

TITLE: EMERGENCE OF POLYMYXIN-RESISTANT *K. pneumoniae* AT HOSPITAL UNIVERSITÁRIO ANTÔNIO PEDRO, NITERÓI- RJ.

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ABSTRACT:

Background: *Klebsiella pneumoniae* is an increasingly important Gram-negative pathogen that is capable of causing nosocomial acquired infections. Recently, the emergence of carbapenem-resistant *K. pneumoniae* and the increased use of polymyxins to treat infections caused by these bacterial pathogens may have contributed to the spread of polymyxin-resistant *K. pneumoniae*. Polymyxins have become last treatment options for multi- or extensively-drug-resistant bacterial infections. Thus, the increased polymyxin resistance rates limits further the treatment options and have become a public health issue. Here, we described polymyxin-resistant *K. pneumoniae* strains recovered from patients admitted to Hospital Universitário Antônio Pedro, Niterói city, RJ. Materials and Methods: A total of eight *K. pneumoniae* clinical isolates, recovered from patients admitted to the Hospital Universitário Antônio Pedro – UFF (from May to October/2018), were included in this study. The sites of isolation for these bacterial isolates were blood (n=6), urine (n=1) and biopsy fragment (n=1). Bacterial identification and antimicrobial susceptibility profile were performed using the BD Phoenix™. The minimum inhibitory concentration (MIC) of polymyxin B was determined by broth microdilution test according the CLSI guidelines and BrCast breakpoints. *Escherichia coli* ATCC 25922 and *Pseudomonas aeruginosa* ATCC 27853 were used as quality control. Results: According to the antimicrobial susceptibility automated testing, all isolates displayed resistance to cefepime, cefoxitin, ceftazidime, ceftriaxone, ciprofloxacin, ertapenem, imipenem, meropenem, piperacillin/tazobactam, tigecycline, sulfamethoxazole-trimethoprim and colistin. Amikacin showed the highest susceptibility rate (n=7; 87.5%) followed by gentamicin (n=6; 75%). Broth microdilution results revealed high polymyxin B resistance (MIC₅₀= 16 µg/mL; MIC₉₀= 32 µg/mL). Among our results, we highlighted a *K. pneumoniae* isolate, recovered from a biopsy fragment of a 70-year-old hospitalized patient, that displayed MIC polymyxin B >256 µg/mL. Conclusions: Infections caused by multidrug-resistant *K. pneumoniae* are currently an important medical concern. Our results showed an emergence of polymyxin-resistant *K. pneumoniae* at Hospital Universitário Antônio Pedro (Niterói-RJ). These results bring attention to the need for adopting effective measures to control the spread of polymyxin-resistant clinical isolates at our institution.

Keywords: *Klebsiella pneumoniae*, multiresistance, polymyxin resistance.