EJCRIM
European Journal
of Case Reports
in Internal Medicine

HAEMATOGENOUS PNEUMONIA CAUSED BY *KOCURIA KRISTINAE* IN A PATIENT WITH A CENTRAL VENOUS CATHETER

Raffaele Natale, Clelia Nasti, Annadora Morena, Fabrizio Pasanisi, Lidia Santarpia

Internal Medicine and Clinical Nutrition Unit, Department of Clinical Medicine and Surgery, Federico II University Hospital, Naples, Italy

Corresponding author: Raffaele Natale **e-mail:** raffaelenatale1993@gmail.com

Received: 19/01/2024 **Accepted:** 02/02/2024 **Published:** 11/03/2024

Conflicts of Interests: The Authors declare that there are no competing interests.
Patient Consent: The informed written consent was obtained from the patient for publishing her clinical history.

How to cite this article: Natale R, Nasti C, Morena A, Pasanisi F, Santarpia L. Haematogenous pneumonia caused by Kocuria kristinae in a patient with a central venous catheter. *EJCRIM* 2024;**11**:doi:10.12890/2024_004314.

ABSTRACT

Kocuria kristinae is a Gram-positive commensal bacterium, rarely responsible for infection in immunocompromised patients.
A 29-year-old woman affected by intestinal pseudo-obstruction and requiring home parenteral nutrition, was hospitalised for fever and shivering during the infusion through a long-term central venous catheter (CVC).
Blood cultures were positive for *K. kristinae* infection. At a chest CT scan, two partially cavitated nodular lesions were evidenced. Meropenem antibiotic therapy was used locally and systemically, resulting in catheter use restoration.
A chest CT scan two months later at follow-up showed two centimetric, fibrotic and disventilatory areas replacing the previous nodular thickenings.
Kokuria kristinae was responsible for haematogenous pulmonary involvement with excavated nodules, requiring a differential diagnosis. Moreover, in the case of a CVC infection, in addition to the risk of right endocarditis, haematogenous pneumonia must also be considered.

KEYWORDS

Kokuria kristinae infection, haematogenous pneumonia, differential diagnosis

LEARNING POINTS

- *Kocuria kristinae* is a Gram-positive commensal bacterium, potentially responsible for infection.
- In the case of central venous catheter infection, in addition to the risk of right endocarditis, haematogenous pneumonia must also be considered.
- A differential diagnosis between bacterial and fungal infection is necessary (less, but to be suspected, neoplastic metastases).

INTRODUCTION

Kocuria kristinae, formerly referred to as *Micrococcus kristinae*, is an aerobic Gram-positive, catalase-positive, coagulase-negative bacterium; it is a natural skin and mucosal flora commensal in mammals and acts as an opportunistic pathogen. Although diseases caused by these organisms are rare, bacteraemia in immunocompromised patients have been described in the literature[1,2]. It has also been associated with urinary tract infections[3] and to catheter-related infections in chronic patients[4].

EFIM
European Federation of Internal Medicine

Publisher
smc media srl

CASE DESCRIPTION

A 29-year-old woman was hospitalised in the Internal Medicine Department of the Federico II University Hospital in Naples for fever and shivering during infusion of a parenteral nutritional mixture by means of a long-term tunnelled CVC.

Her medical history documented total colectomy with ileorectal anastomosis in perinatal age, due to intestinal aganglionosis and pseudo-obstruction; for this reason, she was affected by intestinal insufficiency requiring daily parenteral nutrition/fluid therapy.

On admission, the physical examination was irrelevant; haematic tests showed normal blood count with normal leukocyte value and formula, high C-reactive protein, lactate dehydrogenase and fibrinogen values; the procalcitonin value was in the normal range. Central and peripheral vein serial blood cultures were performed.

An echocardiography showed no signs of valve vegetations; chest X-ray showed diffuse thickening of the pulmonary weft with bilateral perihilar congestion. A chest angio-CT scan was already planned to re-evaluate a previous thrombosis of the left brachiocephalic venous trunk. It showed a consolidative, partially cavitated area in the right lower lobe, and a small nodular formation of similar significance in the upper lingula near the pleural plane. (1→3)-beta-D-glucan and galactomannan dosages were normal. On the seventh day of hospitalisation, central and peripheral vein cultures showed positive for *K. kristinae* infection *(Table 1)*.

The patient was treated with local CVC lock therapy and systemic intravenous meropenem for two weeks resulting in the restoration of the catheter use. Inflammatory parameters normalised and a follow-up chest X-ray confirmed the absence of parenchymal lesions.

A chest CT scan performed two months after antibiotic therapy showed two-centimetre fibrotic and disventilatory areas that substituted the previous partially cavitated consolidative foci.

ANTIBIOTIC	MIC
Ampicillin	12 (R)
Aztreonam	256 (R)
Benzylpenicillin	0.094 (S)
Cefepime	2 (S)
Ciprofloxacin	1 (R)
Gentamicin	1 (R)
Linezolid	1 (S)
Meropenem	1 (S)
Teicoplanin	1 (IE)
Tigecycline	0.5 (S)
Tobramycin	16 (R)
Trimethoprim-sulfamethoxazole	0.75 (IE)
Vancomycin	2 (IE)
Piperacillin/tazobactam	0.75 (S)

Abbreviations: **S**, susceptible; **I**, susceptible increased exposure; **R**, resistant; **IE**, insufficient evidence; **MIC**, minimal inhibitory concentration (mcg/ml). Antibiogram interpretation according to EUCAST 2021 guidelines. Note: Interpretative criteria were applied according to EUCAST 2021 guidelines for species not related to breakpoints.

Table 1. Antibiotic susceptibility of the isolated Kokuria kristinae.

CONCLUSION

Many reports have described the association of *K. kristinae* with severe infections, its changing clinical spectrum from immuno-compromised to immunocompetent patients and its developing antimicrobial resistance[3].

In this case, the *K. kristinae* infection affected an immunocompetent patient bearing a CVC and was resistant to several antibiotics. Furthermore, the infection spared the heart valves, causing pulmonary involvement[5].

This means that physicians should not overlook the importance of *K. kristinae* infection and in case of CVC infection, in addition to the risk of right endocarditis, haematogenous pneumonia must be considered[5,6].

Moreover, the radiological aspect of these excavated nodules required a differential diagnosis with mycotic infections, not neglecting the hypothesis of possible neoplastic metastases[7].

To our knowledge, this is the only case report where CVC was restored with antibiotic lock and systemic therapy, avoiding CVC removal and reimplantation.

REFERENCES

1. Bernshteyn M, Kumar PA, Joshi S. Kocuria kristinae pneumonia and bacteremia. *Proc (Bayl Univ Med Cent)* 2020;**33**:608–609.
2. Napolitani M, Troiano G, Bedogni C, Messina G, Nante N. Kocuria kristinae: an emerging pathogen in medical practice. *J Med Microbiol* 2019;**68**:1596–1603.
3. Tewari R, Dudeja M, Das AK, Nandy S. Kocuria kristinae in catheter associated urinary tract infection: a case report. *J Clin Diagn Res* 2013;**7**:1692–1693.
4. Namba Y, Fujisaki S, Fukuda T. Kocuria kristinae infection associated with short bowel syndrome: a case report. *Int J Surg Case Rep* 2020;**77**:276–278.
5. Santarpia L, Viceconte G, Foggia M, Alfonsi L, Tosone G, Camera L, et al. Home parenteral nutrition in patients with intestinal failure: possible undetected complications. *Nutrients* 2019;**11**:581.
6. Santarpia L, Esposito R, Vaccaro A, Alfonsi L, Pagano MC, Santoro C, et al. Cardiac changes in patients on long-term parenteral nutrition. *Nutrients* 2019;**11**:1587.
7. Kim J, Dabiri B, Hammer MM. Micronodular lung disease on high-resolution CT: patterns and differential diagnosis. *Clin Radiol* 2021;**76**:399–406.