Case Report

Pseudoaneurysm of the inferior epigastric artery—a rare complication of Tenckhoff catheter removal

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Introduction

Pseudoaneurysm formation is a well-known complication of surgery, trauma and arterial puncture. Pseudoaneurysm of the inferior epigastric artery is, however, a rarity. Only seven cases have been described, five consequent to the extraction of discharge (retention) sutures [1–5], and two others following paracentesis [6]. Postoperative complications following peritoneal dialysis catheter removal have been reported infrequently, we observed a patient who developed a pseudoaneurysm of the inferior epigastric artery after removal of a Tenckhoff catheter. This complication has not been reported before. We emphasize the value of duplex and colour Doppler sonography in the diagnosis of this complication.

Case

A 52-year-old male developed end-stage renal disease due to membranoproliferative glomerulonephritis. A straight double-cuff Tenckhoff catheter was inserted via a paramedian approach in December 1997, and CAPD commenced. In February 1998, external cuff shaving was performed because of local pressure by the extruding cuff. This was followed a fortnight later by Proteus peritonitis, which was treated successfully. On the 5 November 1998, while on vacation, peritonitis supervened. Initial treatment consisted of intraperitoneal cefazolin and ceftazidime. Forty-eight hours after presentation, with no response to therapy, peritoneal fluid culture grew Pseudomonas aeruginosa. The patient’s therapy was changed to i.v. aztreonam and piperacillin, to both of which the organism was sensitive. After a further 72 h, the peritonitis remained refractory to treatment. The patient adamantly insisted on continuing efforts to salvage the catheter. However, on 13 November 1998, he finally consented to catheter removal. This was performed at night as a semi-emergency procedure by the attending surgical resident. For 12 h following the operative procedure, considerable oozing from the wound was evident, to the point where the dressing pads were soaked with blood and had to be changed repeatedly.

On examination the following morning, a large non-pulsatile mass immediately below and around the suture line was palpable. Sonography demonstrated a fusiform hypoechoic lesion (length 7 cm, diameter 2 cm) within the anterior abdominal wall, consistent with a rectus sheath haematoma (Figure 1). The patient was maintained on heparin-free haemodialysis via a dual-line femoral catheter.

Fig. 1. Transverse ultrasound image of the abdominal wall showing a large fusiform hypoechoic area within the rectus sheath.

Continued oozing from the suture wound with a decrease of serum haemoglobin from an initial 12.5 g/dl to 8.6 g/dl over the ensuing 6 days, prompted a repeat ultrasound examination which was of similar appearance to the first. Superficial sutures were removed and over a 24-h period 200 ml of blood was drained.

Thereafter, the patient’s condition seemed to stabil-
ize to the point where he was discharged on 27 November (14 days following catheter removal). He was readmitted 2 days later with fever and lower abdominal pain. This time, sonography showed an extension of the hypoechoic area (length 6 cm, diameter 6 cm), which assumed a rounded contour. Within this lesion was a central sonolucent focus (1.6 cm in diameter; Figure 2). Duplex colour echodoppler of this focus revealed turbulent flow within it and demonstrated a connection to the inferior epigastric artery (Figure 3), confirming the presence of a pseudoaneurysm. The patient was taken to theatre where the inferior epigastric artery was ligated and the haematoma evacuated. Recovery, henceforth, was uneventful.

Discussion

Whereas the literature abounds with complications associated with peritoneal dialysis catheters in situ, adverse events following the removal of these catheters go relatively unreported. The case presented here developed a pseudoaneurysm of the inferior epigastric artery consequent to catheter removal because of refractory Pseudomonas peritonitis. The inferior epigastric artery lies within the rectus sheath, anterior to its posterior wall. As such, it is susceptible to injury during abdominal wall procedures. Despite this, pseudoaneurysm of this artery occurs very infrequently. A literature review yielded only seven previously reported cases. Five of these were associated with the removal of retention sutures [1–5] and two developed after paracentesis [6]. Clinically, inferior epigastric pseudoaneurysms are difficult to diagnose. They present as diffuse, tender masses which are, however, non-pulsatile. An audible bruit is the exception rather than the rule [6]. Therefore, they pose a problem in differentiating them from a simple haematoma. In this context, duplex and colour Doppler ultrasonography are the imaging procedures of choice. Haematomas exhibit variable echogenicity and internal complexity but never demonstrate internal blood flow. In contrast, a pseudoaneurysm being a contained extravasation of blood, which maintains a patent vascular connection with the injured vessel, exhibits a characteristic extraluminal pattern of blood flow. This three-phase pattern consists of an inflow into the aneurysm during systole, mixing within the aneurysm during early diastole and outflow during late diastole [7,8].

Our patient’s series of ultrasound examinations affords further proof of the sensitivity of duplex sonography in the diagnosis of false aneurysms. His initial ultrasound was interpreted as representative of a haematoma. Only on appearance of the sonolucent focus and the demonstration by duplex ultrasound of extraluminal blood flow within it, was the correct diagnosis established. Schwartz et al. [7], in a series of 27 patients with pulsatile groin masses examined by colour Doppler ultrasound, reported a 100% sensitivity and specificity in differentiating false aneurysm from non-communicating periarterial haematomas with transmitted pulsation.

To our knowledge, our case description is the first to document inferior epigastric artery pseudoaneurysm as a complication of Tenckhoff catheter removal. The evaluation of an abdominal mass, in this setting, should include colour Doppler sonography.

Fig. 2. Same image as depicted in Figure 1. The hypoechoic area has expanded and has now a rounded contour. A central sonolucent region is seen.

Fig. 3. Colour Doppler imaging demonstrating turbulent blood flow in the central sonolucent area (asterisk) and its connection to the inferior epigastric artery (arrowhead).

References


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