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Phenotypic and genotypic characterization of carbapenem-resistant *Acinetobacter baumannii* clinical isolates from Alexandria

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The aim of the present study was to investigate the prevalence of genes coding four different OXA-type carbapenemases, six metallo- β -lactamases and three insertion sequences associated with carbapenem resistant *Acinetobacter baumannii* clinical isolates collected from university hospitals in Alexandria, Egypt. A total of 74 non-repetitive carbapenem-resistant *Acinetobacter baumannii* clinical isolates were collected and identified by MALDI-TOF mass spectrometry, VITEK 2 and by amplification of the bla_{OXA-51}-like gene. The resistance pattern of the tested isolates was determined by disc diffusion technique and the minimum inhibitory concentration values were determined by agar dilution method. The target sequences were amplified by polymerase chain reaction. bla_{OXA-23}, bla_{VIM} and ISAbal were detected in all tested isolates, while bla_{OXA-40}, bla_{IMP}, bla_{GIM} and bla_{SIM} were completely absent. In addition, plasmids were isolated from 9 isolates harboring bla_{NDM} and transformed into naturally competent carbapenem sensitive *Acinetobacter baumannii* clinical isolates. The obtained recipient transformants showed high level of resistance to carbapenems indicating that bla_{NDM} genes were carried on the isolated plasmids. In conclusion, rapid and effective tools should be available in laboratories to detect carbapenem resistant *Acinetobacter baumannii*, a strict hospital infection control policy should be implemented and antibiotic stewardship programs should be applied to limit the spread of multi-drug resistant pathogens.

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