and both were uneventful. The second pregnancy was complicated by gestational diabetes and her only significant past medical history was uncomplicated rheumatic fever as a child.

Examination on admission revealed a BP of 140/90 mm Hg. She had bilateral lower limb oedema and her reflexes were normal. Investigations revealed normal renal chemistry with a haemoglobin concentration of 11.7 g dl⁻¹ and platelet count 208 × 10⁹ litre⁻¹. Liver function tests revealed alanine transaminase (ALT) 33 U litre ±1, aspartate transaminase (AST) 237 U litre ±1, alkaline phosphatase (ALP) 342 U litre⁻¹, γ-glutaryl transferase 10 U litre⁻¹, bilirubin 8 µmol litre⁻¹, albumin 23 g litre⁻¹, total protein 55 g litre⁻¹ with normal haemoglobin and renal function, and magnesium 2.6 mmol litre⁻¹.

On the day after admission she underwent Caesarian section using a combined spinal–epidural technique [patient choice and worsening pre-eclamptic toxæmia with increasing uric acid (0.6 mmol litre⁻¹)] complicated by a dural tap. Surgery was uneventful and two healthy non-identical twins were delivered. Four hours later she complained of a significant constant frontal headache and wound pain. The epidural was tested and a bolus of bupivacaine 0.5% had good effect. Six hours later her BP was noted to be 230/90 mm Hg. The headache was still present and hyper-reflexia, epigastric tenderness and facial oedema were noted. She was transferred to the obstetric high-dependency unit for treatment of hypertension with i.v. hydralazine. She suffered a self-limiting generalized tonic-clonic seizure lasting 50 s. At this point she was admitted to the intensive care unit where i.v. magnesium (dose 4 g, infusion of 1.5 g h⁻¹) was commenced; hydralazine was continued. Repeat investigations revealed a platelet count of 168 × 10⁹ litre⁻¹, AST 339 U litre⁻¹, ALT 237 U litre⁻¹, ALP 342 U litre⁻¹, γ-glutaryl transferase 10 U litre⁻¹, bilirubin 8 µmol litre⁻¹, albumin 23 g litre⁻¹, total protein 55 g litre⁻¹ with normal haemoglobin and renal function, and magnesium 2.6 mmol litre⁻¹.

A CT scan of her brain was requested, which showed a small right-sided basal ganglia haemorrhage and intraventricular air. On her return from the radiology department she had a further generalized seizure lasting 45 s, which was followed by rapid return of consciousness. She was now noted to have developed horizontal and vertical nystagmus and received an i.v. loading dose of phenytoin, as the magnesium concentration precluded further magnesium.

She remained stable but still complained of a severe headache the following morning (20 h after Caesarean section). A blood patch was performed (10 ml of venous blood), which relieved the headache. Blood pressure was controlled with i.v. infusions of hydralazine and metoprolol. On resolution of her headache she complained of a painful left hip and on examination there was a decreased range of movement in that hip, limited by pain. An X-ray taken that day showed a left subcapital femoral fracture.

The fracture was fixed using a dynamic hip screw under general anaesthesia and postoperative analgesia was provided with morphine. On mobilization, the patient complained of increasing right hip pain and review of previous X-rays showed a right-sided subcapital compression fracture which did not require surgical intervention. The patient was discharged home 6 days later with healthy babies.

Discussion

Hypertension is one of the most common medical complications of pregnancy and affects both maternal and fetal health, sometimes with life-threatening consequences. Hypertensive disorders of pregnancy remain one of the leading causes of maternal deaths worldwide (15–20%).4
Eclamptic seizures causing fractures appear to be very rare. However, any posteclamptic patient who complains of hip pain should be thoroughly assessed, including the use of X-rays, expert radiologist review and orthopaedic assessment. Distracting pains, such as the severe headache experienced by our patient, may lead to a delay in the diagnosis. Subcapital femoral fractures ought to be considered in the absence of more common fractures or other obvious abnormalities. If in doubt, any abnormal hip X-rays should be compared with the normal side to exclude the presence of a fracture. Hip pain as such is not a complication of Caesarean section or vaginal delivery and the cause should be sought.

Transient osteoporosis of the hip is an uncommon condition and has two demographic peaks, one during the third trimester of pregnancy and the other between the fifth and sixth decade of life. This painful regional osteoporosis affects previously healthy women in the third trimester of pregnancy. It is characterized by pain in the affected hip and pronounced osteopenia of the femoral head and neck.\(^5\) Radiographs show pronounced osteopenia of the femoral head and neck with preservation of the joint space. Bone scan and magnetic resonance imaging are sensitive but not specific for diagnosis, and laboratory studies are typically normal.\(^6\) It has a relatively short clinical course (average 6 months) and a predictably benign prognosis. Complete clinical and radiological recovery is the rule. The diagnosis is one of exclusion. The cause of the osteopenia is not known, although various aetiological factors have been implicated.

In summary, aggressive management to minimize the risks of seizures in pre-eclamptics are essential in preventing the complications we have reported here. Clinicians need to be aware of the potential for hip fractures, including bilateral subcapital fractures, during eclamptic seizures.

References
6 Wood ML, Larson CM, Dahners LE. Late presentation of a displaced subcapital fracture of the hip in transient osteoporosis of pregnancy. *J Orthop Trauma* 2003; 17: 582–4