



Vancomycin dosing in patients on Continuous Veno-Veno Hemodiafiltration

Yezina Nigatu , Anil Morisetti , Melinda Monteforte , Vanya Grover, Alexander Osei-Bonsu , Kamran Karimi , Nand K. Wadhwa

Stony Brook Medicine

Introduction

Vancomycin is commonly used to treat life-threatening infections caused by methicillin-resistant *Staphylococcus aureus* (MRSA) in critically ill patients in the intensive care unit (ICU). Limited studies suggest that initial vancomycin trough levels of 15-20 mcg/ml were associated with significantly lower failure rates in the treatment of MRSA bacteremia. Despite the recognized importance of early appropriate antimicrobial therapy, no clear guidelines exist regarding dosing of vancomycin in patients receiving continuous venovenous hemodiafiltration (CVVHDF). It is suspected that the common vancomycin dosing strategies that we practice today often produce sub-therapeutic vancomycin concentrations during CVVHDF. Our facility's vancomycin dosing experience is based on the recommendations for patients that are on intermittent hemodialysis.

Objective

The objective of this study was to evaluate adequacy of vancomycin dosing in patients on CVVHDF in different ICU settings.

Methods

Retrospective data were collected on patients on CVVHDF receiving IV vancomycin in different intensive care units. CVVHDF was performed using M100 set with AN69 hemofilter with Prisma flex CRRT System.

Primasate BGK 4/2.5 was delivered at 500-1000 ml/hour as dialysate.

Primasol BGK 2/0 or 4/0 was infused at 1500-2000 ml/hour as replacement fluid.

Minimum effluent rate of 20-25 ml/kg/hour was achieved in each patient.

Data were analyzed on 11 patients (mean age 63 ± 13 years, 4F, 7M) who received vancomycin while on CVVHDF.

Indication for vancomycin use was empiric in 6 out of 11 patients. The mean number of days of CVVHDF were 4.7 ± 2.4 days.

Results

Thirty six vancomycin dosages were given to 11 patients. Two third of these doses were given as fixed 1 gram each. The mean vancomycin dose was 980 mg (range 500 to 1300 mg).

The dosing was not based on body weight. The timing to checking vancomycin levels was randomly chosen.

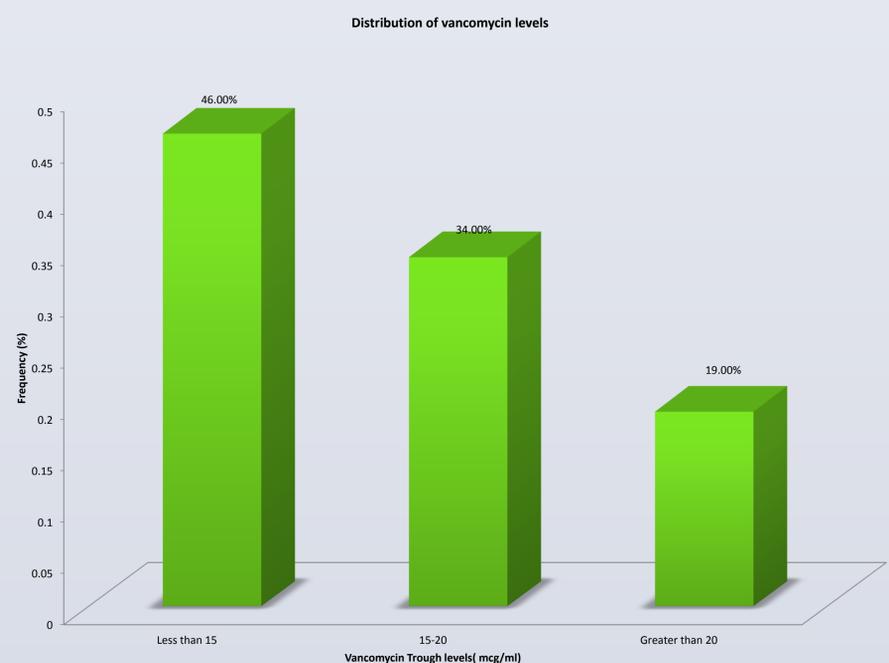
Vancomycin levels were checked 41 times in 9 patients. In two patients, no vancomycin level was done.

The mean frequency of vancomycin levels being checked was 4.7 ± 2.7 times.

Mean number of hours to vancomycin level were 23.2 ± 11.4 hours after the dose was given.

Mean vancomycin level was 17.3 ± 5.9 mcg/ml in the entire population.

Nineteen out of 41 (46 %) vancomycin levels were <15 mcg/ml, 34% levels were between 15-20 mcg/ml while 19% were >20 mcg/ml (mean in this group was 23.3 ± 2.2 mcg/ml).



Discussion

Only Thirty four percent of the vancomycin levels fall within the current recommendations of 15-20 mcg/ml. This small data indicates that in majority of the patients , vancomycin levels were sub-therapeutic .

We need further studies to develop standard protocols to improve vancomycin dosing in the ICU setting among patients on CVVHDF.