

TITLE: FIRST REPORT OF *Raoultella planticola* CARRYING *bla*_{NDM-1}, *bla*_{KPC-2} AND *bla*_{CTX-M-15} IN SWAB RECTAL: THE IMPORTANCE OF THE ROUTINE OF SURVEILLANCE PROGRAMS.

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ABSTRACT:

Surveillance programs are important tools for controlling the emergence and spread of multidrug-resistant microorganisms (MDR), especially of the carbapenem-resistant *Enterobacteriaceae* (CRE). The presence of these microorganisms has a direct effect on increasing patient morbidity and mortality as well as hospital costs. Therefore, early identification of patients colonized and/or infected with MDR is essential to avoid the spread of these pathogens. The objective of this study was to report the importance of the surveillance program of CRE, established by National Health Surveillance Agency (ANVISA), and to show its importance in detecting unusual enterobacteria that may be silent reservoir of resistance genes. In 2011, a surveillance program was implemented at the teaching hospital in southern Brazil, to prevent and control the spread of MDR, according to ANVISA technical note 01/2010 and subsequently updated (technical note 01/2013). The MDR samples detected in the hospital are sent to two reference laboratories, local (medical microbiology laboratory) and Central Laboratory of Paraná State (LACEN-PR), for genotypic confirmation. Among the 175 bacterial isolates of CRE detected in University Hospital in 2017, two isolates of *Raoultella planticola*, both from surveillance culture, were identified. The molecular typing which was performed by enterobacterial repetitive intergenic consensus-polymerase chain reaction (ERIC-PCR) showed that both were clonally associated, although no epidemiological relationship was observed between them. Conventional and real-time multiplex PCR assays were positive for *bla*_{KPC}, *bla*_{NDM} and *bla*_{CTX} genes in both isolates. The DNA sequencing of the isolates confirmed that they carried the KPC-2, NDM-1 and CTX-M-15 variants (GenBank accession number: MH257688, MH257689, MH257690). The early recognition of patients colonized or infected with CRE is extremely important, but the detection of carriers becomes difficult, since these microorganisms can be found in different species including those of environmental origin as *R. planticola* detected in our study. We highlight the great importance of routine laboratories being able to perform the molecular detection of resistance genes in both clinical and surveillance isolates and even in environmental isolates, since these may be a silent reservoir of these genes. Effective surveillance programs can contribute to reducing and controlling the spread of multidrug-resistant bacteria.

Keywords: Public health surveillance, *Enterobacteriaceae*, beta-Lactamases.