

METFORMIN ASSOCIATED LACTIC ACIDOSIS (MALA)
PRESENTING AS MYOCARDIAL INFARCTION IN A CHRONIC
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A 49 year old Caucasian woman presented to the ER with 3 week history of nausea, vomiting and one day history of chest pain. Past medical history included hypertension, type 2 Diabetes Mellitus (DM), End Stage Renal Disease (ESRD) secondary to DM. Dialysis was initiated one month prior for uremia. Patient's stated that she was on Nifedipine, Sevelamer and Sodium bicarbonate. On admission, her temperature was 95.6 F, blood pressure of 97/53 mmHg, pulse 101 beats/min. Physical exam was otherwise unremarkable. Last dialysis session was 48 hours ago. Serum Creatinine was 10.3mg/dL, BUN 51mg/dL, HCO₃ 10.9mg/dL, serum glucose 46mg/dl, anion gap 34 g/dL, serum lactate 17mmol/L. Liver enzymes were normal. Repeat labs obtained in 2 hours showed Serum bicarbonate of 2 mg/dl and an AG of 46. CT scan of the abdomen showed no bowel ischemia. 1 hour after a 4 hour hemodialysis treatment, Serum Creatinine was 7.1mg/dL, BUN 36mg/dL, HCO₃ 5.3mg/dL, lactate 17.42mmol/L and serum pH on ABG of 7.019. Intravenous bicarbonate therapy was begun and a second dialysis treatment was given 10 hours later. Repeat serum lactate and pH were: 8.32mmol/L and pH 7.354 respectively. Patient ruled in for a myocardial infarction with a peak troponin of 3.9 ng/dl (ref .03ng/dl). It was discovered at this time that the patient was started on Metformin 3 weeks ago.

90% of Metformin is renally excreted unchanged. Therefore, its use is contraindicated in renal disease or renal dysfunction (serum creatinine ≥ 1.5 mg/dL in males or ≥ 1.4 mg/dL in females). While overall, lactic acidosis is seen in <1% of patients on Metformin, its incidence can be higher in patients with renal impairment.

Mortality is 50% if not treated. Treatment is supportive and includes elimination of the drug and correcting the acidosis. Metformin's low molecular weight and lack of protein binding allows for effective removal with hemodialysis. Though the patient developed a myocardial infarction, prompt dialysis prevented a fatal outcome. In summary, MALA is potentially fatal but preventable and should always be considered in the differential for lactic acidosis.