Detection of beta-lactamase genes (bla_{TEM} and bla_{CTX}) glutaraldehyde in samples of *Acinetobacter baumannii*

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Background and aims:

Excessive consumption of antimicrobial materials in hospitals is as the main encoder, led to the emergence, development and acquisition of new bacterial resistance to beta-lactamase. According to the lack of the enough information about the mechanism of the resistant genes to disinfectants in the country about this study and with the aim of considering the resistance or sensitivity of the isolates of the Acinetobacter baumannii (MDR) in facing 2% glutaraldehyde, this study was conducted in the selected intensive care units if the hospitals of Tehran in 2013.

Materials and Methods:

This study which was conducted over a period of 10 months, Acinetobacter baumannii species were separated by culture and biochemical tests from intensive care units of some hospitals in Tehran (Fayazbaksh, Taleghani, Imam Khomeini, Valiasr, Labafinejad). The resistance and sensitivity of the isolates to antibiotics is considered according to CLSI (2012) guidelines. By multiplex PCR method blaCTX and blaTEM were detected and finally, MDR strains were treated with 2% glutaraldehyde. PCR was put for each strains of MDR using specific primers.

Results:

In our study 131 isolates out of 588 (22/3%) of Acinetobacter baumannii were isolated. The amount of the resistance to various antibiotics was in the range of the 69/4% to 100%. The percentage of frequency of the blaTEM and blaCTX was 3/2% and 19/4% respectively.MIC50% and MIC90% of imipenem and meropenem antibiotics were 32±1 µg/Ml and 64±1 µg/mL respectively (P<0.9). And there was seen no resistance to glutaraldehyde. Some different bond electrophorus had been seen in the PCR of MDR strains.

Conclusion:

It seems that beside variety and prevalence of blaTEM and blaCTX, enormous mechanisms like porin and leaking systems (efflux Pumps) are responsible in the making of the resistance of Acinetobacter baumannii to disinfectants. The study about an accurate consideration of the resistance in strains and other microorganisms is advised.

Keywords: *Acinetobacter baumannii*, lactamase genes, disinfectants, antimicrobial resistance

References:

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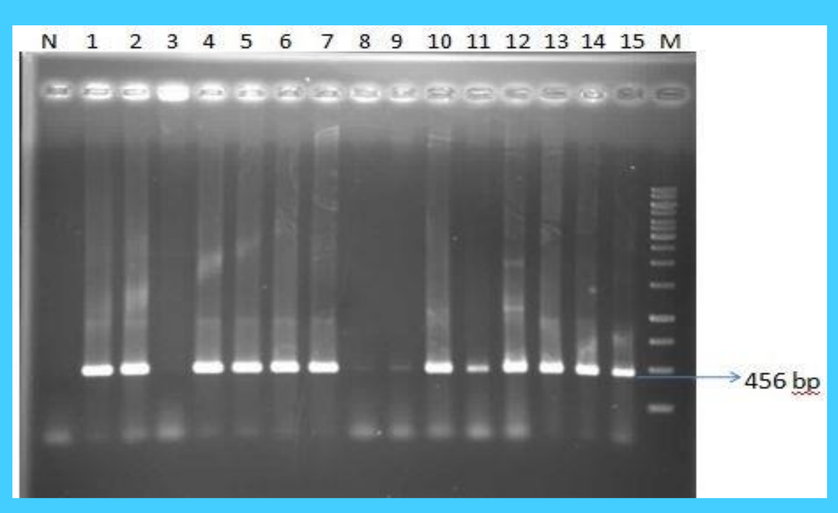

Figure 1: gel electrophoresis of Acinetobacter baumanii gene (blaCTX) strains isolated from Surfaces and equipment N: Number of template DNA, M: size marker 1 kb ladder.

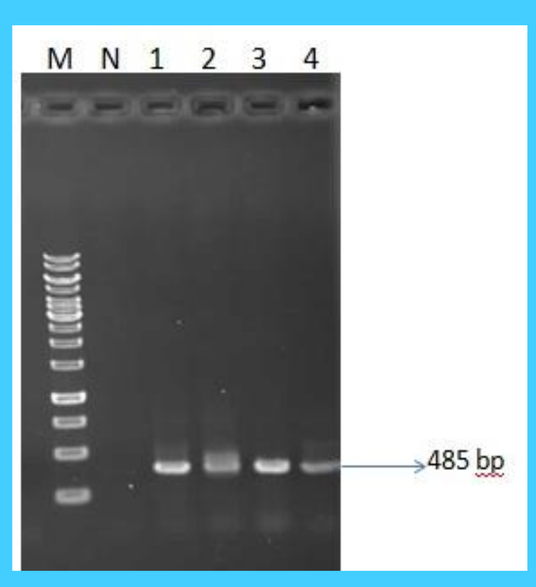

Figure 2: gel electrophoresis gene bla_{CTX},
M: size marker 1 kb ladder