CASE REPORT

Acute Presentation of Bilateral Radial Artery Pseudoaneurysms Following Arterial Cannulation

D. P. Edwards*, M. D. Clarke and P. Barker

Department of General Surgery, Royal Hospital Haslar, Gosport, Hants PO12 2AA, U.K.

Introduction

The use of arterial cannulae for blood pressure monitoring and repeated arterial blood gas sampling is increasing. The placement and maintenance of such cannulae is not without complication. To our knowledge, a case of synchronous bilateral radial artery pseudoaneurysms has not been reported. In our case methicillin-resistant Staphylococcus aureus (MRSA) was a possible causative factor.

Case Report

A 36-year-old male, who had required 21 days’ ventilatory support to manage Legionella pneumonia, was referred for a vascular surgical opinion of bilateral radial arterial puncture is increased in patients as a result of local infection. 2

MRSA is a common isolate in intensive care units and is becoming more prevalent in the U.K. 2 It is associated with prosthetic vascular and vein-graft infection, 3 but, to our knowledge, has not been reported in association with pseudoaneurysm formation. Pseudoaneurysm of the radial artery following cannulation was first reported in 1973. 4 Treatment involves resection of the diseased artery, often followed by arterial ligation without distal ischaemic sequelae. 2 This is due to ulnar arterial supply via the deep palmar arch. However, in 12% of patients the ulnar artery does not communicate with the arch 5 and in these patients vascular reconstruction is necessary. 2 This is achieved by end-to-end anastomosis or an interposition vein-graft (as in our patient).

The complications of radial arterial puncture include thrombosis, haemorrhage and pseudoaneurysm formation. 1 Pseudoaneurysms are caused by a perforation of the arterial wall followed by development of an enlarging haematoma. The haematoma, surrounded by connective tissue, undergoes organisation and central liquefaction to form a sac. A pseudoaneurysm results when this sac remains in continuity with the vessel lumen. The risk of pseudoaneurysm formation following arterial puncture is increased in patients as a result of local infection. 2

MRSA is a common isolate in intensive care units and is becoming more prevalent in the U.K. 2 It is associated with prosthetic vascular and vein-graft infection, 3 but, to our knowledge, has not been reported in association with pseudoaneurysm formation. Pseudoaneurysm of the radial artery following cannulation was first reported in 1973. 4 Treatment involves resection of the diseased artery, often followed by arterial ligation without distal ischaemic sequelae. 2 This is due to ulnar arterial supply via the deep palmar arch. However, in 12% of patients the ulnar artery does not communicate with the arch 5 and in these patients vascular reconstruction is necessary. 2 This is achieved by end-to-end anastomosis or an interposition vein-graft (as in our patient).

* Please address all correspondence to: D. P. Edwards, Department of General Surgery, Royal Hospital Haslar, Gosport, Hants PO12 2AA, U.K.
Prior to cannulation, the arterial supply to the hand should be assessed using Allen’s test, whereby both the radial and ulnar arteries are compressed at the wrist, the hand is blanched by direct pressure or clenching of the fist, and each vessel is released to observe capillary return. If the hand remains blanched for longer than 15 seconds during occlusion of the radial artery, ulnar flow is deemed insufficient and radial artery cannulation should not be attempted.

Vigilance in aseptic technique for arterial puncture and pressure over the vessel following cannula removal should reduce the risks of wound infection, haematoma formation and subsequent development of a pseudoaneurysm; performing Allen’s test prior to cannulation may reduce the need for vascular reconstruction when simple arterial ligation may suffice.

References


Accepted 10 September 1998