Contrecoup haemorrhage in a patient with left pubic fracture but right obturator artery bleeding

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Contrecoup injury following head trauma is well known. It is caused by the acceleration–deceleration mechanism that can be fully explained by Newton’s first law of motion. We report on a victim of a motor vehicle accident with non-displacement left pubis fracture but haemorrhage from the right obturator artery. Contrecoup haemorrhage should be excluded first in unstable patients without evidence of significant trauma but with a minor pelvic fracture.

Contrecoup haemorrhage is a well-known brain injury caused by the acceleration–deceleration mechanism in head trauma. Although this trauma can be fully explained by Newton’s first law of motion, application of this concept of inertia in injury prediction on pelvic trauma has never been reported in the literature. Here we present the case of a motor vehicle accident victim who suffered from left inferior pubic fracture but with active bleeding from the right obturator artery.

CASE REPORT

A 56-year-old woman was struck by a car and fell from her bicycle onto her buttocks first, then onto her head, without losing consciousness. On arrival she was fully conscious with the following vital signs: respiration 20 breaths/min, pulse rate 76 beats/min, blood pressure 131/82 mm Hg, and temperature 36.6˚C. Physical examination revealed a 5 cm swelling on her head, lower back pain, and left inguinal tenderness. Image studies revealed a fracture of the left inferior pubic ramus (fig 1), but no skull fracture or intracranial haemorrhage. Laboratory results were unremarkable with normal platelet count and coagulation profiles. Her blood pressure dropped unpredictably 2 h after arrival. Repeat examination and trauma ultrasonography were unrevealing. However, pelvic computed tomography (CT) scanning showed an expanding haematoma with contrast extravasations in the right pelvis, and angiography revealed bleeding from the right obturator artery. The bleeding subsided after embolisation therapy. The patient had an uneventful recovery without the need for surgery.

DISCUSSION

Pelvic fractures often occur as a result of high energy blunt trauma, as in motor vehicle collisions and falls from height. However, in the elderly they can also occur from falls from a standing position. Morbidity and mortality rates are substantial, mainly from the complications of fractures and associated injuries, especially haemorrhage. Mortality resulting from pelvic fractures is often underestimated because those patients who die before reaching the hospital are excluded in studies.1

Disruption of the pelvic vessels usually results from fracture of the osseous pelvic ring. Arterial haemorrhage from lacerated branches of the iliac artery is one of the most serious complications, and it remains the leading cause of death from pelvic fracture.2 A high percentage of arterial bleeding has been reported in anteroposterior compression and lateral compression types of fractures with complete or partial instability of the posterior pelvic ring.

Contrast enhanced CT of the pelvis is a non-invasive technique that is highly accurate for determining ongoing pelvic haemorrhage. Extravasation of contrast material is not only an accurate indicator of ongoing arterial haemorrhage, but it also corresponds well with the site of bleeding at angiography. Angiographic embolisation, navigated by the CT scan result, is highly effective in controlling arterial bleeding and can be lifesaving. Repeat angiography should be performed in patients after angiographic embolisation if there is ongoing evidence of haemorrhage, and other potential sources of bleeding have been excluded.

In our case, the fracture of the left inferior pubic ramus was mild and no notable displacement was identified on radiography and subsequently on CT scanning. The patient’s vital signs were stable initially, but later her blood pressure dropped as a result of arterial haemorrhage in the contralateral side. Because there was no bony fracture in her right pelvis, the acceleration–deceleration injury rather than the fracture was felt to be the cause of the artery rupture. This mechanism of trauma is similar to the contrecoup haemorrhage in head injury, where deformation of the skull and the negative pressure produced in the contrecoup region strips the dura mater from the calvarium, which stretches and ruptures the small interposed vessels causing them to bleed.3 4

As the population ages, the incidence of pelvic injury will increase. If the patient becomes unstable, even though the pelvic fracture is not significant, consideration must be given to the potential for haemorrhage resulting from acceleration–deceleration injury. Contrecoup haemorrhage is possible not only following head trauma but also in pelvic trauma.

Figure 1  Pelvic radiograph showing a bony fracture (arrowhead) without notable displacement in the interior ramus of the left pubis.
Transurethral catheter in the distal ureter as a cause for acute abdominal pain

Marc Maegele, Uwe Gruetzner, Dirk Wenzel

A 86-year-old woman was admitted to the emergency department with clinical signs of an acute abdomen. Pain emanated from the left lower abdominal quadrant and bowel sounds were absent. Accompanying symptoms included fever, nausea and vomiting. Laboratory findings indicated leucocytosis, an increased amount of C-reactive protein and a positive urine status. Computed tomography (CT) of the abdomen (fig 1) showed a blocked transurethral bladder catheter in the left distal ureter (a) causing an obstruction in renal outflow with subsequent ureteral dilatation (b) and renal swelling (c). Catheter replacement, renal flushing together with intravenous antimicrobial treatment modified to incoming results from urine cultures improved the patient’s symptoms. Laboratory findings returned to normal and the patient was discharged 3 days later free of symptoms. In the present case, obstruction of renal outflow by a blocked catheter in the distal ureter resulted in pyelonephritis with subsequent paralytic ileus and acute abdomen.
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