Outbreak of *Staphylococcus hominis* subsp. *novobiosepticus* bloodstream infections in São Paulo city, Brazil

Coagulase-negative staphylococci (CoNS) are currently recognized as one of the most important causes of nosocomial infections worldwide, principally related to bloodstream infections (Pfaller et al., 1999). *Staphylococcus epidermidis* is the most frequent CoNS species associated with these infections (Rupp & Archer, 1994), but results of surveillance studies indicate a varying frequency, depending on the geographical region (Yamazumi et al., 2001; Sader et al., 2001). Additionally, a substantial increase in the frequency of meticillin resistance among CoNS isolates has occurred over recent decades. According to the results of the SENTRY study, about 80% of CoNS strains isolated from bloodstream infections in Brazilian hospitals are resistant to meticillin (Sader et al., 2001). Glycopeptides are usually the treatment of choice for infections caused by these micro-organisms. However, due to the emergence of vancomycin-resistant enterococci and staphylococci, reduction to the emergence of vancomycin-resistant *Enterococcus* and *Staphylococcus* has been recommended (Hiramatsu, 1998). The accurate detection of meticillin-resistant CoNS isolates by clinical microbiology laboratories is of crucial importance in guiding therapy and promoting the correct use of glycopeptides (Yamazumi et al., 2001; Hussain et al., 1998). Recently, a novel subspecies of CoNS, *Staphylococcus hominis* subsp. *novobiosepticus*, was isolated from blood and other clinical specimens (Kloos et al., 1998). The subspecies name derives from the combination of *novobio*o, pertaining to the property of novobiocin resistance, and *septic*, pertaining to the ability to cause sepsis. This pathogen usually exhibits multidrug resistance, including resistance to oxacillin and other antimicrobial agents (Kloos et al., 1998; Chaves et al., 2005). Meticillin-resistant isolates and those resistant to other antimicrobials are particularly important because they narrow therapeutic options. Recently, Chaves et al. (2005) related a nosocomial outbreak caused by an *S. hominis* subsp. *novobiosepticus* clone in a neonatal intensive care unit in the city of Madrid, Spain.

From March to April 2006, three patients in the intensive care unit of Hospital Nove de Julho, a tertiary hospital located in the city of São Paulo, Brazil, presented with bloodstream infections caused by an uncommon Gram-positive coccus resistant to novobiocin. The isolates were characterized as recommended by Bannerman (2003), with some modifications. The isolates were also identified by the AutoScan (DadeBehring) and Vitek (bioMérieux) systems. The antimicrobial susceptibility patterns were determined by agar dilution according to the Clinical Laboratory Standards Institute recommendations (CLSI, 2006). The isolates were also screened for reduced susceptibility to vancomycin by testing them on brain heart infusion plates containing 6 µg vancomycin ml⁻¹ (CLSI, 2006). The genetic relatedness of isolates was evaluated by PFGE (Pfaller et al., 1992). The PFGE patterns were established by visual inspection of ethidium bromide-stained gels according to Tenover criteria (Tenover et al., 1995). The presence of the gene *mecA* was detected by PCR. All isolates were identified as *S. hominis* subsp. *novobiosepticus*. The *S. hominis* subsp. *novobiosepticus* isolates showed resistance to oxacillin (MIC ≥ 256 µg ml⁻¹) and teicoplanin (MIC 48–64 µg ml⁻¹) and reduced susceptibility to vancomycin (MIC 4–8 µg ml⁻¹). A unique PFGE pattern was found in the three isolates that carried the gene *mecA*. The predominance of a single PFGE pattern confirmed the clonal dissemination of *S. hominis* subsp. *novobiosepticus*. All three patients were older than 65 years of age, presented neurological disease with more than 2 months of hospitalization, and had received teicoplanin before the isolation of *S. hominis* subsp. *novobiosepticus*. After isolation of these micro-organisms, the patients started receiving linezolid therapy. Two of them died and one was discharged from hospital after 2 months.

Our results suggest the intra-hospital dissemination of one predominant clonal group of multi-resistant *S. hominis* subsp. *novobiosepticus*, an uncommon pathogen.

Pedro A. d’Azevedo,† 1,2 Regina Trancesi,† Tiago Sales,‡ Jussimara Monteiro,† Ana C. Gales† and Antonio C. Pignataro†,‡,†,‡

1Laboratório Especial de Microbiologia Clínica (LEMC) da Universidade Federal de São Paulo (UNIFESP), SP, Brazil
2Laboratório de Cocos Gram Positivos da Fundação Faculdade Federal de Ciências Médicas de Porto Alegre (FFFCMPA), RS, Brazil
3Comissão de Controle de Infeccão do Hospital Nove de Julho, São Paulo, SP, Brazil
4Laboratório Bioclinico, São Paulo, SP, Brazil

Correspondence: Pedro A. d’Azevedo (pedro_dazevedo@yahoo.com.br)


Washington, DC: American Society for Microbiology.


