Heavy metal resistance and plasmid profile of the bacterial agents of nosocomial infection

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Background and Objectives: Microorganisms that are resistant to both antibiotics and metals have been isolated from nosocomial and burn wound infection. Most of the hospital infections including *E.coli* and *Klebsiella* that are resistant to heavy metals harbor the plasmids with different molecular sizes. The aim of this study is to evaluate pattern of heavy metal resistance, MIC values of heavy metals and plasmid profiles of the resistant strains.

Materials and methods: Total 527 nosocomial infection cases were isolated and identificated. Then MIC values for heavy metals including Hg^{2+}, Cu^{2+}, Pb^{2+}, Cd^{2+} were determined. The resistant strains to heavy metals were selected for plasmid extraction according to Kado and Lin method (1996).

Results: The most value for resistance to heavy metals was as follows; Hg^{2+} (50mg/L), Cu^{2+} (800mg/L), Pb^{2+} (400mg/L), Cd^{2+} (150mg/L). Plasmid extraction was performed for a total of 41.6% of the resistant isolates. Plasmids of different molecular sizes were extracted among which the most amount is 18 Kb and the least amount is 3.4Kb.

Discussion and Conclusion: The isolates with plasmids for heavy metal resistance showed resistance to the mentioned antibiotics too. Probably, the genes responsible for resistance to both heavy metals and antibiotics are harbored by plasmids in some of the bacterial agents of (UTIs). So, the importance of investigations on the genes responsible for resistance to extended-spectrum β- lactam antibiotics and heavy metals is revealed.

Key words: heavy metal, UTI, MIC, Plasmid