



Adolfo de Salazar<sup>1</sup>  
Francisco Ferrer<sup>1</sup>  
David Vinuesa<sup>2</sup>  
Natalia Chueca<sup>1</sup>  
Claudio de Luis-Perez<sup>3</sup>  
Federico García<sup>1</sup>

## Unusual case report of skin infection by *Paenibacillus timonensis*

<sup>1</sup>Microbiology Clinic Unit, Hospital Universitario San Cecilio. Instituto de Investigación Ibs. Granada, Spain.

<sup>2</sup>Infectious Disease Unit, Hospital Universitario San Cecilio. Granada, Spain.

<sup>3</sup>Orthopedic Surgery and Traumatology Unit, Hospital Universitario San Cecilio. Granada, Spain

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Sir,

*Paenibacillus* is a genus of gram-positive bacilli endospore forming aerobic or facultatively anaerobic bacteria, that were originally included in the genus *Bacillus* [1, 2]. These bacteria are well adapted to the environment, and have been isolated from various sources including water, soil, food and plants, but they are not usually associated with infection. In the last decades, reports of infection in humans has increased through the years, and has been isolated mostly from wound exudates, and others from mitral endocarditis, bone infection and bacteremias [3-6]. Due to its widespread distribution when *Paenibacillus* is isolated, it is important to discriminate infection from contamination; in this context repeated isolation from multiple samples may indicate clinical significance.

Here we report, to our knowledge, the first case of soft tissue and skin infection by *Paenibacillus timonensis*, and we describe the second case of human infection by this species [7].

A 37-year-old man with a medical history of arterial hypertension and neurofibromatosis type 1, also known as von Recklinghausen's disease, was admitted to the emergency room of our university hospital for treatment of a severe pain and swelling in lower left limb due to strong trauma on May 2019. He was operated urgently due to a compartment syndrome in the left knee. After leaving the operating room, he presented serous secretion at one of the points of the scar, sending deep samples for culture to the microbiology laboratory.

After 24 hours of incubation, greyish, translucent and shiny colonies grew in pure culture in aerobic blood agar (BD Columbia Agar 5% Sheepblood®, Becton Dickinson) and chocolate agar in a 5% CO<sub>2</sub> atmosphere (BD Choco Agar, Becton Dickinson). Catalase test was positive and oxidase was negative.

Gram stain revealed Gram-positive rod-shaped bacteria. Identification was performed using MALDI-TOF MS (Bruker Biotyper, MA, USA), with the result of *P. timonensis* with best-match score values of 1.96. Considering that a minimum score of 2 for species determination, the identification was confirmed by the partial sequencing (949 bp) of the 16S rRNA gene using universal primers. This isolate shared 99.88% sequence similarity with the reference sequence of *P. timonensis* available in GeneBank (KT719432.1). Susceptibility testing (Minimum Inhibitory Concentration) was carried out by the E-test method in Mueller Hinton 5% Blood Agar (Becton Dickinson) incubated in aerobiosis at 37°C with readings after 24 and 48 hours. As no specific clinical breakpoints have been established for *Paenibacillus*, we used the EUCAST PK/PD (non-species related) clinical breakpoints. *P. timonensis* was susceptible to trimethoprim-sulfamethoxazole (<0.02 mg/L), gentamicin (0.094 mg/L), erythromycin (0.5 mg/L), cefotaxime (0.064 mg/L), rifampicin (0.125 mg/L), vancomycin (0.25 mg/L), and resistant to ampicillin (>32 mg/L).

To rule out the presence of *P. timonensis* as a possible contaminant, we asked for new samples from the wound, that were sent during the next week. *P. timonensis* was isolated in 4 subsequent samples, thus considering it the cause of the infection. According to susceptibility testing results and the literature [8], the patient was treated with vancomycin intravenously (1 g/12h) for 10 days, followed by 3 weeks of trimethoprim/sulfamethoxazole orally.

Antibiotic treatment was accompanied with the use of negative pressure wound therapy with the use of portable device (PICO™), that has been shown to optimize patient outpatient care and promote rapid wound healing [9, 10]. The patient presented a good evolution of the wound and continued to perform local cures every 7 days until full recovery.

In summary, the genus *Paenibacillus* is an unusual cause of surgical wound infection. Within this group, *P. timonensis* had never been described as a pathogen in this clinical sce-

Correspondence:  
Adolfo de Salazar  
Microbiology Clinic Unit, Hospital Universitario San Cecilio. Instituto de Investigación Ibs.  
Granada, Spain  
E-mail:adolosalazar@gmail.com

nario. In our patient, rapid identification of the etiologic agent allowed quick initiation of antimicrobial treatment. We believe that subsequent isolation of *P. timonensis* in the following samples and clinical improvement after antibiotic treatment helped to show its clinical significance and to discriminate from a possible contamination.

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None to declare.

## CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

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