MO659 **FIRST EXPERIENCE OF BAMLANIVIMAB FOR COVID-19 POSITIVE HAEMODIALYSIS PATIENTS: A CASE-CONTROL STUDY**

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BACKGROUND AND AIMS: The previous study showed a higher prevalence of coronavirus (COVID-19) in end-stage renal disease (ESRD) patients than in the general population (3.1% versus 0.1%). The presence of COVID-19 infection significantly increased the mortality rate of patients on dialysis compared to non-COVID patients (20.2% versus 0.2%). To date, no clear guidelines exist for the management of COVID-19 in renal patients. Bamlanivimab is a potent neutralizing monoclonal antibody that blocks severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) attachment and entry into human cells, which could potentially lead to therapeutic benefit. To our knowledge, this is the first study to use bamlanivimab in COVID-19+ haemodialysis (HD) patients with the aim to determine the effect of bamlanivimab on the mortality of these patients.

METHOD: We conducted a retrospective case-control study across a single HD centre of non-hospitalized HD patients, with documented positive SARS-CoV-2

Table 1. Baseline characteristics of 31 COVID-19 and haemodialysis patients

Characteristics	Bamlanivimab therapy ($n = 13$)	No bamlanivimab ($n = 18$)	*P*-value
Males, *n* %	69.2	67.7	1.000
Mean age, years	62.2 ± 11.3	65.9 ± 15.8	.476
BMI	25.9 ± 3.6	24.2 ± 2.8	.167
Diabetes (main disease or co-morbidity), *n* %	23.1	22.2	.955
Arteriovenous fistula, *n* %	100.0	17/94.4	1.000
Dialysis vintage, monthsMedian (IQR)	60 (25.5–134.0)	45 (8.5–100)	.281
COPD (yes), *n* %	**38.5**	**0.0**	**.008**
Stroke (yes), *n* %	7.7	0.0	.419
CAD (yes), *n* %	30.8	38.9	.468
Covid-19 vaccine (yes), *n* %	69.2	83.3	.354
Duration of symptoms before bamlanivimab administration, median days (IQR)	/	3 (2.5–4.5)	/

Table 2. Symptoms, signs and laboratory parameters of COVID-19 in 31 haemodialysis patients

(yes), %	Bamlanivimab Therapy ($n = 13$)	No Bamlanivimab ($n = 18$)	*P*-value
Cough	38.5	44.4	1.000
Fever	61.5	72.2	.701
Fatigue	30.8	33.3	1.000
Rhinorrhea	0.0	5.6	1.000
Sore throat	7.7	16.7	.621
Diarrhoea	7.7	11.1	1.000
Nausea	15.4	5.6	.361
Vomiting	15.4	0.0	.168
Disease Severity, *n* %			.604
Asymptomatic	7.7	11.1	
Mild	53.8	33.3	
Moderate	30.8	33.3	
Severe	7.7	22.2	
Nutri-CoV score, %			.224
Low risk	0.0	11.1	
Moderate risk	61.5	33.3	
High risk	30.8	27.8	
Very high risk	7.7	27.8	
C-reactive protein, mg/L, median (IQR)	43.0 (6.5–155.5)	43.0 (22.8–63.8)	.880
Ferritin, ng/mL median (IQR)	**528.5 (215.6–718.5)**	**840 (544.7–1576)**	**.020**
D dimer, mg/L	1.14 ± 0.87	1.34 ± 0.99	.523

testing. We analysed the period from October 1 to November 14 2021, in which COVID-19+ patients were dialyzed in our institution. Cases were defined as HD patients who received bamlanivimab and controls were patients who did not receive bamlanivimab. Descriptive statistics, including chi-squared and Mann–Whitney U test, were performed. We used multinomial logistic regression to find the independent relationship between bamlanivimab use, disease severity, coronary artery disease (CAD), heart failure and 1-month mortality risk.
RESULTS: Patients who received bamlanivimab frequently had the chronic obstructive pulmonary disease (COPD) than those in the control group. There were no significant differences between groups in any of the other parameters assessed (Table 1). Besides higher baseline ferritin levels in the control group, no other significant differences in biochemical markers were found between examined groups (Table 2). Over a 1-month follow-up, one patient (7.7%) died in the bamlinivimab group, while 8 patients (44.4%) died in the control group. Multinomial logistic regression revealed that no bamlanivimab treatment was given. CAD and disease severity increased the risks of mortality 39.1 times (P = 0.12), 81.7 times (P = 0.08) and 99.9 times (P = 0.04), respectively.
CONCLUSION: In COVID-19+ HD patients, bamlanivimab has been a safe and effective treatment method, lowering mortality although not statistically significant. We also discovered that having a more severe clinical presentation at baseline, as well as having a CAD, was related to a greater risk of mortality. Our findings imply that larger, more conclusive clinical studies of bamlanivimab in HD patients with COVID 19 should be conducted.

MO660 MEDIUM CHAIN FATTY ACIDS USED AS BINDING COMPETITORS OF ALBUMIN IMPROVE THE DIALYTIC CLEARANCE OF PROTEIN-BOUND URAEMIC TOXINS

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BACKGROUND AND AIMS: Protein-bound uraemic toxins (PBUTs) remain a concerning burden in patients with end-stage renal disease (ESRD) since their removal in haemodialysis (HD) is limited by their strong binding to plasma proteins. By increasing their circulating free fraction during HD, "binding competitors" of albumin could be used to increase their dialytic clearance. Medium-chain fatty acids (MCFAs, 4–10 carbon length) are potent candidates for that purpose. The aim of this work was to evaluate the displacing capacities of MCFAs.
METHOD: Sodium salts of butanoic acid (C4), hexanoic acid (C6), octanoic acid (C8) and decanoic acid (C10) were purchased from Sigma-Aldrich. The interaction between MCFAs and serum albumin was explored using two fluorescent probes: warfarin (specific to Sudlow's site I) and dansylsarcosine (specific to Sudlow's site II). Indoxyl-sulfate (IS, final concentration 212 µM) and p-cresyl sulfate (p-CS, final concentration 250 µM) were added to a 600 µM bovine serum albumin-phosphate buffered saline solution. The free fractions of IS and p-CS were assayed with or without MCFAs (1–2 mM) using ultrafiltration devices. To mimic the removal of PBUTs during an HD session, batches of 2L of fresh bovine blood were loaded with IS and p-CS (final concentration 200 µM). A 2-h closed-loop HD session was performed using a Fresenius 5008 CorDiax HD generator (Fresenius, Germany). A solution of 224 mM of sodium octanoate (C8) was perfused using the electric syringe pump at the rate of 150 µL/min; a solution of saline 0.9% was used as a control. A total of 1 mL of blood was sampled every 15 min through the arterial sampling port and concentrations of IS and pCS were assayed by HPLC coupled with fluorescence detection. The haemolytic effect of MCFAs was evaluated *in vitro* by assaying the free haemoglobin concentration.
RESULTS: Among the short-chain fatty acids tested, octanoic (C8) and decanoic (C10), acids were more prone to displace dansylsarcosine from Sudlow's site II of albumin (which is the main binding site of IS and p-CS). *In vitro*, the incubation with 2 mM of sodium octanoate or decanoate increased the free fraction of PBUTs from 12 to 53% for p-CS (4.4 folds change, P < .05) and from 11 to 45% for IS (4.1 folds change, P < .05). The per-dialytic infusion of sodium octanoate significantly increased the fractional removal of p-CS (from 38 to 88%, P < .001) and IS (from 36 to 91%, P < .001) (Figure 1). No significant haemolysis was observed for the concentration of MCFAs < 2 mmol/L.
CONCLUSION: MCFAs and especially C8 and C10 are serious candidates to displace the binding of PBUTs such as p-CS and IS. The per-dialytic administration of MCFA significantly increased the removal of PBUTs and could constitute a new strategy to get rid of these compounds and prevent their accumulation in end-stage kidney disease patients. Due to their safeness (toxicity and metabolism profiles *in vivo*), MCFAs could be better tolerated than other chemical compounds that have already been tested clinically such as ibuprofen. Further *in vivo* studies are, however needed to carefully evaluate this potentially new therapeutic option.

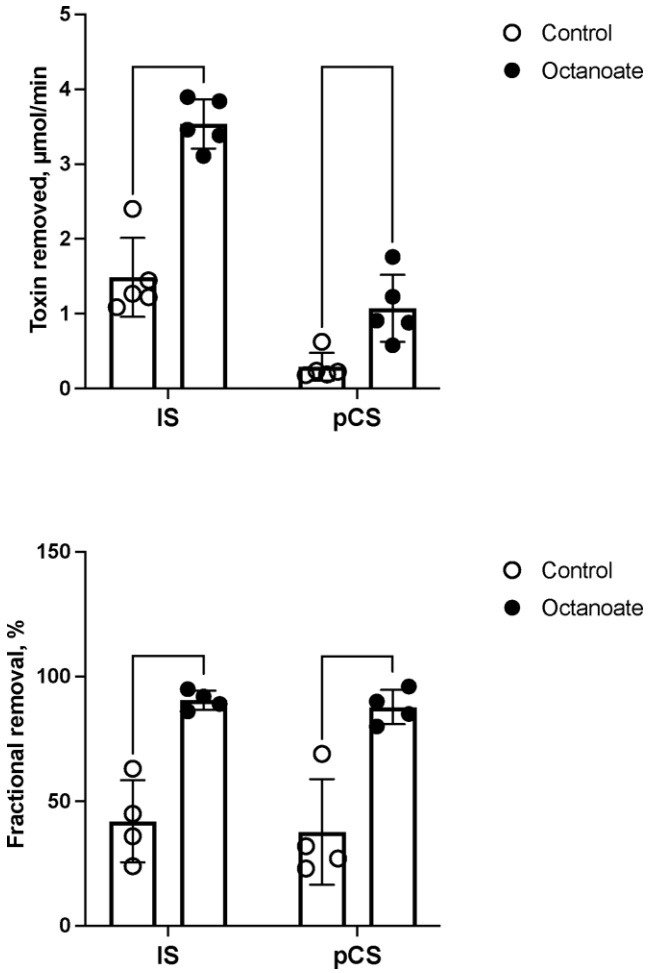

FIGURE 1: Sodium octanoate improves the dialytic removal of IS and p-CS during a simulated haemodialysis session in bovine blood loaded with uraemic toxins. Data are presented as mean ± SD for $n = 4–5$ experiments. $^{*}P < 0.05$, $^{***}P < 0.005$, difference between control and octanoate. IS, indoxyl-sulfate; p-CS, p-cresyl sulfate.