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## **Inhalation alone versus inhalation plus intravenous colistin for multidrug-resistant gram-negative bacterial infection after lung transplantation**

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**Introduction:** After lung transplantation, patients are exposed to the risk of various infections accounting for significant morbidity and mortality. Multidrug-resistant gram-negative (MDR-GN) bacteria are emerging pathogen that is difficult to treat. Intravenous (IV) colistin retains good activity against these pathogens, despite its known nephrotoxicity, especially with concurrent calcineurin inhibitor use. Several studies revealed that nebulized colistin provides good therapeutic responses with less nephrotoxicity. Since there are little data about the efficacy of nebulized or intravenous administration of colistin in MDR-GN infection after lung transplantation, this study compared the nephrotoxicity and clinical outcomes of these two delivery routes in lung transplantation

**Methods:** From January 2015 to December 2020, 307 lung transplantations were performed. 98 patients (31.9%) received colistin due to MDR-GN infection. Forty-seven patients received only nebulized colistin and 51 patients were treated with intravenous with or without nebulized colistin. Variables related to clinical features were retrospectively

**Results:** *Acinetobacter baumannii* was the predominant primary microorganism (n=54, 55.1%), followed by *Klebsiella pneumoniae* (n=28, 28.6%). No significant difference of basic characteristics was observed between the inhalation and the intravenous groups (Table 1). The intravenous group showed longer duration of colistin use ( $p=0.001$ ) and MDR-GN was more frequently isolated from blood and wound than the inhalation group ( $p=0.007$ ,  $p=0.027$ , respectively). There was no difference in the median creatinine clearance before colistin between the groups. The incidence of nephrotoxicity was significantly higher in the intravenous group ( $p<0.001$ ). The achievement of microbiological eradication and clinical cure were significantly higher in the inhalation group than the intravenous group ( $p=0.001$ ,  $p=0.007$ , respectively).

**Conclusion:** Our findings suggested that colistin Inhalation alone could provide an effective and safe treatment option for MDR-GN infection after lung transplantation. However, indication for nebulized colistin should be decided deliberately, especially when MDR-GN is isolated from blood or infected wound.