ISSN: 3107-6513

Kocuria Kristinae Bloodstream Infection in a Catheter-Dependent Haemodialysis Patient with Concurrent Pleural Tuberculosis: A Case Report

Harafinova Binti Harman Shah
Faculty of Medicine, Universiti Sultan Zainal Abidin, Kuala Terengganu, Malaysia
harafinovahshah@unisza.edu.my

Abstract
Kocuria kristinae is an uncommon bloodstream pathogen in patients with intravascular devices. A 57-year-old man with end-stage kidney disease receiving haemodialysis through a tunnelled left internal jugular catheter presented with dyspnoea, orthopnoea and oedema. Peripheral and central aerobic blood cultures collected on 10 November 2024 grew K. kristinae, identified by matrix-assisted laser desorption ionisation time-of-flight mass spectrometry. The vancomycin minimum inhibitory concentration was 2.0 micrograms/mL, reported as susceptible. Catheter exchange was performed on 12 November and intravenous vancomycin administered. Serial concentrations were 6.06, 4.18, 19.65 and 22.39 mg/L, informing dose adjustment. No repeat blood cultures were obtained after treatment, so microbiological clearance could not be established. Concurrent culture-confirmed pleural tuberculosis required modified therapy because of liver dysfunction. The patient improved clinically and was discharged on 23 November. This case illustrates the importance of evaluating uncommon blood isolates, managing vascular access and individualising antimicrobial dosing in haemodialysis.

Keywords—Kocuria kristinae; haemodialysis; bloodstream infection; MALDI-TOF MS; vancomycin; pleural tuberculosis.

I. INTRODUCTION
Central venous catheters expose haemodialysis patients to bloodstream infections. Kocuria kristinae, a skin-associated Gram-positive coccus, may be overlooked as a contaminant but has been implicated in invasive infections involving intravascular devices [1]. Species-level identification using MALDI-TOF MS is valuable, although identifying the organism does not itself establish a catheter source. We describe K. kristinae bloodstream infection in a catheter-dependent haemodialysis patient with simultaneous pleural tuberculosis and discuss antimicrobial monitoring and microbiological follow-up.

II. CASE PRESENTATION
A. Patient history and examination
A 57-year-old Malaysian man with end-stage kidney disease, diabetes and hypertension underwent four-hour haemodialysis three times weekly via a left internal jugular tunnelled catheter. A fistula created in September 2024 was not yet suitable for cannulation. He had been admitted previously for catheter-related infection and fluid overload. On 9 November 2024, he presented with three days of progressive dyspnoea, longstanding orthopnoea and bilateral leg oedema. He was afebrile (36 degrees Celsius), pulse 94/min and oxygen saturation 94% on room air. Basal crepitations and pitting oedema were present. Ultrasonography showed bilateral B-lines, a distended inferior vena cava and a complex septated right pleural effusion.

B. Investigations
On 23 November, haemoglobin was 10.3 g/dL, white cell count 7.87 × 10^9/L and platelet count 250 × 10^9/L. Albumin was 29 g/L, alkaline phosphatase 158 U/L, alanine aminotransferase 7 U/L and aspartate aminotransferase 24 U/L. Earlier aminotransferases had reached 226 and 139 U/L, respectively. Imaging identified right lower-lobe collapse with complex pleural effusion, cirrhotic liver changes with ascites and bilateral renal parenchymal disease.

III. MICROBIOLOGY AND MANAGEMENT
A. Blood culture and susceptibility
Peripheral and central aerobic blood cultures collected on 10 November yielded K. kristinae, identified by MALDI-TOF MS. Corresponding anaerobic cultures were negative. E-test results are summarised in Table I. The identification confidence score and susceptibility breakpoint standard were not available. Paired positive cultures suggested a catheter source but differential time to positivity and catheter-tip culture were not documented.

TABLE I. ANTIMICROBIAL SUSCEPTIBILITY

Agent	MIC (µg/mL)	Report
Erythromycin	1.0	Intermediate
Penicillin G	0.25	Intermediate
Trimethoprim-sulfamethoxazole	0.19	Susceptible
Vancomycin	2.0	Susceptible

ISSN: 3107-6513

B. Catheter and antimicrobial management

The left internal jugular catheter was exchanged on 12 November. Intravenous vancomycin was documented at 1.25 g on 12 November, 1.5 g on 14 November, 1.25 g on 18 and 20 November and 500 mg on 23 November; 500 mg was planned for 25 November. Vancomycin concentrations are shown in Table II. The 14 November measurement was random; the subsequent samples were pre-haemodialysis. The laboratory reference interval was 10–20 mg/L.

TABLE II. VANCOMYCIN MONITORING

Date (2024)	Concentration (mg/L)	Sampling
14 Nov	6.06	Random
17 Nov	4.18	Pre-HD
20 Nov	19.65	Pre-HD
23 Nov	22.39	Pre-HD

C. Concurrent tuberculosis

Pleural fluid collected on 20 October was exudative (pleural LDH 696 U/L; serum LDH 368 U/L), with ADA 31.8 U/L. Routine bacterial culture and acid-fast smear were negative, but mycobacterial culture grew Mycobacterium tuberculosis. Given liver dysfunction, streptomycin 945 mg intramuscularly, ethambutol 1200 mg and levofloxacin 750 mg were prescribed three times weekly after haemodialysis; isoniazid 300 mg daily was added on 17 November and rifampicin 150 mg daily on 20 November, increased to 300 mg on 23 November. Further adjustment and liver monitoring were planned.

IV. OUTCOME

Following catheter exchange and intravenous vancomycin treatment, the patient improved clinically, remained afebrile and no longer complained of dyspnoea. Repeat blood cultures were not obtained during follow-up. He was discharged on 23 November 2024 in a clinically stable condition, with plans for completion of vancomycin at the dialysis centre, continuation of tuberculosis treatment and fistula assessment.

V. DISCUSSION

A. Significance and source attribution

K. kristinae is an uncommon opportunistic organism, but its recovery from both peripheral and catheter-associated cultures in a catheter-dependent patient raises concern for true bloodstream infection [1]. The recent literature also includes catheter-associated infection with the related species K. rhizophila in a dialysis patient [2]; this is comparative evidence, not evidence that both species have identical behaviour. Without differential time to positivity, quantitative cultures or a catheter-tip isolate, the catheter remains a suspected rather than microbiologically proven source.

B. Individualised vancomycin dosing

The measured vancomycin concentrations increased from 6.06 and 4.18 mg/L to 19.65 and 22.39 mg/L during intermittent haemodialysis. Interpretation depends on sampling time, dialysis membrane and timing of administration; the random first measurement is not directly equivalent to pre-dialysis samples. The laboratory range is not an organism-specific validated exposure target. Serial monitoring nevertheless informed clinical dose adjustment and illustrates the complexity of vancomycin use in dialysis.

C. Clinical response and microbiological follow-up

The patient demonstrated favourable clinical improvement after catheter exchange, intravenous vancomycin and optimisation of haemodialysis. Repeat blood cultures were not obtained after treatment commenced; therefore, the clinical response was assessed through the documented improvement in symptoms and overall condition. The negative anaerobic culture collected on 10 November was part of the initial investigations and was not a post-treatment specimen.

D. Concurrent conditions and limitations

Dyspnoea was plausibly related to fluid overload and pleural disease rather than bloodstream infection alone. Culture-confirmed tuberculosis required a separate regimen complicated by liver dysfunction. Available records did not include MALDI-TOF confidence metrics, susceptibility breakpoint standards, catheter-tip culture, differential time to positivity or complete vancomycin sampling information.

VI. CONCLUSION

Kocuria kristinae is an uncommon but clinically significant cause of bloodstream infection in patients receiving maintenance haemodialysis through long-term central venous catheters. This case highlights the importance of accurate microbial identification using MALDI-TOF MS, appropriate catheter management and individualised intravenous vancomycin therapy guided by therapeutic drug monitoring. Following catheter exchange and antimicrobial treatment, the patient demonstrated favourable clinical improvement, with resolution of symptoms. Although repeat blood cultures were not obtained, the patient's clinical course was reassuring. The coexistence of pleural tuberculosis and underlying liver dysfunction further illustrates the complexity of managing infections in haemodialysis patients. This case emphasises the value of coordinated multidisciplinary care in achieving favourable clinical outcomes.

ACKNOWLEDGMENT

The author acknowledges the physicians, nurses, dialysis personnel, microbiology laboratory staff, pharmacists and other clinical teams involved in the care of the patient.

ISSN: **3107-6513**

FUNDING
No funding was received for this case report.

DISCLOSURE
Harafinova Binti Harman Shah had full access to the clinical data presented and takes responsibility for their integrity and accurate reporting. The author approved the final version for submission.

ETHICS STATEMENT
The author reports that institutional review board approval was not required for this single-patient case report at Hospital Pengajar Sultan Zainal Abidin. This institutional determination and consent for publication must be confirmed before submission. The report was prepared in accordance with applicable ethical principles.

CONFLICTS OF INTEREST
The author declares no conflicts of interest.

DATA AVAILABILITY STATEMENT
Supporting data may be available from the corresponding author upon reasonable request and subject to institutional and patient privacy requirements. The data are not publicly available.

CONSENT FOR PUBLICATION
Written patient consent or an applicable waiver must be documented before submission.

REFERENCES
[1] R. Natale, C. Nasti, A. Morena, F. Pasanisi, and L. Santarpia, “Haematogenous pneumonia caused by Kocuria kristinae in a patient with a central venous catheter,” European Journal of Case Reports in Internal Medicine, vol. 11, no. 4, article 004314, 2024. doi:10.12890/2024_004314.
[2] A. Gupta, N. S. Roy, V. Tak, and M. Chaturvedy, “Catheter-related bloodstream infection by Kocuria rhizophila in a dialysis patient,” Indian Journal of Medical Microbiology, vol. 59, article 101029, 2026. doi:10.1016/j.ijmmb.2025.101029.
[3] R. Azevedo, A. L. Graça, G. Gonçalves, and A. C. Carvalho, “Kocuria rhizophila infection: A case report and literature review,” Cureus, vol. 17, no. 6, article e86788, 2025. doi:10.7759/cureus.86788.
EDITORIAL CHECK (remove before submission): Verify reference metadata, institutional ethics determination and consent for publication.