ABSTRACT

AmpC beta-lactamases hydrolyze broad spectrum cephalosporins except cefepime and carbapenems. They are not inhibited by beta-lactamase inhibitors such as clavulanic acid. The objective of this study was to determine the frequency of bacteria in neonatal sepsis and to detect the presence of AmpC beta-lacatamases among them. This study also demonstrated the antimicrobial resistance pattern of AmpC producing bacteria and their correlation with various interventions. A total number of 1,914 blood samples of suspected neonatal septicemia were processed. Positive cultures showed growth of Gram positive (n=54) and Gram negative bacteria (n=582). Coagulase negative Staphylococci and Klebsiella pneumoniae were found as the most frequent isolates among Gram positive and Gram negative isolates respectively. Gram negative bacteria were screened for AmpC production by using disc diffusion method. Isolates resistant to cefoxitin, cefotaxime and ceftazidime were screen positive and confirmed by using boronic acid with ceftazidime-clavalunic acid or cefotaximeclavalunic acid discs. Enterobacter species followed by Escherichia coli and Klebsiella pneumoniae were the most frequent organisms isolated as AmpC producers. A total of 141 (22.0%) isolates were AmpC producers and found to be 100% resistant to co-amoxiclav, cefoxitin, ceftazidime, cefotaxime, cefuroxime, cefixim, ceftriaxone, cefpodoxime, gentamicin, amikacin and aztreonam. Less resistance was observeed against cefepime 43 (30.4%), sulbactam-cefoperazone 35 (24.8%), piperacillin-tazobactam 15 (10.6%), ciprofloxacin 29 (20.5%) and meropenem 3 (2.1%). All the isolates were found sensitive to imepenem. The patients harboured AmpC beta-lactamases were on various interventions in which intravenous line was noted among 72 (51.1%), naso-gastric tube 53 (37.6%), ambu bag 12 (8.5%), endotracheal tube 5 (3.5%), ventilator 3 (2.1%) and surgery 1 (0.7%). Overall the occurrence of AmpC beta-lactamase producing bacteria was found to be high in neonatal sepsis. Major risk factors included indiscriminate use of third generation cephalosporins, prolonged stay in hospital and various invasive procedures were associated with the emergence and transmission of AmpC producing bacteria.