TITLE: MICROBIOLOGICAL EVALUATION AND RESISTANCE PROFILE OF MICROORGANISMS ISOLATED FROM AIR, SURFACES AND UNIFORMS FROM HOSPITAL ENVIRONMENTS IN BRAZIL

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ABSTRACT:

Hospital infections (HI) are a serious public health problem worldwide. Several studies have identified strains correlated to surgical site infections such as *Enterococcus*, *Staphylococcus aureus*, *Staphylococcus* sp coagulase negative and Gram-negative bacteria, many of them with multi-resistance. Thus, the objective of the present study was to quantify, isolate, identify and verify the antibiotic resistance profile of microorganisms from air, surfaces and uniforms of hospitals from Goiânia-GO. For air sampling, the solid media impaction method (Spin Air, IUL®) and passive sedimentation were used. For the isolation of bacteria on surfaces contact plates (RODAC®) were used. Identification of the microorganisms was performed using Vitek® 2 Systems identification cards. The antibiograms were made according to the disk diffusion method. A statistical difference was observed between the impaction and passive sedimentation methods. The surgical center of both hospitals and the Intensive Care Unit from hospital A presented aerial microbial load higher than the recommended limits. *Micrococcus luteus*, *Streptococcus haemolyticus* and *Staphylococcus hominis* spp *hominis* were the most frequent microorganisms in the aerial microbiota of sampled areas of both hospitals. On the surfaces and uniforms there was a prevalence of *M. luteus* and *S. hominis* spp *hominis*, but emerging pathogens such as *Staphylococcus warneri*, *Rhodococcus rhodochrous*, *Enterobacter ludwigii*, *Sphingomonas paucimobilis* were also identified. More than 90% of the bacteria isolated from both hospitals had resistance to at least one antibiotic and 14 strains were resistant to more than five of the evaluated antibiotics. Resistance to oxacillin was observed in 31,25% (hospital A) and 34.8% (hospital B) of the bacteria isolated, being one strain (hospital A) and eight strains (hospital B) recovered from the air of surgical centers, which is worrying since this is a high-risk environment for acquisition of HI. Even though the limits on airborne microbial load are established, there is no legislation in any country that imposes limits on the presence of multi-resistant bacteria in the air, surfaces and uniforms in hospital environments. Therefore, the hospital infection control commission must be always attentive and carefully monitor all hospital settings, thus avoiding new cases and outbreaks of nosocomial infection

Keywords: Multi-resistant microorganisms; Environmental monitoring; Nosocomial infection; Air quality.

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