Título: Rapid Detection of Methicillin-Resistant *Staphylococcus aureus* (MRSA) Nasal Colonization from Chronic Kidney Patients under Surveillance

Autores: Rezende, T.F.T. [1], Dói, A. M. [1], Quiles, M. G. [1], Manfrendi, S. [2], Barbosa, C. [2], Taminato, M. [2], Grothe, C. [2], Pignatari, A. C. C. [1], Barbosa, D.A [2]

Instituições: [1] LEMC - Laboratório Especial de Microbiologia Clínica – Universidade Federal de São Paulo. (Rua Leandro Dupret, 188, Vila Clementino – São Paulo-SP-Brasil). [2] HRIM - Hospital do Rim e Hipertensão (Rua Borges Lagoa, 960, Vila Clementino, São Paulo-SP,-Brasil)

Resumo:

Methicillin-resistant *Staphylococcus aureus* (MRSA) is a major agent of infections in patients with chronic kidney disease. Surveillance of MRSA colonization is important for patient care and also for effective infection control programs. Our objective was to compare the performance of MRSA agar screening with traditional swab and ESwab using direct PCRs assays for MRSA detection. A total of 152 chronic kidney patients attended at a specialized hospital from kidney diseases in São Paulo, Brazil were included**:** 60 on hemodialysis, 82 transplanted and 9 on conservative treatment. From October 2013 to February 2015, 1 ESwab and 1 coal Amies swab were collected from the patient's nose. After incubation on chromogenic agar (CA) (CHROMagar, Brazil) for 48 hours at 35°C, MRSA suspected isolates were re-identified by MALDI-TOF (Bruker Daltonics). ESwabs and isolated strains were submitted to DNA extraction by QIAamp DNA Mini Kit (Qiagen). Conventional PCR assays targeting the *S. aureus* specie and the *mec*A gene were conducted. In parallel, real-time PCR (qPCR) for the same genes was applied to ESwabs samples on Rotor-gene (Qiagen). Among 152 swabs collected, 13 (8.5%) were positive for MRSA screening by CA: 9 (69%) from hemodialysis and 6 (46%) from transplanted patients. MALDI-TOF identified 4 (4/13) samples as *S. aureus*, 8 as *S. haemolyticus* and 1 as *S. saprophyticus*. PCR was 100% concordant at species level. Conventional PCR detected 12 samples with *mec*A gene. Thus, true MRSA by CA was 2,6%. Among 152 ESwabs collected, 15 (10%) were *S. aureus* and *mec*A positive. Only three (3/15) samples were concordant by CA. One sample was MRSA positive by CA and conventional PCR and negative when collected by ESwab. The presence of coagulase-negative *Staphylococcus* with *mec*A gene was identified in 24 (16%) samples. In conclusion, the CA was not efficient in MRSA detection, showing high sensitivity for *mec*A detection and low specificity for *S. aureus*. . The qPCR form ESwab showed to be a sensitive method for rapid and efficient diagnosis of MRSA nasal colonization in this clinical setting with high rate of MRSA infections.

Palavras-chaves: MRSA, ESwab, surveillance