

Large Right Atrial Vegetation in a Patient with Tunnelled Dialysis Catheter-Related Staphylococcal Sepsis Remove the catheter if not in use

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تعفن بكتيري ضخم في الأذنين الأيمن لمريض غسيل كلي بالقسطرة تعفن
الدم بالاستافيلوكوكاس متعلق بالقسطرة
يجب إزالة أنبوب القسطرة عند عدم استعماله

براشانث باندرانجا و محمد المخيني

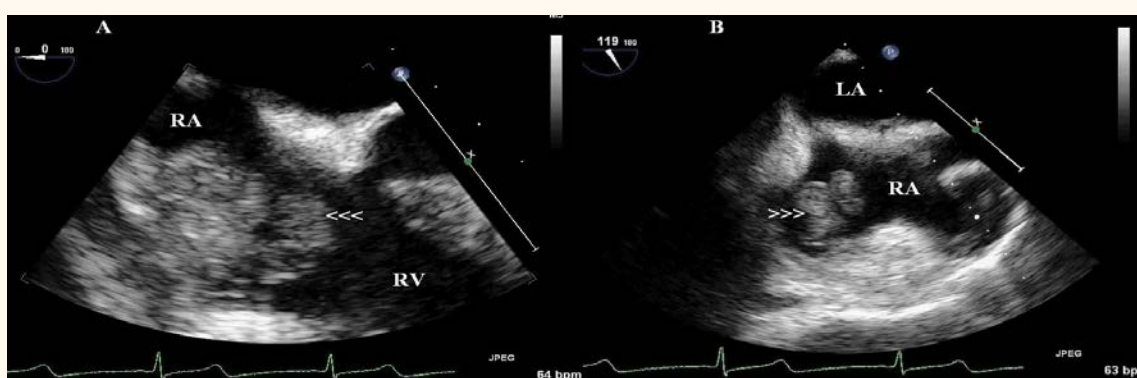


Figure 1 A & B: (A) Transoesophageal echocardiogram demonstrating the presence of large vegetation attached to the right atrial wall in a patient with a tunnelled dialysis catheter-related staphylococcal sepsis (arrowheads); (B) Multi-lobulations typical of staphylococcal bacteremia (arrowheads).

RA = right atrium; LA = left atrium; RV = right ventricle.

A 57-YEAR-OLD WOMAN WHO WAS diabetic and hypertensive, with a history of end-stage renal disease and on regular haemodialysis was referred from a regional hospital with fever and leucocytosis. She was receiving dialysis through an arteriovenous fistula (AVF), initially created 8 months prior to the present admission. However, after 3 months, the patient developed recurrent haematoma and stenosis of the fistula, necessitating an angioplasty. At that time a tunnelled dialysis catheter (TDC) (QUINTON™ PERMCATH™ Dual Lumen Catheter, Covidien, Mansfield, Massachusetts, USA) was inserted in the

right internal jugular vein. Dialysis was continued uneventfully using the TDC for approximately one month. For the following 3-month period the patient returned to using the AVF. However, the TDC was left *in situ*. Upon admission, 3 blood cultures drawn from the TDC and one from the peripheral blood were confirmed to be positive for methicillin-sensitive *Staphylococcus aureus*. A transthoracic echocardiogram showed multiple masses in the right atrium suggestive of vegetation. The TDC was removed as the tip of the catheter grew *S. aureus*. The patient was treated with flucloxacillin and vancomycin, with a trough vancomycin level

of 18 µg/mL (target 15–20). The transoesophageal echocardiogram showed a large lobulated mobile mass in the right atrium, attached to the free wall just near the inferior *vena cava*. It measured 35 x 15 mm prolapsing into the tricuspid valve but with no significant obstruction [Figure 1]. There were no vegetations on the valves. High-risk open heart surgery was offered to the patient but was refused. The patient subsequently went into a refractory sepsis and did not survive.

The occurrence of a catheter-related bloodstream infection (CRBI) in patients on haemodialysis has been found to be independently associated with increased mortality.¹ A report from the US Renal Data System (USRDS) database states that infection is the second most common cause of mortality in end-stage renal disease (ESRD), the first being cardiovascular events.² A TDC-related infection can occur either at the exit site, within the tunnel and/or in the bloodstream (CRBI). Cases of CRBI are reported to have a mortality rate of 12–25%.³ The Centers for Disease Control and Prevention (CDC) in the USA recommend that the primary prevention strategy is the avoidance of central lines in favor of AVFs, for instance, as recommended in the Fistula First Breakthrough Initiative.³ Additionally, when catheters are used, the recommended interventions to improve central-line maintenance can reduce CRBI in patients undergoing haemodialysis.³ Furthermore, the CDC stress the need for the prompt removal of unused or unneeded central lines.³ TDCs have a reported infection rate of 1.6–5.5 cases every 1,000 days.⁴ The Vascular Access Work Group Clinical Practice Guidelines for vascular access recommend important central-line maintenance measures: 1) staff manipulating catheters should wear masks and clean or sterile disposable gloves; 2) the need for meticulous skin preparation during the insertion and application of exit site cleaning solutions; 3) the application of non-occlusive dressings; 4) the application of topical antibiotic ointment at catheter exit sites; 5) the use of prophylactic antimicrobial locking solutions; 6) catheters should be coated with

antimicrobial agents or heparin, and 7) the training of nurses and patient in the proper maintenance of central-lines.⁴

Catheter exit-site infections should be treated with topical and oral antibiotics without the need for catheter replacement. However, CRBI requires the administration of the appropriate systemic antibiotics (for a minimum of 3 weeks). The catheter should also either be removed with a delayed replacement (particularly for unstable patients, or those with a persistent fever lasting >48 hours), or the catheter should be exchanged over the wire, or it should be salvaged with antibiotic locking solutions, depending on the clinical situation. In the case of tunnel-tract infections, the appropriate response is the removal of the catheter.

This case indicates that if a TDC is used in patients with end-stage renal disease, the catheter needs to be removed as soon as medically possible. In addition, national guidelines as initiated by the CDC³ or the Vascular Access Work Group⁴ need to be developed and employed in Oman.

References

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