Micafungin plasma levels are not affected by continuous renal replacement therapy – experience in critically ill patients

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Background: Critically ill patients often experience acute kidney injury and the need for renal replacement therapy in the course of their treatment on an ICU. These patients are at an increased risk for candidiasis. Although there have been several reports of micafungin disposition during renal replacement therapy, there are up to this date no data describing the elimination of micafungin during high dose continuous venovenous haemodiafiltration with modified AN69 membranes. The aim of this prospective open label pharmacokinetic study was to assess whether Micafungin plasma levels are affected by continuous haemodiafiltration in critical ill patients using the commonly employed AN69 membrane.

Methods: a total of 10 critically ill patients with micafungin treatment due to suspected or proven candidaemia were included in this trial.

Results: Pre-filter/post-filter micafungin clearance was measured to be 46.0 ml/min (±21.7 ml/min, n=75 individual timepoints), while haemofilter clearance calculated by sieving coefficient was 0.0038 ml/min (±0.002 ml/min, n=75 individual timepoints). Total body clearance was measured to be 14.0 ml/min (±7.0, n=12). The population $AUC_{0\text{-}24h}$ was calculated as 158.5 mg.h/L (±79.5 mg.h/L, n=13).

Conclusion: In spite of high protein binding, no dose modification is necessary in patients receiving continuous venovenous haemodiafiltration with AN69 membranes. A dose elevation may however be justified in certain cases.