K. J. Stevens
R. H. Gregson
R. W. Kerslake

False aneurysm of a lumbar artery following vertebral biopsy

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K. J. Stevens (✉) · R. H. Gregson
R. W. Kerslake
Department of Radiology,
Queen's Medical Centre,
University Hospital,
Nottingham NG7 2UH, UK
Tel. +44-115-924 9924;
fax +44-115-970 9962

Abstract Vertebral body biopsy is regarded as a simple and relatively safe technique, with a low complication rate. We report the case of an 80-year-old man who developed a false aneurysm of a lumbar artery following biopsy of the fourth lumbar vertebra.

Key words False aneurysm · Lumbar artery · Vertebral biopsy

Introduction

A false aneurysm or pseudoaneurysm develops at a site of arterial injury, where the adjacent non-vascular tissues contain the resultant haemorrhage. This occurs after penetrating arterial injury, vascular reconstructive surgery, invasive diagnostic radiologic procedures, inadvertent puncture by drug addicts, blunt trauma, orthopaedic internal fixation and repetitive minor trauma [2, 7]. We describe an unusual case of an 80-year-old man who developed a false aneurysm of one of the lumbar arteries following vertebral body biopsy.

Case report

An 80-year-old man presented with back pain, a purpuric rash on his legs, pyrexia, weight loss, anorexia and a normochromic anaemia. Liver function tests were deranged and both the erythrocyte sedimentation rate and C-reactive protein (CRP) were elevated. A compression fracture of the T12 vertebral body was identified on the chest radiograph. A provisional diagnosis of lymphoma was made at this point.

CT of the abdomen did not show any evidence of retroperitoneal lymphadenopathy. MRI confirmed the collapse of the body of T12, but also demonstrated a loss of signal throughout the thoracic and lumbar vertebrae on T1-weighted images, suggestive of an infiltrative process such as myeloma or lymphoma. A vertebral biopsy from the body of L4 was performed in theatre using a Harlow Wood needle and image intensifier. No complications were

apparent at the time of the procedure, and the histology showed non-specific reactive hyperplasia, with no evidence of malignancy. A diagnosis of systemic vasculitis was proposed and the patient was managed conservatively.

Six months later the patient was admitted for further investigations. An abdominal ultrasound scan demonstrated an 8-cm lamellated mass in the right iliac fossa in which pulsatile flow was revealed on Doppler examination (Fig. 1). A repeat CT scan of the abdomen demonstrated a large mass in the right paravertebral region (Fig. 2). This was thought likely to be a false aneurysm arising from one of the lumbar arteries and was not present on the CT scan performed 6 months previously. Arteriography confirmed a false aneurysm arising from the right fourth lumbar artery and causing displacement of the right kidney (Fig. 3). It was decided that embolisation was the optimal method of treatment, but it was not possible to position the catheter in the right fourth lumbar artery from the femoral artery in a safe position for embolisation of the false aneurysm. As this frail elderly man was also unable to lie prone, it was not possible to embolise the false aneurysm directly through a needle introduced through the right loin. A decision was made not to treat the false aneurysm surgically.

The patient was subsequently treated with a course of steroids and cyclophosphamide, leading to both a subjective improvement by the patient and a fall in CRP.

Discussion

Percutaneous bone biopsy is generally regarded as a safe technique, giving an accurate diagnosis of bone pathology [1, 6]. Diagnostic accuracy is improved when larger cores are obtained, permitting both structural as well as cyto-

Fig. 1 Transabdominal ultrasound of the right iliac fossa showing a lamellated mass with pulsatile flow in Doppler imaging

Fig. 2 Abdominal CT scan demonstrating a large soft tissue density in the right paravertebral region with deep enhancement following intravenous contrast (*arrow*)

Fig. 3 Transfemoral arteriogram. False aneurysm arising from the right fourth lumbar artery (*arrow*)

logical information [4]. The Harlow Wood needle has been specifically designed to provide a large tissue specimen and minimise damage to the surrounding soft tissues. The biopsy trephine has an internal diameter of 3 mm, and is passed through a trephine guide with an external diameter of 5 mm. This needle also has the advantage of a central guidewire for localisation of the biopsy site.

Review of the literature shows a complication rate of about 0.2% following vertebral biopsy [9]. These complications include nerve or spinal cord damage, sinus formation, soft tissue recurrence of tumour, infection, pneumothorax, pneumonia and death [1, 5, 8]. Haemorrhagic complications following vertebral biopsy are rare, and out of a large study of 1061 cases there was only one case of haemorrhage in a patient with generalised plasmacytoma, where a haematoma was produced in the needle tract of the vertebral puncture [6].

Retroperitoneal haematomas have been produced after bone marrow biopsy of the iliac crest. In one reported case a Westermann-Jensen needle is presumed to have lacerated a retroperitoneal vessel after penetrating the posterior iliac crest, resulting in a large retroperitoneal haematoma [3].

Orthopaedic procedures, particularly those involving drills, migration of screws and lumbar disc surgery, are a recognised cause of traumatic false aneurysms. As far as we are aware, there are no cases described in the literature in which a false aneurysm has been produced as a result of vertebral biopsy. We presume that the biopsy needle lacerated the lumbar artery lying alongside the vertebral body resulting in the development of a false aneurysm. This was not recognised on clinical grounds, and was only discovered incidentally on subsequent imaging.

If an arterial laceration is not immediately repaired, the resulting haemorrhage may be contained by the surrounding tissues. The risk of rupture of a false aneurysm is greatest before the surrounding tissues have matured into a definitive sac. Early operation lessens the risk of rupture, thrombosis, pressure effects and other complications. Treatment options include surgical repair, therapeutic embolisation with coils and ultrasound compression. Two attempts were made to embolise the pseudoaneurysm in our patient, but it was not possible to position a catheter in the fourth lumbar artery from the femoral artery due to marked tortuosity of the iliac arteries. The patient was also unable to lie prone, preventing a direct puncture of the pseudoaneurysm from a translumbar approach in order to introduce embolisation coils. A decision was made simply to observe the aneurysm rather than attempt any surgical procedure.

In conclusion we describe a previously unrecognised complication resulting from a vertebral biopsy using a large-diameter biopsy needle.

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