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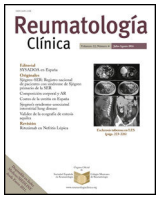

Case Report

Septic Arthritis in a Native Knee Due to *Corynebacterium striatum*☆

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ABSTRACT

We describe a case of septic arthritis in a native knee due to *Corynebacterium striatum*, gram-positive bacilli that are usually commensal organisms of skin and mucosal membranes, but are seldom implicated in native septic arthritis. An 84-year-old man with *Corynebacterium striatum* septic arthritis of his native left knee and no response to conventional antibiotic therapy. Thus, the patient was allowed to take dalbavancin for compassionate use, with an excellent clinical outcome. This case emphasizes de role of *Corynebacterium striatum* in native joint infections and highlights the importance of early detection and appropriate treatment in improving the clinical outcome.

Artritis séptica de rodilla nativa por *Corynebacterium striatum*

Palabras clave:
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RESUMEN

Describimos un caso de artritis séptica de rodilla por *Corynebacterium striatum*, bacilo Gram positivo colonizador habitual de la flora de la piel y mucosas, que rara vez ha sido implicado en artritis sépticas de articulaciones nativas. Se trata de un varón de 84 años diagnosticado de artritis séptica de rodilla izquierda por *Corynebacterium striatum* que evoluciona de forma tórpida con antibioterapia convencional, por lo que se solicita tratamiento compasivo con dalbavancina, con excelente respuesta clínica. Este caso resalta el potencial papel patógeno que las especies del género *Corynebacterium* pueden tener en artritis sépticas de articulaciones nativas y subraya la importancia de su detección precoz y tratamiento dirigido para obtener resultados clínicos satisfactorios.

Introduction

Corynebacterium ssp. are opportunist pathogens that are common colonizers of the skin and mucosae in asymptomatic individuals that are frequently considered contaminants when isolated in blood cultures.[1] We report a case of septic arthritis due to *Corynebacterium striatum* (*C. striatum*), a pathogen whose implication in infection of native joints is exceptional.

Clinical Observation

The patient was an 84-year-old man who was allergic to penicillin. He had a history of chronic obstructive pulmonary disease (COPD), chronic atrial fibrillation and left nephrectomy. He had been admitted 5 months earlier for acute monoarthritis of left knee with microcrystalline disease (calcium pyrophosphate), and required arthrocentesis and anti-inflammatory agents. Since then, he had had an indolent course, with slight intermittent fever and impaired function, reasons for which he was reevaluated. On admission he had inflammatory signs in left knee, C-reactive protein 72 mg/L and arthrocentesis yielded a fluid containing blood and pus, the glucose level was 3 mg/dL and proteins 4.4 g/dL; cell count could not be performed. Given the suspicion of the presence of infectious arthritis, we decided to perform surgical joint lavage.

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In cultures of the fluid from arthrocentesis and in intraoperative specimens, we isolated *C. striatum*, which is resistant to penicillins, clindamycin and quinolones, whereas it is sensitive to vancomycin, linezolid and rifampicin. It was decided to treat him with intravenous linezolid (600 mg/12 h) as the patient had only 1 kidney. After a week, the patient developed gastrointestinal toxicity, and the arthritis persisted. Thus, we replaced linezolid with teicoplanin (600–800 mg/24 h) and he underwent a second surgical lavage. After a number of determinations, therapeutic levels were not being achieved. Therefore, we decided to treat him with dalbavancin in a single dose of 1500 mg after confirming sensitivity by means of an E-test® (minimum inhibitory concentration <0.125 μg/mL). After that treatment, the patient began to show clinical and analytical improvement, and we decided to discharge him 7 days later. The patient was followed in the outpatient clinic for 6 months, with no signs of reactivation.

Discussion

Corynebacterium is a genus of facultative anaerobic Gram-positive bacilli. With the exception of *C. diphtheriae*, the rest of the species are saprophytes of the skin and mucosae, and are considered common contaminants.[1] Their repeated isolation in relation to medical devices and in patients in whom infection is suspected signifies that they are considered a pathogen. *C. striatum* has been implicated in endocarditis, pneumonias and osteoarticular infections. They are usually resistant to diverse groups of antibiotics but, basically, continue to be sensitive to glycopeptides, linezolid and imipenem.[2]

In a review of the literature, we found 4 cases of infection in native joints by *C. striatum* and only 2 cases with genicular involvement. Westblade et al.[3] described a patient with acute arthritis of the knee produced by *C. striatum* with a positive outcome after 4 weeks of treatment with intravenous vancomycin. Scholle[4] reported another case of arthritis of the knee treated for 2 weeks with intravenous vancomycin. Both of these cases developed after a previous traumatic injury affecting the joint. Cone et al.[5] described the case of a patient with arthritis of the elbow secondary to an accidental injury with a scalpel during an intervention, that was treated with vancomycin for 10 days, followed by ciprofloxacin for 7 days. Finally, Feced Olmos et al.[6] published a case of arthritis of the shoulder that developed after corticosteroid injection, and improved after 15 days of treatment with ceftriaxone. In the case we report here, aside from factors known to have a role in immunosuppression, such as advanced age and COPD, we suspect, as a probable additional risk factor, the fact that the patient had undergone arthrocentesis, as well as arthritis due to calcium pyrophosphate deposition, which could, in turn, contribute to the development of septic arthritis.

Dalbavancin is a semisynthetic lipoglycopeptide, derived from teicoplanin. It is a bactericide and time-dependent, and acts by inhibiting the formation of the bacterial wall, with a spectrum of activity against methicillin-susceptible and methicillin-resistant Gram-positive pathogens, as well as intermediate susceptibility to vancomycin. It is also effective against certain Gram-positive anaerobic pathogens. It is not active against enterococci expressing the VanA gene. Dosage is convenient as its long half-life enables a single dose every 2 weeks (1500 mg) or 2 doses at an interval of 1 week (1000 mg followed by 500 mg). The dose does not need to be adjusted in patients with renal insufficiency, except with a glomerular filtration rate <30 mL/min. The safety profile is acceptable, although medium-to-long-term studies have yet to be done. Dalbavancin was approved by the Spanish Agency of Medicines and Medical Devices in June 2015. Its main indications are infections of the skin and soft tissue. The clinical trials conducted have demonstrated noninferiority of dalbavancin and a comparator (vancomycin + linezolid).[7]

Authors Rolston et al.[8] and Jones and Stilwell[9] studied the *in vitro* activity of dalbavancin against different Gram-positive strains, and showed it to have more potent activity than vancomycin and daptomycin against *Bacillus* spp., *Corynebacterium* ssp., *Micrococcus* spp. and several species of streptococci, as well as bactericide activity against methicillin-resistant *Staphylococcus aureus*, including those with a minimum inhibitory concentration >1 μg/mL of vancomycin.

Conclusion

In summary, we must keep in mind the pathogenic role of *Corynebacterium* ssp. in certain clinical circumstances and the option of novel antibiotics like dalbavancin that can be just as effective, and reduce the nosocomial infections derived from a prolonged hospital stay.

Ethical Disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Conflicts of Interest

The authors declare they have no conflicts of interest.

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