[ID-P#106] Combined intermittent (IHD) and continuous (CRRT) dialysis in severe metformin poisoning

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Background/Objective: Metformin is the preferred initial pharmacologic treatment of type 2 diabetes (1). Renal dysfunction may cause accumulation of metformin (renal excretion only) and subsequent lactic acidosis (type B). Such metformin-associated lactic acidosis (MALA) has a reported mortality up to 36% in a recent meta-analysis (2). Therefore, hemodialysis has been recommended, both IHD and CRRT. However, the indication for each modality – and their possible combination - is not clarified. We therefore studied patients with severe MALA with focus on demonstrating the efficacy of combined IHD and CRRT.

Methods: Combined retrospective and prospective case series of 10 patients admitted to our MICU at Oslo University Hospital diagnosed with MALA between 2011 and 2023; all treated with IHD and CRRT.

Results: All patients had elevated S-creatinine upon admission (median 787uM, range 424-1175) due to pre-renal kidney failure causing metformin accumulation. All had metabolic acidosis with median BD 27mM (range 17-34); median pH 6.97 (range 6.63-7.13); median S-lactate 15.6mM. Their median sBP on admission was 81mmHg, and all needed vasopressors during IHD. Despite their severity only one patient with several comorbidities died after 70 days in hospital. Kinetics during IHD and CRRT showed effective removal of metformin in all patients (will be presented in detail).

Conclusion: Despite critically ill patients with severe metformin poisoning, aggressive and combined dialysis approach was associated with low mortality in our cohort. There is a need to quickly reduce the level of metformin, but the volume of distribution of metformin is relatively high. Therefore, we recommend initial IHD to remove metformin from plasma, with transition to CRRT for a longer period to further remove metformin in “the rebound phase”.