

TITLE: Prevalence and evaluation of the antimicrobials resistance profile of non-fermenter Gram-negative bacilli isolated from samples of the lower respiratory tract

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ABSTRACT:

Non-fermenter Gram-negative bacilli (BGNNFs) are responsible for serious infections in health care institutions. In addition to the high incidence, these microorganisms have shown reduced susceptibility to a large amount of antimicrobials. This study aimed to identify the prevalence and to evaluate the antimicrobials resistance profile of BGNNFs isolated from sample of the lower respiratory tract sent to the Hermes Pardini Institute during the period from October 2018 to March 2019. A total of 1200 samples were submitted to culture and representability evaluation. The representability of the samples was determined using a Q score method, which consists of the quantification of leukocytes and epithelial cells visualized at Gram. The microorganisms identification was performed by MALDI-TOF (VITEK[®] MS/bioMérieux) and antibiotic susceptibility testing were performed by disk diffusion method. The representability of samples was 56.7% (680/1200). A total of 333 BGNNFs were isolated. The microorganisms most frequently isolated were *Pseudomonas aeruginosa* (n=216; 64.9%), *Stenotrophomonas maltophilia* (n=60; 18.0%), *Acinetobacter baumannii* (n=50; 15.0%). Other species showed rates lower than 5%. The biological materials with the highest positivity for these microorganisms were the following: tracheal aspirate (n=180; 54.1%), sputum (n=102; 30.6%) and bronchoalveolar lavage (n=51; 15.3%). For *Pseudomonas aeruginosa*, the antimicrobials resistance were the following: 41.7% (carbapenems), 27.3% (aztreonam), 21.3% (quinolones), 13.4% (aminoglycosides), 9.3% (piperacillin-tazobactam), 6.9% (cephalosporins) and 1.4% to all antimicrobials. For *Stenotrophomonas maltophilia*, only 1.7% were resistant to trimethoprim-sulfamethoxazole and levofloxacin. Finally, for *Acinetobacter baumannii*, the antimicrobials resistance were the following: 92.0% (cephalosporins), 82.0% (carbapenems), 76.0% (trimethoprim-sulfamethoxazole), 74.0% (quinolones), 54.0% (ampicillin-tazobactam), 46.0% (aminoglycosides) and, alarmingly, 42.0% to all antimicrobials. The treatment of infections caused by BGNNFs is a major challenge, due to the reduction of therapeutic options and the high rates of morbimortality. Because they are extremely important microorganisms, rapid identification and knowledge of the susceptibility profile are fundamental to guide empirical treatment, sometimes necessary, and to design strategies for prevention and control of resistance propagation.

Keywords: Non-fermenter Gram-negative bacilli, lower respiratory tract, antimicrobials