

Case Report

Staphylococcus Lugdunensis Vascular Aortic Graft infection: A report of first case.

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Abstract:

Staphylococcus lugdunensis has been reported to cause a wide variety of serious infections to include infective endocarditis, peritonitis and osteomyelitis.

This report describes our patient who developed aorto bifemoral graft infection with Staphylococcus lugdunensis not previously described in the literature.

Case Report

A 75 year old lady who originally underwent an aorto bifemoral graft for occlusive disease six years ago in another hospital developed a pseudoaneurysm of the left limb of her graft. This was excised and an interposition left femoral PTFE (Polytetrafluoroethylene) graft was inserted in the same hospital and the patient was subsequently discharged with an uneventful recovery.

Five weeks later, the patient presented through A&E department of this hospital with acute confusion and associated blood stained purulent discharge from left groin wound.

On clinical examination the patient was confused with no evidence of haemodynamic compromise. Examination of the left groin wound revealed a sinus discharging blood stained purulent substance with associated localised erythema. Further assessment revealed no neurovascular deficit of the ipsilateral limb or systemic features of sepsis.

Her leucocyte count was 9700 mm³ with a CRP of 34mg/L. All others blood results were unremarkable. An urgent CT pelvis arranged showed evidence of inflammatory changes localised to the left groin graft with likely graft incorporation and occlusion.

Consequently, IV Metronidazole and Cefotaxime were initiated and the patient underwent emergency exploration of her left groin wound. The intraoperative findings concluded a large infected haematoma and the patient subsequently underwent excision of the left

transfixation of the proximal stump, betadine washout and insertion of gentamicin/collagen implant. The skin was loosely closed with nylon and corrugated drain inserted.

The excised graft together with tissue specimens were sent for culture and sensitivity testing. The results of which confirmed *Staphylococcus lugdunensis* using VITEK 2 system (bioMerieux, Inc, Hazelwood, Mo.) sensitive to Flucloxacillin and Rifampicin. In addition to this blood cultures taken on admission were reported as positive for coagulase negative staphylococcus.

The patient was commenced on appropriate IV antibiotic therapy and made a good postoperative recovery. She was subsequently discharged from hospital 13 day after admission and was without any problem at four months follow up.

Discussion

Originally isolated in Lyon, France in 1988 and described by Freney et al¹ *Staphylococcus Lugdunensis* is a coagulase negative staphylococcus associated with aggressive disease. Prosthetic graft infections are uncommon complications of vascular procedures (1.3%–6% of cases)^{2,3} but are difficult to treat, and associated with significant morbidity and mortality^{3,4}.

Pathogens causing vascular graft infection are usually site-specific. Whilst *Staphylococcus aureus* is implicated in thoracic aortic and carotid operations, *Staphylococcus aureus*, *Saphylococcus epidermidis* and gram negative bacteria contribute equally in aortofemoral surgeries⁵.

Because of its high sensitivity, specificity and availability, CT should be the first investigation ordered in cases of suspected aortic graft infection⁶. In the early postoperative period, signs of graft infection can be difficult to differentiate from normal postoperative changes and adjunctive tests may be necessary. Perigraft air is rare beyond 1 week after surgery but is not pathognomonic of graft infection until 4–7 weeks after surgery^{7,8}. Similarly, perigraft fluid that persists beyond 3 months should be considered highly suspicious for infection⁷.

Conventional management options of infected vascular grafts include excision of graft, debridement and washout and creation of an extra anatomical bypass through non infected

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tissue. In our case the patients graft infection was confirmed by CT scanning which bore the hallmark of graft infection. Our patient recovered after excision of the infected limb of the graft and was not considered for extra anatomical bypass as there was no vascular compromise despite the occluded limb of the graft at presentation evident on CT scan as well.

Commonly highlighted pathogens in vascular graft infections include *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Pseudomonas aeruginosa* and *E.coli*.⁹, however, to date no report of *Staphylococcus lugdunensis* aortic graft infection has being identified. A thorough literature search only revealed a single case of femoropopliteal Gore-Tex graft infection by *Staphylococcus lugdunensis*¹⁰.

This coagulase-negative staphylococcus has capacity to cause serious infections in human which include native valve endocarditis, peritonitis, osteomyelitis and sepsis^{11,12}, and also following coronary artery and aortic coarctation stenting, soft tissue infection, cardiac device, central line, dialysis catheter and joint prosthesis infections^{10,13}.

The organism is considered to be a part of the normal skin flora, primarily of the lower abdomen and extremities¹⁴. *Staphylococcus lugdunensis* generally is susceptible to anti-staphylococcal antibiotics¹⁵, but increasing penicillin resistance has been reported^{12, 13}. Early studies reported penicillin resistance rates of <4%⁹, while more recent studies report penicillin resistance rates between 12 and 15%^{16, 9}. In our patient the clinical isolate of *Staphylococcus lugdunensis* was sensitive to flucloxacillin and rifampicin.

This case report highlights the importance of simple screening strategies to differentiate *S. lugdunensis* from other coagulase-negative staphylococci. This will improve the recognition of clinical disease in postoperative vascular patients with a view of introducing appropriate prophylactic and therapeutic antimicrobial therapy and also the surveillance of antibiotic resistance in *S. lugdunensis*.

It is evident that all the infections are caused by skin flora and a breach in aseptic technique is the reason for these infections. We believe preoperative shower with chlorhexidine, operative field preparation with 2% chlorhexidine in 70% alcohol and iodine impregnated adhesive barrier draping whenever possible is a good start.

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