Coexistence Investigation of Different Beta-lactamase Enzymes in Multidrug Resistance Burn Isolates of P. aeruginosa in Tehran

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Background & Objectives: Infections caused by *Pseudomonas aeruginosa* are difficult to treat as the majority of isolates exhibit varying degrees of beta-lactamase mediated resistance to most of the beta-lactam antibiotics. It is also not unusual to find a single isolate that expresses multiple β-lactamase enzymes, further complicating the treatment options. the present study was designed to investigate the coexistence of different beta-lactamase enzymes in clinical isolates of *P. aeruginosa.*

Methods: 32 metallo-beta-lactamase positive isolates, of a total 1325P. aeruginosa burn isolates, were tested for the production of inducible AmpC beta-lactamase and extended spectrum beta-lactamase(ESBL). Detection of metallo-beta-lactamase producers was performed by Double Disk Synergy test and inducible AmpC production investigation was done by disk antagonism test whereas ESBL production was detected by combined disk diffusion methods per clinical and laboratory standards institute (CLSI) guidelines.

Results: Of 132 *P. aeruginosa* isolates which most of them were multidrug resistance 32(25%) were metallo-beta-lactamase producers, among them 4(12%) isolates were ESBL producers and all of them were negative for inducible AmpC betalactamase.

Conclusion: This study showed that it is possible that a single isolate express more than one betalactamase enzyme Thus proper antibiotic policy and measures to restrict the indiscriminative use of cephalosporins and carbapenems should be taken to minimize the emergence of this multiple beta-lactamase producing pathogens.

Keywords: *P. aeruginosa*; Multiple Antibiotic Resistance; Metallo-beta-lactamase; ESBL; AmpC