TITLE: ANTIBIOTIC SUSCEPTIBILITY OF *KLEBSIELLA PNEUMONIAE* RECOVERED FROM HEALTHCARE-ASSOCIATED INFECTIONS IN THE UNIVERSITY HOSPITAL WALTER CANTÍDIO IN 2022

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ABSTRACT

Klebsiella pneumoniae is one of the main causes of nosocomial infections, such as pneumonia and bloodstream infections, mainly affecting immunosuppressed patients, newborns and individuals hospitalized in intensive care units. The global emergence of carbapenemase-producing bacteria poses a threat to the achievements of modern medicine. In this context, this work aimed to analyze the antibiotic susceptibility of *K*. *pneumoniae* recovered from healthcare associated infections in the University Hospital Walter Cantídio (HUWC), from January to April of 2022. Bacterial identification and antimicrobial susceptibility were performed using the Vitek-2 automatic system (bioMérieux™). In addition, the classification of carbapenemase-producing bacteria was based on immunochromatographic assay NG-test Carba 5 (NG Biotech). Protocol number for ethical approval were given by the Committee of Ethics in Research under number 2.422.124. Overall, 138 *K*. *pneumoniae* isolates were identified during the studied period. Among the isolates, 26.8% (37/138) of *K*. *pneumoniae* were resistant to carbapenems, which were isolated from blood (37.8%;14/37), urine (27%; 10/37) tracheal aspirates (16.2%; 8/37), bronchoalveolar lavage (5.4%; 2/37), abdominal fluid (5.4%; 2/37), ascitic fluid (2.7%; 1/37), liver abscess (2.7%; 1/37) and catheter (2.7%; 1/31). All isolates analyzed showed resistance to antimicrobials: ampicillin, ampicillin/sulbactam, piperacillin/tazobactam, cefuroxime, ceftazidime, ceftriaxone, cefepime, imipenem, meropenem. Moreover, only 45.9% (17/37) and 56.7% (21/37) showed susceptibility to amikacin and gentamicin, respectively. The carbapenemase-producing *K*. *pneumoniae* were classified as KPC-type serine carbapenemase producers (39.45%; 22/37) and NDM-type metallo-carbapenemase (40.5%; 15/37). Furthermore, among the serine carbapenemase-producing strains 90.9% (20/22) were susceptible to ceftazidime-avibactam. Therefore, due to limited therapeutic options and poor outcomes associated with these resistant microorganism, increased awareness and prompt detection of carbapenemase-producing *Klebsiella pneumoniae* in regional hospitals is necessary to direct infection control and antimicrobial stewardship efforts to limit the spread of these pathogens.

Keywords: carbapenemase, *Klebsiella pneumoniae*, antibiotic susceptibility, ceftazidime-avibactam

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