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Paper Poster Session
Colistin and polymyxin B pharmacokinetics

Efficacy and safety of polymyxin B for infections caused by extensively drug-resistant (XDR) Gram-negative bacteria in Thailand

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Background: Colistimethate sodium, inactive prodrug of colistin, has been used for therapy of infections caused by XDR gram-negative bacteria in Thailand over the past 10 years with mortality of 40% to 60% and nephrotoxicity of 40% to 50%. Polymyxin B has several advantages over colistin e.g. it is an active drug, it is somewhat more active than colistin, adjustment of the dose may not be needed for the patient with impaired renal function, and it might be have less nephrotoxicity. However, polymyxin B has not been widely available in Thailand. The objective of this multicenter study was to determine the efficacy and safety of polymyxin B for the treatment of XDR gram-negative infections.

Material/methods: Patients hospitalized at 4 participating tertiary care hospitals between January and November 2014 who had infections caused by XDR gram-negative bacteria were enrolled in the study. Polymyxin B was given intravenously twice a day at the dosage according to the patient's body weight with no adjustment for the renal function for 7 to 14 days. The dose of polymyxin B was usually 100 mg per day. The primary outcomes were clinical response and 30-day mortality; and the secondary outcomes were microbiological clearance and drug toxicity.

Results: 67 patients with documented XDR gram-negative bacterial infections who received polymyxin B for longer than 48 hours were included. Most of the patients were elderly males who had comorbidities and had received antibiotics, particularly carbapenems, prior to receiving polymyxin B. More than half of the patients had pneumonia. 50.9% of the target infections were caused by XDR *Acinetobactor baumannii* which were susceptible to colistin. Good clinical response at the end of polymyxin B treatment was 77.6%, all cause 30-day mortality was 31.4%, microbiological clearance at the end of therapy was 58.2% and nephrotoxicity (RIFLE criteria) was 26.9%. Neurotoxicity of reversible numbness was observed in two cases.

Conclusions: Polymyxin B appears to be effective and safe for treatment of infections caused by XDR gram-negative bacteria in Thai adult patients. Nephrotoxicity related to polymyxin B seems to be lower than that of colistin reported in other case series in Thai patients. Polymyxin B should be considered as an effective alternative therapy to colistin for therapy of infections caused by XDR gram-negative bacteria especially in the patients at risk of nephrotoxicity.