Characterization of a new coagulase-negative Staphylococcus species (Staphylococcus pettenkoferi) isolated from blood cultures from a hospitalized patient in Porto Alegre, Brazil

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ABSTRACT
Introduction: Staphylococcus pettenkoferi was originally isolated and described by Trülzsch et al (2002). In this study, we characterized two isolates of this newly described species. Methods: Blood cultures were initially processed using the BacT/ALERT® device, and the isolates were initially characterized using the Vitek2 identification system. Results: The initial characterization revealed slow-growing Gram-positive cocci that formed opaque colonies on sheep blood agar. Other phenotypic/genotypic tests were performed. Conclusions: We would like to emphasize that this new staphylococcus species is phenotypically similar to other CoNS, especially S. auricularis. This could potentially lead to misidentification of these uncommon species.

Key-words: Coagulase-negative Staphylococcus. Blood culture. Staphylococcus pettenkoferi.

RESUMO
Introdução: Staphylococcus pettenkoferi foi originalmente isolado e descrito por Trülzsch et al (2002). Neste estudo, caracterizamos dois isolados dessa nova espécie. Métodos: As hemoculturas foram inicialmente processadas usando o instrumento BacT/ALERT® e os isolados foram inicialmente caracterizados pelo sistema de identificação Vitek2. Resultados: A caracterização inicial revelou um coco Gram-positivo de crescimento lento com formação de colônias opacas em agar sangue de carneiro. Outros testes fenotípicos/genotípicos foram realizados. Conclusões: Gostaríamos de enfatizar que esta nova espécie de Staphylococcus é fenotipicamente similar a outros CoNS, especialmente S. auricularis, que poderia levar a um erro na identificação dessas espécies incomuns.


The genus Staphylococcus is currently composed of 37 species and subspecies that are ubiquitous in nature. Coagulase-negative staphylococci (CoNS) have become important nosocomial pathogens during the past few years, especially among patients with an orthopedic or cardiac prosthesis, patients with prolonged catheter use, immunocompromised patients or neonates¹⁻⁴. Staphylococcus pettenkoferi was originally isolated and described by Trülzsch¹ et al, but this species name has not yet been scientifically validated. In this study, we characterized two isolates of this newly described species that were recovered from blood cultures from a hospitalized patient in the city of Porto Alegre, Rio Grande do Sul, Brazil. The 56-year-old patient had been hospitalized for 45 days and tested positive in three blood culture sets in April 2008. The blood cultures were initially processed using the BacT/ALERT® device (bioMérieux) and the isolates were initially characterized by means of the Vitek2 identification system (bioMérieux). The device named the isolates Kocuria varians (formerly Micrococcus varians), which was not consistent with the characteristics of this species⁵. As reported by Cunha et al,⁶ some Staphylococcus strains have often been identified as Kocuria in using the Vitek2 system. Because of the atypical results, the isolates were further subjected to an extensive battery of conventional tests, along with molecular analysis, including DNA sequencing of 16S rRNA and SodA genes⁶⁻⁸. The initial characterization revealed slow-growing Gram-positive cocci that formed opaque colonies on sheep blood agar. The other tests results included: weakly positive catalase reaction, negative coagulase reaction, sensitivity to novobiocin, resistance to desferoxamine, sensitivity to phosphomycin, resistance to desferroxamine, sensitivity to phosphomycin, resistance to bacitracin, positive for pyrrolidonyl arylamidase (PYR), positive for urease and positive for nitrate reductase. The DNaSe test using 1N HCl was negative. Acid was produced only with glucose, fructose and sucrose, following up to seven days of incubation. Arginine arylamidase, ornithine decarboxylase and acetoin production were negative. Molecular characterization of the isolates were performed by means of sodA amplification using the polymerase chain reaction (PCR) followed by direct sequencing of the PCR products generated using BigDye-termination chemistry (Applied Biosystems), in order to better identify these isolates. Homology search (BLAST) demonstrated that the sequences generated were identical to those of Staphylococcus pettenkoferi. We would like to emphasize that this new staphylococcal species is phenotypically similar to other CoNS, especially S. auricularis. This could potentially lead to misidentification of this uncommon species.

The authors declare that there is no conflict of interest.
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REFERENCES


