TRACKING OF METHICILIN RESISTANT *Staphylococcus aureus* CARRIAGE AMONG DOGS AND THEIR HUMAN CONTACTS IN THE STATE OF RIO DE JANEIRO

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ABSTRACT

Antimicrobial resistance is a serious global public health threat that requires efforts from all to be controlled. Reports of multidrug-resistant bacteria recovered from animals have questioned their role as infection sources to humans. The close contact among humans and dogs may facilitate the transmission of these bacteria. Methicillin-resistant *Staphylococcus aureus* (MRSA) is one of the leader causes of nosocomial infections. Currently, MRSA is an agent of community infections. No data is available about the occurrence of MRSA and other methicillin resistant staphylococci (MRS) among dogs and their human contacts in our country. Hence, the aim of the present study was to track MRSA and MRS carriage among dogs, and MRSA carriage among owners and veterinary personnel in our country. In addition, antimicrobial resistance profile was investigated. Nasal swabs were collected from 292 dogs and 299 human contacts in three veterinary units from Niterói and Rio de Janeiro, between 2015 and 2017. Specimens were cultured onto mannitol salt agar, with and without oxacillin. Up to five suspect colonies were selected for bacterial identification by MALDI-TOF. Antimicrobial susceptibility was determined by disk diffusion for 11 antimicrobials and microdilution for vancomycin. Detection of *mec*A gene was performed by PCR for MRSA and MRS isolates. Nasal carriages of *S. aureus* were detected among 5.5% of dogs and among 18.7% of human contacts. MRSA colonization rates were similar in both dogs (1.4%) and human contacts (1.3%). In 4.5% of the animals were isolated MRS of the species *S. haemolyticus, S. saprophyticus*, *S. intermedius* group, *S. schleiferi* and *S. sciuri*. *S. aureus* demonstrated resistance to all antimicrobials tested, except to rifampicin and vancomycin. Higher resistance rates were observed to penicillin, erythromycin and clindamycin. MRSA resistance profiles varied from one to six antimicrobials, in addition to beta-lactams, and to only beta-lactams to three antimicrobials among canine and human isolates, respectively. All MRSA and MRS carried *mec*A and exhibited MIC for vancomycin ranging from 0.5 to 1.0 µg/mL. No dog–owner pairs were simultaneously colonized by MRSA, but three were colonized by *S. aureus* with the same antibiotic resistance profile. MRSA or MRS isolates are circulating among dogs in the state of Rio de Janeiro. Detection of *S. aureus* strains with the same resistance profile suggests that these animals may be sources of infections to humans.

KEYWORDS: *Staphylococcus aureus*, antimicrobial resistance, dog, MRSA, MRS

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