TITLE: DISSEMINATION OF KPC AND RmtB CO-PRODUCING *Klebsiella pneumoniae* COMPLEX IN A HOSPITAL IN MARILIA, BRAZIL.

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ABSTRACT

Health care-related infections are relevant in public health because multidrug resistant microorganisms, specially members of *Klebsiella pneumoniae* complex which have several mechanisms of resistance to antimicrobial agentes difficulting the therapeutic options to treat these infections. With the advent of ESBL (enzymes that degrade β-lactams, except carbapenems), carbapenems were the choice for the treatment, sometimes associated with aminoglycosides. After the spread-out of carbapenemases (enzymes that hydrolyze carbapenems), other classes of antimicrobial agentes were used for the treatment. Currently, RMTases (enzymes responsible for methylating the binding site of aminoglycosides, inhibiting the effect of this class of antimicrobials, such as, ArmA, RmtA, RmtB, RmtC, RmtD, RmtE, RmtF, RmtG and RmtH) are described. The aim of this study was to characterize an outbreak of *Klebsiella pneumoniae* complex resistant to carbapenems and aminoglycosides isolated in a hospital in Marília city, Brazil. Twenty-five isolates were submitted to antimicrobial susceptibility tests, multiplex PCR to detect the bla_{KPC}, bla_{NDM} and bla_{OXA-48} genes and the genes responsible for the production of RMTases, such as, *rmt*B, *rmt*D and *rmt*G. ERIC-PCR was used for molecular epidemiological typing. Twenty-five isolates (100%) were resistant to carbapenems and aminoglycosides (no inhibitory zone with any aminoglycosides, which suggests the presence of RMTases). All isolates were positive for both bla_{KPC} and *rmt*B genes; 12 (48%) were obtained from blood, urine, CSF or bone, 12 (48%) from other sources (tracheal, abdominal and genital secretion and catheter tip), and 1 (2%) did not had the site of infection informed. ERIC-PCR revealed clonal spread (profile “A”). Control measures were taken to contain the outbreak. The spread of microorganisms exhibiting a multidrug-resistant nature by coproduction of KPC and RmtB represent an additional limitation in antimicrobial therapy and is becoming a serious threat to human health.

Keywords: carbapenemase, *Klebsiella pneumoniae*, KPC, RMTase, RmtB