

Short Communication

Open Access

Gram Negative Bacterial Resistance in a Private Institution of Medellin, Colombia

Lina Maria Martinez*, Isabel Cristina Ortiz, Camilo Andres Agudelo, Juan Jose Builes, Maria de los Angeles Rodriguez, Andrea Johanna Manrique, Natalia Vargas, Mateo Zuluaga and Maria Camila Velez

Universidad Pontificia Bolivariana, Colombia

Summary

Bacterial resistance is a public health problem worldwide that has increased during the last decades. Global data directly impacts patient morbidity and mortality and hospitalization conditions.

Keywords: Gram-negative bacteria; Drug resistance; Anti-bacterial agents; Epidemiology

The concept of bacterial resistance is defined as the set of genetic changes experienced by microorganisms which gives them tools to efficiently evade the antimicrobial action. Resistance mechanisms occur by multiple processes, such as mutation of chromosome material and acquisition of extra-chromosomal material. The first descriptions were found in *Staphylococcus* spp., but in the last two decades there has been an increase of Gram-negative bacteria isolates with some kind of resistance [1].

Data from the Bacterial Resistance Surveillance System from the Capital District (SIVIBAC), Colombia, shows a percentage of 13.19% of isolates of *E. coli*, 8.11% of *K. pneumoniae* and 5.2% of *P. aeruginosa* in ICUs during the year 2006 [2]. The data mentioned directly impacts patient morbi-mortality and hospitalization conditions.[3]

Fifty Eight Gram-negative isolated strains from patients in the hospitalization service from a third level complexity institution in 2012 were considered. Using a recollection instrument created by the researchers, the information was put on a database taking into account the type of bacterial isolation and type of resistance.

Nine microorganisms were isolated from the studied strains, being the most frequent *E. coli* (43.1%), *Enterobacter cloacae* (25.9%) and *Serratia marcescens* (12.4%). The most common sampling was from urine (69.0%) followed by throat swab (8.6%). Regarding the resistance profile of the isolates, AmpC resistance was present in 74% of cases. About 25% of the strains presented Extended-Spectrum Beta-lactamases (ESBL) type resistance and only 3.4% expressed carbapenemases.

The bacterial resistance profile of the isolates from the institution was similar to the reported in the literature and is consistent with the level of complexity of the institution. It is necessary to typify the mechanisms of resistance of the included isolates to make decisions regarding the hospital's epidemiological dynamics.

References

1. Giske CG, Monnet DL, Cars O, Carmeli Y (2008) ReAct-Action on Antibiotic Resistance. Clinical and economic impact of common multidrug-resistant gram-negative bacilli. *Antimicrob Agents Chemother* 52: 813-821.
2. Surveillance System from the Capital District (SIVIBAC) (2006) Bacterial resistance information. Universidad Nacional de Colombia, Bogotá DC, Año.
3. Kang CI, Kim SH, Park WB, Lee KD, Kim HB et al. (2005) Bloodstream infections caused by antibiotic-resistant Gram-negative bacilli: risk factors for mortality and impact of inappropriate initial antimicrobial therapy on outcome. *Antimicrob Agents Chemother* 49: 760-766.

*Corresponding author: Lina Maria Martinez, Specialist Universidad Pontificia Bolivariana, Colombia, Fax: +5742572428; E-mail: linam.martinez@upb.edu.co

Received September 04, 2013; Accepted October 30, 2013; Published November 04, 2013

Citation: Martinez LM, Ortiz IC, Agudelo CA, Builes JJ, de los M, et al. (2013) Gram Negative Bacterial Resistance in a Private Institution of Medellin, Colombia. *Clin Microbial* 2: 133. doi: [10.4172/2327-5073.1000133](https://doi.org/10.4172/2327-5073.1000133)

Copyright: © 2013 Martinez LM, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.