

콜리스틴 용량과 콜리스틴에 의한 신독성과의 연관성

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The Association between Colistin dosing and Colistin-induced Nephrotoxicity

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Objective: The objective of this study was to evaluate the association between colistin doses and the development of nephrotoxicity.

Methods: A retrospective cohort study of all patients received intravenous colistin to treat infections caused by multi-drug-resistant Gram-negative rods at Samsung Changwon Hospital was conducted. From 2010 to 2013, adult patients receiving colistin for 72 hr or longer were included in this study. The patients who received dialysis at baseline or colistin therapy less than 3 days were excluded. Colistin induced nephrotoxicity was defined as doubling of baseline serum creatinine. Colistin dosing was evaluated based on ideal body weight (IBW).

Results: Total number of 475 patients received colistin therapy. Three hundred twenty-nine patients met inclusion criteria and were included in the analysis. One hundred forty-three (43.5%) experienced nephrotoxicity during colistin treatment. The median onset time of nephrotoxicity was 6 days (IQR 4-8 days). The patients with nephrotoxicity were older, and had lower hematocrit and serum albumin levels compared to those without nephrotoxicity. Daily dosing based on IBW was significantly higher in patients with nephrotoxicity compared to those without nephrotoxicity (4.80 ± 1.53 mg/kg/day vs 4.32 ± 1.38 , respectively; $p=0.003$). Cumulative dose was not different between two groups. In logistic regression analysis to identify predictors of nephrotoxicity, age [Odds Ratio (OR)=1.022], hematocrit (OR=0.932), serum albumin level (OR=0.513), use of glycopeptides (OR=2.111), and Daily dosing based on IBW (OR=1.403) were significantly associated with development of nephrotoxicity. The association between colistin dosing and development of nephrotoxicity was also examined by subgroups stratified by renal function. Colistin dosing was significantly associated with development of nephrotoxicity in patients ($n=43$) with estimated glomerular filtration rate (eGFR) <60 ml/min/1.73m² compared with those with eGFR ≥ 60 ml/min/1.73m² (OR=2.317, 95% CI, 1.263-4.248 vs OR=1.203, 95% CI, 0.976-1.481, respectively).

Conclusion: Development of nephrotoxicity during colistin treatment was associated with older age, lower hematocrit, lower serum albumin, use of glycopeptides and colistin dosing. Especially, development of nephrotoxicity was significantly more strongly associated with colistin dosing in patients with eGFR <60 ml/min/1.73m² not in those with normal renal function.

Key Words: 콜리스틴, 신독성, 용량

Colistin, Nephrotoxicity, Dose