Reminder of important clinical lesson

Corynebacterium jeikeium bacteraemia and pulmonary infiltrates in a patient with acute myelogenous leukaemia

Kota Sato, Michihiro Uchiyama

Department of Hematology, Suwa Red Cross Hospital, Suwa, Japan

Correspondence to Dr Michihiro Uchiyama, mi.uchiyama@suwa.jrc.or.jp**Summary**

The authors used vancomycin (VCM) to treat *Corynebacterium jeikeium* bacteraemia and pulmonary infiltrates in a patient with acute myelogenous leukaemia. Pulmonary infiltrates are found in about one-third of patients with haematological pathologies accompanying *C jeikeium* bacteraemia. Although linezolid and daptomycin are antimicrobial alternatives for treating *Corynebacterium* infections, the authors believe that VCM is the best choice for immediate treatment success and to prevent pulmonary infiltrates from developing in the presence of bloodstream infection with *Corynebacteria* in patients with haematological malignancies.

BACKGROUND

Corynebacteria can cause sepsis, particularly among patients with underlying haematological malignancies or other conditions that cause immunosuppression.^{1 2} These bacteria are isolated from blood cultures and are primarily associated with the use of central venous catheters,^{1 3} although they can also proliferate and become embedded in biofilm matrices on catheters.^{4 5} Although infection with *Corynebacteria* is considered treatable with both linezolid and daptomycin,^{6 7} vancomycin (VCM) is the most popular choice because *Corynebacterium* species are usually susceptible to this antibiotic. Here, we describe *C jeikeium* bacteraemia and pulmonary infiltrates that were treated with VCM in a patient with acute myelogenous leukaemia (AML).

CASE PRESENTATION

An 18-year-old man who had recently been diagnosed with type M0 AML was admitted to our hospital in October 2010. A central venous catheter (CVC) was inserted and induction chemotherapy was started with idarubicin (12 mg/m², days 1–3) and cytosine arabinoside (100 mg/m², days 1–7). Oral levofloxacin and voriconazole were administered as prophylaxis to prevent febrile episodes during neutropenia. The clinical course was uneventful for 11 days before the patient developed a fever that reached 39.5°C. A physical examination and a chest x-ray at that time revealed no abnormalities, and the neutrophil count was 0.4×10³/μl. Blood cultures were positive for *C jeikeium*, which was also isolated from the tip of the CVC. He was treated with VCM 1000 mg q.i.d.

Figure 1 (a–c) Chest CT 10 days after the fever started. (d–f) Chest CT on discharge.

Because bone marrow recovery is critical for a favourable outcome, haematopoietic growth factor (filgrastim) was administered from 12 days after starting chemotherapy. The bone marrow started to recover, but multiple nodular infiltrates on chest x-ray and CT images appeared 10 days after the fever started (figure 1). We considered that the chest CT findings had become more remarkable due to restored immune competence after chemotherapy. As the nadir was too low at 4–5 µg/ml, the dose of VCM was increased to 1000 mg every 6 h from 10 days after starting this therapy. Thereafter, the lowest concentration of VCM was maintained between 14 and 15 µg/ml and the patient clinically recovered. We stopped VCM at 28 days after the fever started and the patient was discharged. Complete remission was achieved after induction chemotherapy, and the patient subsequently underwent two courses of consolidation chemotherapy and a bone marrow transplant. No complications developed due to *C jeikeium* infection.

DISCUSSION

Pulmonary infiltrates were apparently associated with concurrent bacteraemia in this patient. *Corynebacterium* strains are resistant to several antibiotics, but they are most susceptible to VCM, which is the drug of choice for treatment. However, linezolid and daptomycin that are broadly applicable to many gram-positive pathogens have recently been considered as possible antimicrobial alternatives for treating *Corynebacterium* infections.^{6 7} Although linezolid can penetrate bronchial fluids more effectively than VCM,⁸ it is infrequently applied during chemotherapy as it can suppress bone marrow and cause thrombocytopenia. Daptomycin binds avidly to pulmonary surfactant, and therefore cannot be used to treat pneumonia. Considering that pulmonary lesions occur in about one-third of patients with haematological diseases who are infected with *C jeikeium* bacteraemia,¹ VCM is the optimal treatment choice to ensure a good outcome for such patients.

Learning points

- ▶ *Corynebacteria* can cause sepsis, particularly among patients with underlying haematological malignancies or other conditions that cause immunosuppression.
- ▶ Pulmonary infiltrates are found in about one-third of patients with haematological pathologies accompanied by *C jeikeium* bacteraemia.
- ▶ VCM results immediate treatment success and can prevent pulmonary infiltrates from developing in patients with haematological malignancies accompanied by *Corynebacterium* bacteraemia.

Acknowledgements This manuscript has not received any outside funding or support.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **van der Lelie H**, Leverstein-Van Hall M, Mertens M, *et al*. *Corynebacterium* CDC group JK (*Corynebacterium jeikeium*) sepsis in haematological patients: a report of three cases and a systematic literature review. *Scand J Infect Dis* 1995;**27**:581–4.
2. **Wang CC**, Mattson D, Wald A. *Corynebacterium jeikeium* bacteremia in bone marrow transplant patients with Hickman catheters. *Bone Marrow Transplant* 2001;**27**:445–9.
3. **Funke G**, von Graevenitz A, Clarridge JE3rd. Clinical microbiology of coryneform bacteria. *Clin Microbiol Rev* 1997;**10**:125–59.
4. **Marrie TJ**, Costerton JW. Scanning and transmission electron microscopy of in situ bacterial colonization of intravenous and intraarterial catheters. *J Clin Microbiol* 1984;**19**:687–93.
5. **Olson ME**, Ceri H, Morck DW, *et al*. Biofilm bacteria: formation and comparative susceptibility to antibiotics. *Can J Vet Res* 2002;**66**:86–92.
6. **Goldstein EJ**, Citron DM, Merriam CV, *et al*. *In vitro* activities of the new semisynthetic glycopeptide telavancin (TD-6424), vancomycin, daptomycin, linezolid, and four comparator agents against anaerobic gram-positive species and *Corynebacterium* spp. *Antimicrob Agents Chemother* 2004;**48**:2149–52.
7. **Gómez-Garcés JL**, Alos JL, Tamayo J. *In vitro* activity of linezolid and 12 other antimicrobials against coryneform bacteria. *Int J Antimicrob Agents* 2007;**29**:688–92.
8. **Honeybourne D**, Tobin C, Jevons G, *et al*. Intrapulmonary penetration of linezolid. *J Antimicrob Chemother* 2003;**51**:1431–4.

This pdf has been created automatically from the final edited text and images.

Copyright 2012 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Sato K, Uchiyama M. *Corynebacterium jeikeium* bacteraemia and pulmonary infiltrates in a patient with acute myelogenous leukaemia. *BMJ Case Reports* 2012;10.1136/bcr.11.2011.5097, Published XXX

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow

Keep up to date with all published cases by signing up for an alert (all we need is your email address) <http://casereports.bmj.com/cgi/alerts/etoc>