

CASE REPORT

q5 The Case of the Neighbour's Cat Causing a Symptomatic (Mycotic) Aortic Aneurysm and an Infected Endograft

q1 q4 A. Shalan*, N. Wilson, J. Poels, A. Ikponmwoza, S. Cavanagh

York and North Yorkshire Vascular Unit, York Teaching Hospital NHS Foundation Trust, York, UK

Introduction: Aortic endograft infection is a rare but serious complication following endovascular aneurysm repair. An unusual presentation associated with an uncommon organism is reported.

Case report: A 69 year old female was prescribed but failed to complete a full course of co-amoxiclav following a forearm cat bite. Nine days later she was admitted with pyrexia, left flank pain, and haematuria. Empiric treatment for a urinary tract infection was started. *Pasteurella multocida* was isolated from blood culture performed during this attendance. Imaging demonstrated hydronephrosis and a 5.5 cm aortic aneurysm with features of impending leak. Emergency endovascular repair was performed without immediate complication. Four weeks following stent graft insertion, the patient was readmitted with loss of consciousness. Imaging demonstrated an infected graft with an associated psoas abscess. The endograft was explanted and reconstruction performed with the femoral vein. Only at this point was the history of a cat bite and positive blood cultures elicited and recognised as relevant.

Conclusion: Detailed history taking can expose unusual sources of infection. Ideally, an infected aortic endograft should be explanted and the septic focus eradicated prior to autogenous aortic reconstruction.

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INTRODUCTION

Aortic endograft infection following endovascular aortic aneurysm repair (EVAR) is a rare but serious complication. The estimated incidence of 0.25–1%^{1,2} is limited by the paucity of large multicentre studies, which leads to difficulty in estimating the incidence of graft infection. The gravity of this major life threatening complication has been described with a morbidity rate of 35%, an all-cause 5 year mortality rate of 51%, and a 30 day peri-operative mortality of 11% reported in a multicentre retrospective study.³ Menna et al. reported that infection was responsible for 46% of late open conversions after EVAR.⁴

The most common organisms implicated in graft infection are Gram positive (*Streptococcus* species being the most prevalent) although Gram negative organisms, such as *Escherichia coli* and *Bacteroides* species, have been isolated.³

Pasteurella multocida is a commensal Gram negative bacillus inhabiting the nasopharyngeal and gastrointestinal

tracts of domestic pet species.⁵ It is a rare cause of aortic stent graft infection, with only two cases in the literature implicating *P. multocida*.^{5,6} There are case reports of patients who have developed aortitis and mycotic aneurysms as a result of *P. multocida* infection.⁷ Here an interesting clinical presentation of an infected EVAR graft is reported. The endovascular intervention was performed to treat an acutely symptomatic abdominal aortic aneurysm (AAA) that was retrospectively diagnosed as a mycotic AAA resulting from *P. multocida* infection from a cat bite.

CASE REPORT

A 69 year old female presented to the accident and emergency (A&E) department following a forearm cat bite. A tetanus toxoid booster was administered and given that she was systemically well she was discharged with a 7 day course of co-amoxiclav, which she failed to complete. Wound review follow-up at 5 days was arranged with the patient's practice nurse.

Nine days later she was admitted to hospital with haematuria, abdominal pain, and left flank pain. She was pyrexial at 38.3°C with elevated inflammatory markers: the white cell count (WCC) was $13.9 \times 10^9/L$ and C-reactive protein (CRP) was 270 mg/L, but otherwise she was stable. The patient was diagnosed with a presumed urinary tract infection (UTI), admitted under the urology team and

* Corresponding author. York and North Yorkshire Vascular Unit, York Teaching Hospital NHS Foundation Trust, Wigginton Road, York YO31 8HE, UK.

E-mail address: Ahmed.shalan@york.nhs.uk (A. Shalan).

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received 2 days of intravenous gentamicin followed by a 10 day course of nitrofurantoin. Anaerobic and aerobic blood cultures taken on admission subsequently isolated *P. multocida*.

Given the suspicion of a complicated UTI, a urinary tract ultrasound scan (USS) was performed which revealed an incidental 4.8 cm AAA. A computed tomography (CT) scan performed the following day demonstrated a mild left hydronephrosis and a 5.5 cm infrarenal AAA that had “worrying features” of a recent small leak (Fig. 1). An urgent referral was made to the vascular team, and on finding a tender aneurysm on abdominal examination, she underwent an emergency EVAR for her symptomatic non-ruptured infrarenal AAA. The urology, vascular, and anaesthetic teams were at this point unaware of the positive blood cultures and history of a cat bite. Consequently, the patient was treated as a standard symptomatic 5.5 cm AAA.

A Cook Zenith Flex device was successfully deployed with a satisfactory completion angiogram.

The patient's procedure and recovery were uncomplicated; however, an elevated WCC of $18.4 \times 10^9/L$ was noted. She remained afebrile and other than the previously presumed UTI for which she was treated with nitrofurantoin, no other source of infection was identified. Pre-discharge the patient had a satisfactory CT. She was discharged 9 days post-operatively once the pyrexia resolved.

Two weeks following discharge she complained of general lethargy and left flank pain. Her WCC was raised at $17 \times 10^9/L$. Given the stable appearances on CT and history of UTI, she was referred to the urology team.

A further 2 weeks later she was readmitted with a sudden loss of consciousness, without preceding dizziness or pain. Her laboratory tests demonstrated leucocytosis $20.4 \times 10^9/L$ and raised CRP of 180 mg/L. CT imaging on this admission confirmed graft infection, enlargement, and rupture of the aneurysm sac with a multiloculated abscess extending into the left psoas muscle (Fig. 2). A further retrospective review of the first presentation CT by a vascular radiologist identified a lymph node between the inferior vena cava and the aorta, a ring of inflammatory tissue, swollen adventitia, and haziness posterior to the AAA and left common iliac artery suggestive, in retrospect, of a mycotic picture (Fig. 1). The patient was



Figure 1. Lymph node between inferior vena cava and aorta, a ring of inflammatory tissue, haziness posterior to the AAA.



Figure 2. Large abscess in left psoas and left hydronephrosis.

commenced on piperacillin–tazobactam empirically and received 4 days of treatment before surgical intervention. Autogenous and prosthetic graft reconstructive options were discussed in full with the patient. Given the lack of pre-existing comorbidities and the patient's desire to avoid prolonged courses of antibiotics, autogenous reconstruction was undertaken. She underwent explantation of the graft, debridement of her aorta, and reconstruction using a femoral vein graft. The operative techniques have been described elsewhere.⁸ Initially the superficial femoral vein was harvested from just distal to the profunda femoral vein to the knee and used to construct a bifurcated graft. Vascular clamps were positioned at the hiatus and at both iliac bifurcations. The aortic sac was opened and the endograft removed. An infrarenal clamp was then applied. The aorta was radically debrided and extensive washouts were performed followed by reconstruction using the pre-formed vein graft which was covered with omentum.

Blood cultures were taken before commencement of antibiotics. However, all blood cultures were negative and it is likely that any growth may have been suppressed by incomplete courses of antibiotics received by the patient over the preceding weeks. Additionally, tissue culture from the debrided aneurysm wall, explanted graft, and pus from the field all proved to be negative.

One week after reconstruction, the patient developed left flank pain. CT revealed hydronephrosis that required nephrostomy insertion. Two days later a nephrostogram showed no evidence of mechanical obstruction (Fig. 3). The nephrostomy remained for 16 days in total and was removed after being clamped for 2 days, normal drainage had resumed, and the obstruction had resolved.

At this point it was elicited that the patient had been bitten by a cat a few weeks earlier. Based on the original *P. multocida* positive blood culture, the microbiology team recommended high dose benzyl penicillin. Inflammatory

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