# ACUTE KIDNEY INJURY COMPLICATING LACTIC ACIDOSIS IN A PATIENT RECEIVING METFORMIN, LENALIDOMIDE AND TELMISARTAN

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## INTRODUCTION

Metformin is the hypoglycemic drug of first choice in Type II Diabetes (T2D). However, this drug must be carefully managed in patients with impaired renal function due to the risk of lactic acidosis. We hereby present a case report of lactic acidosis related to an improper use of metforformin with a concomitant use of lenalidomide and telmisartan.
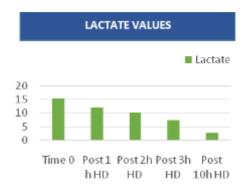
## PRESENTATION

A 77-year-old woman with T2D, Hypertension, Chronic Kidney Disease (CKD) stage III and Multiple Myeloma, was hospitalized due to the sudden appearence of vomiting, edema and asthenia.  At home she was assuming temisartan + hydrochlorothiazide, lenalidomide (not at renal dosage), metformin 1.5 g / day. On admission, laboratory exams showed a rapid worsening of renal fuction and a lactic acidosis,  as summerized in Table 1.

## RESULTS

After right jugular catheter placement, a Sustained Low Efficiency Dialysis (SLED) session was started with potassium concentration of 3mmol/l and bicarbonate concentration of 32 mEq / L in the dialysis bath, with a Blood flow of 200 ml / min, Dialysate flow of 300 ml / min. At the end of 3 hours dialysis session, pH improved to 7.38, bicarbonate (HCO3) increased up to 19.7 mmol / L and lactates levels were reduced to 7.4 mmol/L.. After a following session of Continuous Hemodiafiltration (CVVHDF), lactate levels and the pH value finally reverted to normal. Ten days later, creatinine concentration also decreased to 1,5 mg/dl. Balancing metformin dosage is crucial in patients with CKD. In fact, this patient was on exceedingly high doses of this drug, despite no overdose episodes were previously been recorded. Further worsening of her renal function - probably induced by lenalidomide, dehydratation and the concomitant therapy with losartan – may have significantly contributed to the progressive accumulation of the drug.





Figure 1 - Lactate and pH values in arterial blood gas analysis obtained at different intervals.

| Laboratory test on plasma | Pre SLED | Post SLED | Admission |
|---|---|---|---|
| pH | 7.148 | 7.38 | 7,36 |
| HCO$_3^-$, mmol/L | 6 | 19.7 | 26 |
| Lactate, mmol/L | 15.4 | 7.4 | <2 |
| AG, mmol/L | 32 | - | - |
| BUN, g/dl | 173 | 133 | 68 |
| Creatinine, mg/dl | 6,37 | 4,4 | 1,5 |
| K$^+$, mEq/L | 5,5 | 4,5 | 3,5 |

Table 1 - Laboratory test pre SLED, post SLED , on admission.

## CONCLUSION

**The reported mortality associated with metformin-induced lactic acidosis is high (~30%), particularly if AKI occurs. In this patient, despite the concomitant treatment with lenalidomide, we were able to achieve a favorable outcome by employing a combined SLED-CVVHDF approach.**

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