METFORMIN ASSOCIATED LACTIC ACIDOSIS TREATED WITH SUSTAINED LOW-EFFICIENCY DIALYSIS: A RETROSPECTIVE EVALUATION OF 43 PATIENTS

Fraga Dias, B [a*], Tavares, J [a], Fernandes, J [a], Domingues, P [a]; Freitas, C [a], Castro, A [a], Pimentel, J [a], Cabrita, A [a]

[a]. Department of Nephrology, Centro Hospitalar do Porto, Porto, Portugal

BACKGROUND and OBJECTIVE

- ✓ Metformin is one of the most used drugs in the treatment of diabetes mellitus.
- ✓ Despite a good safety profile, some at risk populations can accumulate metformin in tissues leading to lactic acidosis. This is a rare but life-threatening side effect of the drug, with high mortality.
- ✓ The best treatment strategy for this complication remains a matter of debate however dialytic support is often needed. Sustained low-efficiency dialysis (SLED) seems to be a good compromise between an adequate clearance of metformin, the hemodynamic stability and economic concerns.
- ✓ The aim of this investigation is to evaluate the predictors of inpatient mortality and to study the effectiveness and safety of SLED.

METHODS

- ✓ Retrospective and unicenter study.
- ✓ All patients with MALA and acute kidney failure treated with SLED between January 2007 and May 2021 were reviewed. Follow-up was performed until May 2022.
- ✓ Demographic, baseline characteristics and laboratory tests at admission, at 36h and at discharge were analyzed. Patient survival was defined as outcome.
- ✓ Statistical analysis was performed using SPSS 26 (IBM Corporation, USA); the evolution of laboratory parameters at admission and discharge date were assessed with the paired t-test. The factors that influenced patient survival during hospitalization were evaluated using Fisher's exact test (to nominal variables) and t-test for independent samples (for continuous or ordinal variables).

RESULTS

- ✓ Our study included 43 patients, 72% (n=31) women with a median age of 74 (47-91) years old.

Type 2 diabetes mellitus, n (%)	43 (100)
Chronic kidney disease, n (%)	15 (34.9)
Heart failure, n (%)	23 (53.5)
Sepsis, n (%)	9 (20.9)
Time of hospital permanency, mean±SD	12.5±9.0
Number of SLED sessions, median (IQR)	1 (1.0)
Inpatient mortality, n (%)	6 (14)
Mortality during follow-up, n (%)	13 (30.2)

Table 1 – Demographic, baseline characteristics and mortality.

	Admission (mean±SD)	Hospital Discharge (mean±SD)	p value
Hemoglobin, g/dL	10.99±1.67	9.98±1.77	**<0.001**
Serum creatinine, mg/dL	7.210±4.109	1.739±1.097	**<0.001**
Serum potassium, mmol/L	5.72±1.54	3.77±0.52	**<0.001**
pH	6.682±1.604	7.439±0,071	**0.005**
HCO3-, mmol/L	7,008±4.624	25.437±4.339	**<0.001**
Arterial lactate, mmol/L	12.435±5.307	1.224±0.552	**<0.001**
Anion Gap	29.28±11.56	12.97±3.84	**<0.001**
Arterial carbon dioxide, mmHg	21.31±8.45	36.33±4.02	**<0.001**
C-reactive protein, mg/L	58.64±97.09	28.72±28.85	0.061

Table 2 – Laboratory tests at admission and at discharge; evaluation by paired t-test.

- ✓ The variables that significantly influenced in-hospital mortality were sepsis ($X^2_{(1)}$=8.814, p=0.012) and arterial carbon dioxide concentration at admission (30.717±13.825 vs 21.392±8.398, p=0.027).
- ✓ Sixty percent of the patients (n=26) required only one session of SLED and recovering renal function. One patient remained dialysis dependent.
- ✓ Mortality during the episode was 13,9% and 30,2% at 55 (0-126) months.
- ✓ Median follow-up time of 55 (0-126) months.

CONCLUSIONS

- ✓ In this study SLED appears to be an effective and safe method of treatment of patients with MALA.
- ✓ Mortality was reduced compared to what is described in the literature.
- ✓ SLED increases pH and serum bicarbonate and reduces serum lactate and creatinine, significantly.
- ✓ The factors that significantly contributed to mortality in our study are sepsis and arterial carbon dioxide concentration at admission.
- ✓ More multi-center studies should be performed to determine the duration of treatment with SLED.

40TH VICENZA COURSE on AKI&CRRT
SPECIAL EDITION
June 14-16, 2022