Colistin Concomitant Use with Other Potential Nephrotoxic Drugs in Intensive Care Units

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Introduction. Colistin is potentially nephrotoxic antibiotic used for treatment of severe systemic infections caused by multi-drug resistant (MDR) Gram-negative bacteria, e.g. *Acinetobacter baumanii*. Nephrotoxicity is a commonly described side effect also for glycopeptide and aminoglycoside group antibiotics, as well for loop diuretics and non-steroidal anti-inflammatory drugs (NSAIDs).

Aim, Materials and Methods. The aim of this study was to detect cases of colistin co-administration with other potentially nephrotoxic drugs in intensive care units (ICU) of Pauls Stradins Clinical University Hospital (PSCUH).

The inclusion criteria for this retrospective study: adult patients; admission to PSCUH ICUs; ICD-10-CM Diagnosis Code A49.8 (bacterial infections of unspecified site); colistin therapy during hospitalisation (started in ICU); discharge from hospital in 2016. Information about patients' demographics, duration of hospitalisation and outcome, clinical diagnoses, colistin doses and duration of therapy, other potentially nephrotoxic drug use, bacterial susceptibility and biochemical analysis tests results was collected retrospectively from medical notes and Dialab database. Statistical data analysis was performed by SPSS 22 Software. Approval of the Ethical Committee of Rīga Stradiņš University have been received prior to the study.

Results. Fifty patients were included in this study. 35 patients (70 %) were men. Mean age (± SD) was 62 ± 2 years. Median duration (Q1; Q3) of hospitalisation was 34 (21; 63) days. Mortality rate was 27 %. The most common clinical diagnoses groups were pulmonology (16 cases (32 %)), cardiology (9 cases (18 %)), trauma and surgical complications (8 cases (16 %)) and neurology (7 cases (14 %)). *A. baumanii* was usually isolated from trachea aspirate (37 cases (74 %)) and blood (13 cases (26 %)). Median duration (Q1; Q3) of colistin therapy was 11 (7; 22) days and median cumulative dose (Q1; Q3) was 85 (44; 154) million units. In 13 cases (26 %) colistin was used together with one and in 10 cases (20 %) – with two or three potentially nephrotoxic drugs. The most common drugs were loop diuretics (13 cases), diclofenac (12 cases) and vancomycin (10 cases). In four cases of co-administration of colistin with loop diuretics and in three cases of co-administration of colistin with vancomycin decline in renal function was observed.

Conclusions. In PSCUH, ICUs colistin sometimes is co-administrated with other potentially nephrotoxic drugs, e.g, with loop diuretics, NSAIDs or glycopeptide antibiotic. More well-designed studies are necessary for evaluation of the role of these combinations in development of colistin-associated renal impairment.