Abstract: Introduction: ESBLs are β-lactamases that hydrolyze penicillins, extended-spectrum cephalosporins and aztreonam and are inhibited by clavulanic acid. Extended-spectrum betalactamase oxa hydrolyze oxacillins and cloxacillins and Extended-spectrum betalactamase tem hydrolyze cefotaxime and cefazidime and aztreonam. The aim of this study was to determine the prevalence of ESBL producing P. aeruginosa and molecular detection of OXA & TEM β-lactamases among P. aeruginosa strains by PCR.

Materials and methods: The total of 200 clinical isolates of P. aeruginosa was collected from clinical specimens. Antibiotic susceptibility was determined by disk diffusion method as recommended by CLSI with regard to cefotaxime (CTX), ceftazidim (CAZ), imipenem (IMP), piperacillin (pip), aztreonam (ATM), cefepime (FEP), cefexim (CFM), ticarcillin (TIC), tobramicin (TOB), gentamicin (GM), ciprofloxacin (CP), amikacin (AN). ESBL production was tested using the combined disk method with CAZ and CTX with and without clavulanic acid and PCR was made by specific primers for blaOXA and blaTEM genes.

Results: P. aeruginosa isolates were resistant to most drugs. High percentages of isolates were resistant to CTX(95%), CAZ (84/5%), CFM (96%), PIP (81/5%), FEP (79%), TIC (50%), ATM (59/5%), TOB (46%), AN (39/5%), GM (38/5%) and CP (34/5%). In combined disk test, a ≥5mm increase in zone diameter of CTX and/or CAZ tested in combination with clavulanic acid versus CTX and/or CAZ alone was considered positive for ESBL producing. Out of isolates (58/5%) were confirmed ESBL producing P. aeruginosa by combined disk. The blaOXA gene was found by PCR Out of isolates(38%) and blaOXA gene was found Out of isolates(24%) among ESBL producing isolates.

Conclusion: The results indicated that high percentage of ESBL producing P. aeruginosa (58.5%), according to high resistance of separated isolates existence of ESBLs can be attributed to existence of OXA & TEM enzymes, and the existence this enzymes can be assumed as an alarm for spread of resistance to ESBLs, so far appropriate treated antibiotic sensitivity test and the identification of this enzyme with molecular methods are necessary. Selection of appropriate therapy can restrict extention and transmission of new drug resistance.

Key words: P. aeruginosa, Combined disk, ESBL, OXA & TEM

Presentation: Poster