2nd International Conference on

Medical and Clinical Microbiology

July 16-17, 2018 Melbourne, Australia

Colistin resistant clinical *Acinetobacter* species may be mediated by the absence of the *IpxA* gene at an academic complex hospital in Durban, KwaZulu-Natal, South Africa

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Statement of the Problem: Drug resistant *Acinetobacter* species (*Acinetobacter* spp.) presents a serious therapeutic and infection control policy challenge globally. The purpose of this study investigated the relationship between the Minimum Inhibitory Concentrations (MICs) of standard drugs against *Acinetobacter* spp. and genes associated with colistin resistance. The association between drug resistance and clinical outcomes of patients with *Acinetobacter* spp. in a central academic hospital was also determined.

Methodology & Theoretical Orientation: Case information from 107 patients cultured with *Acinetobacter* spp. was recorded during clinical wards rounds, including clinical outcomes, history of antibiotics prescribed and microbiological investigations. The 107 *Acinetobacter* spp. isolates were investigated for susceptibility to antimicrobial agents in use at local hospitals. Resistant genes related to colistin (IpxA) was investigated by Polymerase Chain Reaction (PCR) and sequencing. Analysis was performed on the relationship between clinical outcomes and antimicrobial resistant patterns, as well as on the MICs of colistin (n=6) in resistant isolates versus their PCR results.

Findings: Colistin resistance was observed in six isolates out of 107 isolates. All six colistin resistant isolates were not Multi Drug Resistant (MDR). The MICs were >16 μ g/mL for the six colistin resistant isolates. The IpxA gene was absent in colistin resistant isolates and correlated with high MICs. While the majority (63%) of cases was discharged, mortality rates were high (21.5%). No underlying clinical factors were significantly associated with clinical outcome.

Conclusion & Significance: Colistin resistance may be associated with the absence of the IpxA gene and is not a surrogate marker for MDR *Acinetobacter* species. The emergence of colistin resistance is of serious concern. Recommendations are highlighting the urgency for standardized guidelines for the treatment and management of *Acinetobacter* species.

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