TITLE: EVALUATION OF ANTIMICROBIAL SUSCEPTIBILITY PROFILE OF EXTENDED-SPECTRUM β-LACTAMASES-PRODUCING ENTEROBACTERIAS ISOLATED IN URINE CULTURE

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ABSTRACT

Production of Extended-Spectrum β-Lactamases (ESBL) is a resistance mechanism commonly observed in enterobacterias causing urinary tract infection (UTI). These enzymes are able to hydrolyze the most of β-lactams antibiotics, making them ineffective. In addition, ESBL-producing strains often have shown resistance mechanisms against other antimicrobials classes, making more difficult the treatment of infections caused by these bacteria. The aim of this work was to study the sensitivity profiles of ESBL-producing enterobacteria isolated from urine of patients with UTI and identify antibiotics that could be used in the empirical treatment. It was evaluated all enterobacterias isolated from urine cultures performed in the LAC-CCF UNAERP, in the period of March to October 2015. The isolates were identified phenotypically and the antibiogram was conducted by disc diffusion. The ESBL production was confirmed by phenotypic tests of Double-Disk Synergism (DDS) and Combined disk (CD). During the research period, 20 ESBL-producing enterobacterias were isolated. Among the isolates, the following species were identified: 12 *Escherichia coli* (60%); 6 *Klebsiella pneumoniae* (30%); 1 *Klebsiella oxytoca* (5%) e 1 *Proteus mirabilis* (5%). According to the antimicrobials susceptibility test of the ESBL-producing isolates, only imipenem (90% sensitivity), amikacin (95% sensitivity) and nitrofurantoin (60% sensitivity) showed efficacy. Other investigated antimicrobials (ampicillin, aztreonam, cefalotin, cefotaxime, cefoxitin, ceftazidime, amoxicillin with clavulanate, cefepime, amoxicillin, nalidixic acid, pipemidic acid, ciprofloxacin, levofloxacin, norfloxacin, ofloxacin, gentamicin, trimethoprim and sulfamethoxazole, tetracycline) presented low efficiency, because more than 50% of isolates ESBL-producers were resistant against these antimicrobials. The high rate of ESBL-producing enterobacterias resistance, should be due to the coexistence in plasmids of ESBL-encoding genes with genetic determinants of others resistance mechanisms. These plasmids can be transferred between different genera and species. Therefore, studies that evaluate and monitor the sensitivity profile are extremely important as basement for therapeutics strategies most appropriate to the treatment of UTI. According to the results of this study, the antimicrobials indicated as therapy options for UTI caused by ESBL-producing enterobacterias were: imipenem, amikacin and nitrofurantoin.

Keywords: beta-lactamases, enterobacterias, susceptibility profile, UTI