

Use of the Cytosorb® filter in metformin intoxication in a hemodynamically unstable patient, a case report.

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Background / Aims

Metformin is a hypoglycemic agent used in type 2 diabetes. In case of overdose, it induces lactic acidosis (LA), that occurs especially in case of chronic or acute kidney injury. To date, there is no antidote available, thus therapy is based on the support of vital functions, possibly associated with

Clinical case

A 66 years old man with history of type 2 diabetes treated with metformin, hypertension, hypercholesterolemia, overweight, chronic cerebral vasculopathy, medullary sponge kidney associated with recurrent renal colic, was admitted to our ICU. He presented with polypnea (RR 32), hypotension (BP 70/43 mmHg) and tachycardia (HR 108 bpm), oliguric not responding to furosemide, pulmonary edema. SAPS II score was 55 and SOFA score 7. Blood gas analysis (BGA) showed pH 6.95, PaO₂ 146 mmHg, PaCO₂ 37 mmHg, HCO₃⁻ 8.2 mmol/L, base excess (BE) -22.8, lactate (Lac) 20.64 mmol/L, Anion Gap (AG) 53.18, serum creatinine (SCr) 14.5 mg/dl, K⁺ 6.3 mmol/L.

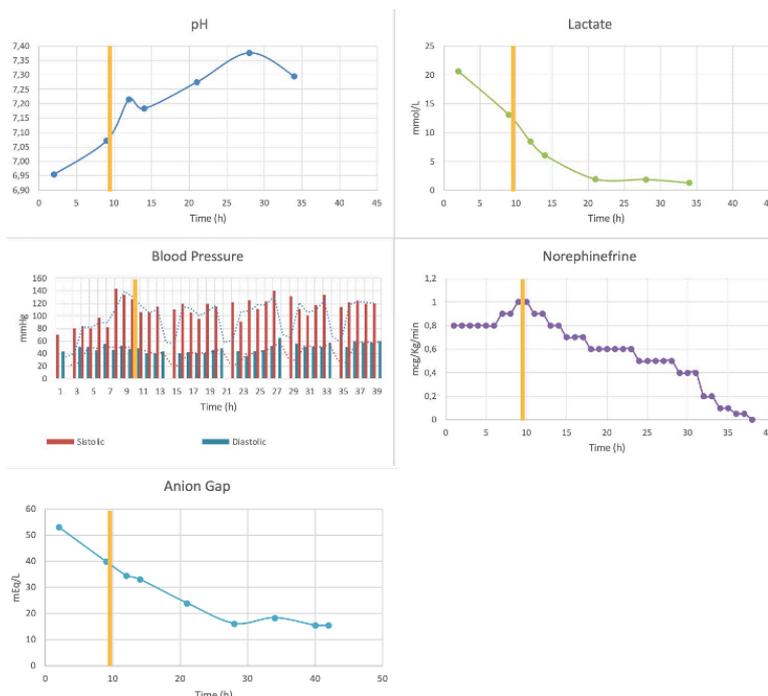


Figure 1 - variation of the main parameters over time. The yellow line indicates the start of the CRRT + CytoSorb therapy

The patient underwent prompt sedation, mechanical ventilation and norepinephrine infusion as well as administration of a bolus of HCO₃⁻ 8.4% 250ml, followed by continuous infusion. He underwent 2 hours of IHD till hemodynamic instability became unmanageable. Thus, we started CRRT with CytoSorb; the treatment lasted 24 hours. The first BGA showed: pH 7.07, PaCO₂ 14.6 mmHg, HCO₃⁻ 4.2 mmol/L, BE -24, Lac 13.08 mmol/L, AG 40. At the end of the treatment BGA was pH 7.41, PaCO₂ 38.1 mmHg, HCO₃⁻ 23.8 mmol/L, BE -0.6, Lac 1.59 mmol/L, AG 15.6, RR and BP had normalized. On day 2, the patient was extubated, hemodynamically stable and his urinary output normalized. He had no relapse of LA as can be seen from the pH and lactate trend reported in figure 1.

Discussion and Conclusion

The use of CRRT together with CytoSorb appears to be a valid treatment for patients with metformin intoxication. CRRT + CytoSorb lead to rapid pH and lac normalization with hemodynamic stability and decreased norepinephrine support. We used CytoSorb because it is very effective in adsorbing low-medium molecular weight molecules, especially when present in high concentrations like in acute intoxication.