

MULTIVARIATE ANALYSIS OF ACINETOBACTER SPECIES IN A TERTIARY CARE HOSPITAL

Abstract: Introduction : Acinetobacter is an opportunistic bacterial pathogen primarily associated with Hospital-acquired infections. Multi-drug Resistant (MDR) Acinetobacter has increasingly become a formidable antigen in nosocomial and community acquired infections. So much so, that in recent years it has been designated as a red alert human pathogen generating alarm among the medical personnel. **Aim:** The aim of the study is to isolate, identify the Acinetobacter species from various clinical samples and to demonstrate its antimicrobial resistance pattern with special emphasis on molecular characterization of Carbapenemase producing strains in our hospital. **Materials and methods:** Total 103 isolates of Acinetobacter species were isolated. They were tested for ESBL and CARBAPENEMASE production by phenotypic and genotypic methods. **Results ;** Acinetobacter species was the most common species isolated. ESBL producers were 45%. Multi- drug resistant was 40%. XDR were 20%. Acinetobacter species showed high level resistance to Cephalosporins, Aminoglycosides and Fluoroquinolones. 20% of isolates were Carbapenem resistant and they were subjected to phenotypic methods such as Modified Hodge test and Double disk synergy test. 75% of isolates were positive by Modified Hodge test. Molecular characterisation of OXA-Carbapenemases and MBL was done. It was found that OXA-51 and OXA-23 were present 100% in 20 of Carbapenem resistant isolates. bla_{VIM} and bla_{IMP} were also identified. bla_{VIM} was present in 10% of isolates. **CONCLUSION :** Acinetobacter is recently emerging as a major cause of Hospital acquired infections. Its ability to cause infection in the healthy host and to develop multi-drug resistance is of grave concern. Among them *A.baumannii* is the most frequently encountered species which is commonly associated with ICU infections and a high mortality rate. Now a days emerging resistance to the Carbapenem drug has become a challenge to treat the patients. Hence therapeutic options are limited to last line antimicrobials like Colistin and Polymyxin. Treatment with these drugs are not without adversities. Carbapenem resistance in *A.baumannii* is due to OXA Carbapenemases bla_{OXA-23} and bla_{OXA-51} . Hence phenotypic identification and molecular characterization of these resistant isolates is necessary. The only alternative left is stringent infection control plus antibiotic stewardship program which limits the spread of resistant mechanisms by using the available antimicrobials. A simultaneous existence of different classes of Carbapenemases is a major problem to encounter with and hence detection methods are required for each of these. In outbreaks, an initial screening of the Carbapenemase producers will help to organize interventions and early therapies. Further awareness should be created to good housekeeping and control of the

equipment , including equipment decontamination. Strict attention to hand washing should be undertaken to control the spread of Acinetobacter in Hospitals.

Key words: Acinetobacter, ESBL, Carbapenamase, MBL, OXA & bla gene