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Congress Abstract

Colistin in Oncohematological Intensive Care: Clinical Outcomes, Microbiological Profile, and Renal Function Dynamics

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Introduction: Infections caused by multidrug-resistant gram-negative microorganisms are one of the causes of adverse outcomes in critically ill patients with oncohematological diseases. Given the limited availability of modern antibacterial agents, colistin remains a reserve drug; however, its use is associated with concerns regarding nephrotoxicity. Objective: To evaluate clinical outcomes, microbiological profile, and renal function dynamics during colistin therapy in an oncohematological intensive care unit.

Materials and Methods: A single-center retrospective study was conducted on 48 consecutive episodes of colistin therapy in an oncohematological intensive care unit in 2024. Clinical and microbiological data, treatment characteristics, creatinine dynamics, use of renal replacement therapy, and in-hospital outcomes were analyzed. The primary outcome was in-hospital mortality. Comparisons were made using the Mann–Whitney U test and Fisher's exact test; differences were considered statistically significant at $p < 0.05$.

Results: Neutropenia was observed in 36 of 48 episodes (75.0%), and mechanical ventilation and/or vasopressor support prior to therapy initiation was required in 41 episodes (85.4%). Positive cultures were obtained in 30 episodes (62.5%). Klebsiella pneumoniae was isolated in 26 episodes (54.2%); 25 of the 26 isolates exhibited a multidrug-resistant phenotype. Among episodes with positive cultures, 26 of 30 isolates (86.7%) were susceptible to colistin. In-hospital mortality was 60.4% (29 of 48). Compared with survivors, non-survivors more frequently had neutropenia (96.6% vs. 42.1%; $p < 0.001$) and required mechanical ventilation and/or vasopressor support before therapy initiation (100.0% vs. 63.2%; $p < 0.001$). They also had higher median procalcitonin concentrations (17.67 [5.40–34.91] vs. 3.15 [0.87–6.35] ng/mL; $p < 0.001$) and higher median baseline serum creatinine concentrations (108 [96–180] vs. 93 [89.5–102] μmol/L; $p = 0.006$). Colistin susceptibility was not associated with mortality ($p = 0.584$). An increase in creatinine of at least 26.5 μmol/L was observed in 21 episodes (43.8%), and an increase to at least 1.5 times the baseline value was observed in 13 episodes (27.1%). Renal replacement therapy after colistin initiation was required in 7 of 39 episodes without prior renal replacement therapy (17.9%).

Conclusions: Colistin therapy in the oncohematological intensive care unit was predominantly administered to patients with severe infection, neutropenia, and a need for organ support. Adverse outcomes were primarily associated with the baseline severity of the condition, whereas laboratory susceptibility to colistin did not determine prognosis. Worsening renal function during treatment was frequent; however, the retrospective design and concomitant organ dysfunction preclude attributing it exclusively to colistin. These findings underscore the need for early microbiological diagnosis and careful monitoring of renal function.

Keywords: Colistin; Hematologic Neoplasms; Intensive Care Units; Bacterial Drug Resistance; Klebsiella Pneumoniae; Acute Kidney Injury