TITLE: OCCURENCY AND MOLECULAR CARACTERIZATION OF MULTIDRUG-RESISTANT *Klebsiella pneumoniae* ISOLATES FROM HEALTHCARE-ACQUIRED INFECTIONS IN MACEIÓ-AL, BRAZIL

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ABSTRACT:
The incidence of carbapenem resistant isolates of *Klebsiella pneumoniae* is considered critical by the World Health Organization. Investigating the mechanisms of resistance in these isolates is important for taking appropriate measures and minimizing their consequences to healthcare system. The aim of this study was to determine the occurrence and genotypic profile of carbapenem resistance of multidrug-resistant isolates (MDR) *K. pneumoniae* from Healthcare-Acquired Infections (HAIs) in Maceió-AL. Isolates of *K. pneumoniae*, identified as MDR in the source laboratory using the diffusion disk method (CLSI, 2018), were obtained from two public (A and B) and one private (C) hospitals between May and December 2018. The species was confirmed by mass spectrometry (MALDI-TOF) and resistance to meropenem was determined by disc diffusion technique. The presence of genes was established by PCR with specific primers for the bla_{KPC}, bla_{VIM} and bla_{IMP} genes, which confer resistance to carbapenems; and for the virulence genes: *cps*P, responsible for the synthesis of capsular polysaccharide; and *mrk*D, which encodes type 3 fimbria synthesis. We obtained 37 isolates, of which 40.6% (n = 15) were resistant to meropenem. In all isolates (100%, n = 37) the bla_{KPC} gene was detected, while bla_{VIM} was not present in any (0%, n = 0). The bla_{IMP} was found in 8.1% (n = 3) of the isolates, in which two presented sensitivity to meropenem. As for the virulence genes, 51.3% (n = 19) had the mrkD gene, whereas cpsP was present in all the isolates analyzed (100%, n = 37). Related to the hospitals, in C there was a greater number of MDR isolates (A = 13, B = 3, C = 21;), isolates resistant to meropenem (A = 6, B = 1, C = 8) and isolates with the *mrk*D gene (A = 2; B = 1; C = 16). However, there was no predominance in the presence of the bla_{IMP} gene (A =; B = 1; C = 1). We observed that a large number of isolates were sensitive to meropenem (59.4%, n = 22) even in the presence of the carbapenemase encoding gene bla_{KPC}. Thus, further studies based on gene expression and tests with other carbapenems are necessary for a better understanding of these results. In this study, a high incidence of the bla_{KPC} resistance gene in *K. pneumoniae* isolates in Maceió-AL was observed, as well as the presence of the virulence genes *cps*P and *mrk*D, which, together, raise the rate of cell survival in human tissues.

Keywords: *Klebsiella*, multidrug-resistant bacteria, Healthcare-Acquired Infections

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