

TITLE: HIGH FREQUENCY OF METALLO- β -LACTAMASE ENCODING *bla*_{VIM} GENE AMONG GRAM-NEGATIVE BACTERIA IN A GENERAL HOSPITAL IN JOINVILLE, SOUTHERN BRAZIL

AUTHORS: CORRÊA, A. J.; KOBBS, V. C.; VALDEZ, R. E.; DEGLMANN, R. C.; FRANÇA, P. H. C.

INSTITUTION: UNIVERSIDADE DA REGIÃO DE JOINVILLE – UNIVILLE (RUA PAULO MALSCHITZKI, 10, CAMPUS UNIVERSITÁRIO, ZONA INDUSTRIAL NORTE, CEP 89219-710, JOINVILLE – SC, BRAZIL)

ABSTRACT

Bacterial metallo- β -lactamases (M β L) are widely distributed enzymes associated with high mortality and morbidity rates in Healthcare-Associated Infections worldwide. The Verona Integron-Encoded Metallo- β -lactamase (VIM) family, the largest group within the B1 subgroup of M β L, presents high prevalence in Europe, Asia-Pacific and Middle East Africa, with sporadic cases reported in Brazil. Our aim was to investigate the frequency of *bla*_{VIM} gene among Gram-negative bacteria (GNB) resistant to carbapenems isolated from clinical samples. There were evaluated 157 clinical isolates collected during 9 consecutive years in a general hospital in Southern Brazil. Identification of the species was performed by automated method and the evaluation of antibiotic susceptibility by disc-diffusion in agar. The *bla*_{VIM} was investigated by polymerase chain reaction. The isolates analyzed were derived from bronchoalveolar lavage (31%, n = 48), rectal swab (20%, n = 32), wound secretion (15%, n = 24), urine (14%; n = 22), blood (6%, n = 9) and other less frequent sample types (14%, n = 22). The majority of isolates were derived from the Intensive Care Unit (41%; n = 65), followed by the hospitalization units (37%; n = 58). *Acinetobacter calcoaceticus* - *Acinetobacter baumannii* complex (ABC) strains comprised the majority of isolates (46%, n = 72), followed by *Pseudomonas aeruginosa* (27%, n = 43), *Klebsiella pneumoniae* (20%, n = 31), *Enterobacter cloacae* (4%, n = 7) and 4 (3%) isolates distributed in species with less frequency. The presence of *bla*_{VIM} was observed in 39 (25%) isolates, 16 (41%) belonging to *Enterobacteriaceae* family, 14 (36%) *P. aeruginosa* and 9 (23%) *A. baumannii*. It is important to highlight that 32% (14/43) of the *P. aeruginosa* isolates in this study were confirmed as carriers of *bla*_{VIM}, which is a higher rate when compared to other Brazilian studies. In conclusion, it was observed a high frequency of *bla*_{VIM} in GNB derived from clinical samples, especially in the most recent years of the historical series analyzed.

Keywords: antimicrobial resistance, *bla*_{VIM}, carbapenem resistance, gram-negative bacilli, *Pseudomonas aeruginosa*

Development Agency: This study was funded by the Research Support Fund of the University of Region of Joinville (FAP / UNIVILLE)