

LESSON OF THE MONTH

The Consequences of an Abdominal Aortic Aneurysm Infected with Methicillin-resistant *Staphylococcus aureus* (MRSA)

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Introduction

Infection of the material lining an atherosclerotic abdominal aortic aneurysm (AAA) is generally a consequence of systemic bacteraemia or septicaemia. Culture of AAA contents is frequently positive, however, the infecting organisms are generally of low virulence.¹ Methicillin-resistant strains of *Staphylococcus aureus* (MRSA) were first described in the U.K. in 1961,² and are now a major cause of nosocomial infection. We report the consequences of an infra renal AAA infected with MRSA.

Case Report

A 65-year old man presented with a 3-week history of acute onset, constant low back pain and a 4-day history lethargy, reduced appetite and night sweats. Relevant past history included chronic renal failure requiring haemodialysis for the preceding 6 months, via a left subclavian catheter. He was known to have a small AAA (AP diameter 3.5 cm on ultrasound 2 months earlier) and previously had undergone bilateral iliac angioplasties for claudication. On examination, he was afebrile and haemodynamically stable with a tender right-sided abdominal mass and reduced femoral pulses. Throat, nasal, axillary and groin swabs, central and peripheral blood cultures

were all positive for MRSA thus the patient was commenced on teicoplanin. An ultrasound demonstrated shrunken kidneys and a 6.7 cm diameter AAA. A CT scan demonstrated an infra renal AAA with a contained leak anterior to the right psoas muscle and a retroduodenal "collection" (Figure 1). At laparotomy, the aneurysm was found to communicate with the contained leak and the retroduodenal mass (a large, pus-filled cavity which subsequently grew MRSA). The aortic stump was over sewn (2 layers of 0/0 prolene) and covered with sac, peritoneum and omentum. Following laparotomy closure, a complete change of instruments and gowns, the patient was re-draped and a right axillo-bifemoral rifampicin soaked GelsolTM (Vascutek) graft was inserted. The left subclavian dialysis catheter was removed.

The patient was discharged home on the 14th post operative day, dialysed via a left internal jugular catheter inserted on the second postoperative day and receiving intravenous vancomycin titrated according to plasma levels.

Three weeks following discharge the patient presented with collapse, haematemesis and fresh PR bleeding. A CT suggested a fistula between the jejunum and the aortic stump, which was confirmed at laparotomy, where the fistula was taken down, the aortic defect repaired with 3/0 prolene and the jejunum repaired with 2 layers of 3/0 vicryl and an omental patch. The distal suture line was intact. The aneurysm cavity was packed with a haemostatic Gentamicin impregnated pad (Collatemp G) and closed. Eight hours later, the patient suddenly became profoundly hypotensive, tachycardic and distended. He developed

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Fig. 1. Aortic aneurysm with contained leak (superior arrow) and associated retroduodenal collection (inferior arrow).

electromechanical dissociation unresponsive to resuscitation and died. A post-mortem examination was not performed.

Discussion

In 1998 over 10 000 cases of *Staphylococcus aureus* bacteraemia were reported in the U.K., of which over 30% were due to methicillin resistant organisms.³ Aortic MRSA infections are usually associated with implanted prosthetic grafts. Such cases generally require total graft excision and lower limb revascularisation.

Our decision to use an extra anatomical (axillo-bi-femoral) revascularisation in this case is supported in the literature. However, aortic stump blow out due to on going infection has been highlighted as a potential devastating complication.⁴ As this patient had chronic renal failure necessitating haemodialysis, oversewing the aorta proximal to the renal arteries at the original operation may have prevented the subsequent development of an aortoenteric fistula.

The significance of positive bacterial cultures from AAA contents is contentious. The incidence of positive cultures varies from 6.6–22.6%, with *Staphylococcus aureus*, accounting for only 10–20% of cases.^{1,5} This is the first reported case of pre-existing AAA becoming infected with MRSA, with devastating consequences despite aggressive surgery and antibiotic therapy. We recommend that patients with known AAA who are to undergo invasive investigation or treatment should be screened for MRSA. If positive, such patients should receive appropriate antibiotic prophylaxis and may merit preemptive eradication therapy.

References

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