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A high aminoglycoside regimen associated with renal replacement therapy for the treatment of multi-drug resistant pathogens

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Introduction

Infections caused by multi-drug resistant (MDR) Gram-negative (GN) organisms in critically ill patients are a therapeutic challenge. Few therapeutical options are available.

Objectives

The administration of high-dose aminoglycoside (HDA) therapy coupled with high-flow continuous veno-venous hemodiafiltration (CVVHDF) could allow required high drug peaks to be achieved with reduced toxicity.

Methods

All adult patients present on the intensive care unit (ICU) between October 2009 and July 2014 who had MDR-GN sepsis were considered for HDA and high-flow (>45 mL/kg/h) CVVHDF when an isolated pathogen was at least partially sensitive to aminoglycosides and the patient's condition was not improving with conventional therapy. Optimal antibacterial activity was defined as a peak concentration of at least 8 times the minimal inhibitory concentration.

Results

Fifteen patients infected with MDR-GN pathogens (11 with Pseudomonas aeruginosa; 10 with abdominal and 5 with respiratory infections) were treated with amikacin (n = 11), gentamicin (n = 3) or tobramycin (n = 1) and high-flow CVVHDF. A favorable clinical response was observed in 8 (53%) patients, including 3 in whom microbial eradication was obtained. Six patients were discharged alive from the ICU, and five from the hospital. No renal toxicity was observed.

Conclusions

In this cohort of septic patients with MDR-GN infections, HDA combined with high-flow CVVHDF represented a valuable therapeutic option. The effectiveness of this approach should be further evaluated in larger studies.

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