Category :**Renal: extracorporeal support**

A139 - ***Exploring population pharmacokinetic models in patients treated with vancomycin during continuous venovenous hemodiafiltration (cvvhdf) on different anticoagulant modalities.***

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Introduction:

Achievement of target concentrations for antibiotics using therapeutic dose monitoring (TDM) is particularly challenging in septic patients requiring renal replacement therapy.

Methods:

We conducted an exploratory population pharmacokinetic (PK) analysis in our single centre tertiary level intensive care unit (ICU) on PK of vancomycin following intermittent infusion in critically ill patients receiving continuous venovenous haemodiafiltration (CVVHDF). This retrospective study extracted clinical, laboratory and dialysis data from the electronic healthcare record (EHR), using strict inclusion criteria. A population PK analysis was conducted with a one compartment model using the PMetrics population PK modelling package. A base structural model was developed, with further analyses using clinical and dialysis related data to see if model prediction could be improved through covariate inclusion. The final selected model was used to simulate patient concentrations to investigate the probability of different dosing regimens achieving target therapeutic concentrations.

Results:

107 vancomycin dosing intervals (155 levels) in 24 patients were examined. An acceptable base model was produced (Plots of observed vs. population predicted concentrations (Obs-Pred) R^2=0.78). No continuous covariates used resulted in a clear improvement over the base model. Use of anticoagulation modality and vasopressor use as categorical covariates resulted in similar PK parameter estimates, with a trend towards lower parameter estimate variability when using RCA or without vasopressor use. Simulations using PTA plots suggested that a 2 g loading dose followed by 1.5g in 24 hours as maintenance dose, commencing 12 hours after loading, is required to achieve adequate early target trough concentrations of at least 15 mg/L.

Conclusion:

Simulations based on PTA plots showed we could achieve acceptable vancomycin trough concentrations early in treatment with a 2 g loading dose and maintenance dose of 750 mg 12 hourly in CVVHDF.