Detection of Imipenem Resistant Genes Due to Production of Metallo-beta-Lactamases in Klebsiella Pneumonia Isolates by PCR

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Background & Objectives: On the basis of recent reports drugs resistance in *Klebsiella pneumonia* strains are increasing and several antibiotics have used for patients treatment. Metallo-beta- Lactamases have a board spectrum. They hydrolyze all Betalactams. Four groups of MBLs have been described up to now, namely, IMP, VIM,SPM, and GIM . The IMP and the VIM types being prevalent and have been reported in the world wildly. In addition VIM1 and VIM2 are two subtypes of VIM and IMP1 is a subtype of IMP group.

Methods: This research was performed on 100 *Klebsiella pneumonia* strains that were collected from patients referred, to the hospitals of Hamadan university of medical science in 2008-2010. The strains were distinguished separately with two microbiological and PCR Methods, then detection of blavim1,blavim2 and blaimp1 genes was done by phenotyping and genotyping Methods used DDST and genotyping Methods by PCR protocol. In addition, the antimicrobial susceptibility was tested by KirbyBauer and Etest methods.

Results: According to the results, Imipenem resistant strains were (12%) and (8%) Were Meropenem resistant strains. Furthermore evaluation of DDST Methods showed that (5%) of these strains have Metallo-beta-Lactamases enzyme. Finally, evaluation of blavim1, blavim2, blaimp1 genes showed that (5%) of strains have only blavim1 gene and none of them have blaimp1 and blavim2 genes.

Conclusion: The genotyping and phenotyping experiments are efficient for detection of these genes. In addition the results show high prevalence of blavim1 gene in *Klebsiella pneumonia*.

Keywords: *Klebsiella pneumonia*; MBLs; DDST; BlaVIM1; BlaVIM2; BlaIMP1; PCR