ABSTRACTS

AKI. CLINICAL. EPIDEMIOLOGY AND OUTCOME

MO291 COMPARISON OF ACUTE KIDNEY FAILURE IN PATIENTS WITH SARS-COV-2 INFECTION DURING THE FIRST AND SECOND WAVES IN A THIRD-LEVEL HOSPITAL IN ANDALUSIA

Melissa Cintra[1], Javier Burgos Martin[1], Marina Almenara Tejederas[1], Rocío Valverde Ortiz[1], Raquel Galván Toribio[2] and Mercedes Salguiera Lazo[1]

[1]*Nephrology, Hospital Universitario Virgen Macarena, Sevilla, Spain and* [2]*Biochemistry, Hospital Universitario Virgen Macarena, Sevilla, Spain*

BACKGROUND AND AIMS: The incidence of acute renal failure (ARF) is frequent and has an implication in the morbidity and mortality of SARS-CoV-2 infection.

METHOD: A retrospective descriptive study of patients admitted for SARS-CoV-2 infection during the first (G1) and second (G2) waves who presented with ARF. They correspond to the period from March to May 2020 (G1) and from August to December 2020 (G2). We compare populations, outcomes and treatments.

RESULTS: A total of 73 patients in the first wave (G1), with a cumulative incidence (CI) of 28.3% (G1), compared with 58 patients in the second wave (G2), with a CI of 8% (G2). The mean age was higher in G2 [65.8 ± 15 years (G1); 75.3 ± 14 (G2); $P < .05$], with no difference regarding sex [63% (G1); 54% (G2)]. In G2, there was a higher proportion of patients with cardiovascular disease [23% (G1); 57% (G2)], hypertension [56% (G1); 83% (G2)]. The baseline glomerular filtration rate (GFR) being similar for both groups (CKD EPI: 69 mL/min/1.73^2 (G1); $P = .27$). In the first wave, the mean days from admission to ARF was 3.1 days ± 4.2, and 42% of the patients were diagnosed at admission (31 patients). In the second, it was 2.9 days ± 5.7, of which 60% at admission (35 patients). The most prevalent cause was prerenal in both. Higher proportion in G1 of KDIGO stage 3 (G1: 30% versus G2: 17%) and renal replacement therapy (RRT) (G1: 9 versusG2: 2 patients). Only 3 patients remained in RRT in G1 and 1 patient in G2. In G1, 64% recovered their GFR [mean time (MT): 7.5 ± 8 days], and the percentage of deaths was 34%. In G2, 72% recovered GFR (MT: 16 ± 25 days), and 19% of patients died.

CONCLUSION: Despite a lower age and comorbidity of the first wave patients, the severity and lethality was higher. There were no differences in the proportion of patients who recovered their baseline renal function, although the recovery time was longer in the second wave.

Table 1.

Characteristics of kidney failure and treatments	Group 1	Group 2	
Baseline CKD			
G1-2	40 (61%)	36 (63%)	$P = .245$
G3	16 (26%)	18 (32%)	
G4-5	9 (14%)	3 (5%)	
ARF severity (KDIGO)			
KDIGO 1 and 2	51 (70%)	48 (83%)	$P = 0.08$
KDIGO 3	22 (30%)	10 (17%)	
Cause of ARF			
Prerenal	38 (52%)	39 (67%)	$P = 0.121$
Sepsis	25 (25%)	11 (19%)	
Obstructive	2 (3%)	4 (7%)	
Others	8 (11%)	4 (7%)	
Haematuria	8 (11%)	16 (27%)	$P = 0.74$
ICU	18 (25%)	3 (5%)	$P = 0.03$
OTI	16 (22%)	3 (5%)	$P = 0.007$
RRT	9 (12%)	2 (3%)	$P = 0.069$
ARF recovery time	7.5 ± 8	16 ± 25	$P = 0.04$
Total Patients	73	58	

Group 1: ARF patients on first wave of SARS CoV2. Group 2: ARF patients on the second wave of SARS CoV2. Baseline CKD, baseline chronic kidney disease; ICU, intensive care unit; OTI, orotracheal intubation; and RRT, renal replacement therapy. ARF recovery time: days from renal failure to recovery of baseline renal function.

MO292 CLINICAL CHARACTERISTICS, MANAGEMENT AND OUTCOMES OF CRITICALLY ILL COVID-19 PATIENTS UNDERGOING CRRT: COMPARISON BETWEEN THE FIRST TWO PANDEMIC WAVES

Francesca Cappadona[1], Filippo Sangregorio[1,2], Elisa Costa[1,2], Valentina Zanetti[1,2], Erica Tugnoli[2], Lorenzo Ball[3], Giovanni Battista Traverso[1], Francesca Viazzi[1,2] and Pasquale Esposito[1,2]

[1]*Clinica Nefrologica, Dialisi e Trapianto, IRCCS Ospedale Policlinico San Martino, Genoa, Italy,* [2]*Internal Medicine, Universtity of Genova, Genoa, Italy and* [3]*Department of Surgical Sciences and Integrated Diagnostics, Universtity of Genova, Genoa, Italy*

BACKGROUND AND AIMS: Acute kidney injury (AKI) is a common complication of coronavirus disease-19 (COVID-19), which, particularly in critically ill patients requiring continuous renal replacement therapy (CRRT), is associated with an elevated mortality risk [1, 2]. However, knowledge about COVID-19 pathogenesis and management is evolving, and clinical practice is changing rapidly. Here, we evaluated if this process had an impact on the management and outcome of AKI patients.

METHODS: We performed a retrospective observational study on critically ill adult COVID-19 patients who received CRRT in the intensive care unit (ICU) during the first two pandemic waves before the availability of COVID-19 vaccines: the first one from March to August 2020 (first) and the second one (second) from September to December 2020.

RESULTS: Overall, we considered 63 patients, aged 65 (60–69) years, 76.2% males. The main comorbidities were diabetes (DM), cardiovascular disease (CVD) and chronic kidney disease (CKD). Among them, 28 (44%) were in the first group and 35 (66%) in the second group. There were no significant differences in general characteristics, such as in comorbidities, except for a higher prevalence of CVD in the first group (Fig. 1). Lab examinations at ICU admission, including serum creatinine level (sCr), were not different between the two groups. While all patients required respiratory support, non-invasive ventilation was more prevalent in the second wave. Notably, during this period, decapneization combined with CRRT was introduced. Regarding drugs, we found that in the second group, hydroxychloroquine was abandoned, tocilizumab use was reduced and heparin administration significantly increased. The AKI time course was similar between the patients of the two waves (Fig. 2). There were no significant differences in CRRT techniques. However, in the second, the use of additional CRRT-devices, in particular adsorption-based filters, significantly increased. In most cases, citrate anticoagulation was used in both groups. Looking at the outcomes, we found no significant difference between the two waves. Indeed, 17 (60.2%) and 22 (62.8%) patients died in the ICU in the first and second groups, respectively. The length of ICU hospitalization, days on CRRT, invasive ventilation and DM were significantly related to overall mortality; time of ICU hospitalization was the only remaining significant at multivariate Cox regression. Overall, 21 (33%) patients survived hospitalization. At the 6 months after the discharge, 3 of them died, 3 were on HD and 15 were dialysis-free, even if 6 of them presented CKD.

CONCLUSION: Our data confirm the high complexity and mortality of COVID-19 patients undergoing CRRT. Comparing the first two pandemic waves, we found that the patients also presented similar characteristics in terms of renal function and AKI time course. Regarding treatments, we observed some significant modifications in the management of ventilation, drug administration and dialysis membranes, mainly because of the results of ongoing clinical trials. However, these changes did not impact patients' outcomes.

These data support the view that only game-change strategies, such as vaccination or infection-specific drugs, may impact the presentation and outcome of COVID-19 patients undergoing CRRT.

Finally, patients surviving this condition deserve special attention in the follow-up.

REFERENCES

1. Russo E, Esposito P, Taramasso L *et al.* Kidney disease and all-cause mortality in patients with COVID-19 hospitalized in Genoa, Northern Italy. *J Nephrol* 2021;34:173–183
2. Eriksson KE, Campoccia-Jalde F, Rysz S *et al.* Continuous renal replacement therapy in intensive care patients with COVID-19; survival and renal recovery. *J Crit Care* 2021;64:125–130

© The Author(s) 2022. Published by Oxford University Press on behalf of the ERA.
All rights reserved. For permissions, please e-mail: journals.permissions@oup.com

	All (n=63)	1st wave (n=28)	2nd wave (n=35)	P value
Age	65 (60-69)	66.5 (61 -71.5)	64 (60-69)	0.3252
Female, n (%)	15 (23.81)	6 (21.43)	9 (25.71)	0.691
Comorbidities, n(%)				
Lung diseases	10(15.87)	5(17.86)	5(14.29)	0.7
CVD	23(36.51)	14(50)	9(25.71)	**0.047**
Diabetes Mellitus	12(19.05)	6(21.43)	6(17.14)	0.667
CKD	13(20.63)	8(28.57)	5(14.29)	0.164
Lab examination at ICU admission				
sCr, (mg/dl)	1.1(0.8-1.9)	1.4(0.9-3.35)	1(0.8-1.7)	0.2047
CRP (mg/l)	108.5(45.9-154)	124(47.3-199)	95.5(42.2-148)	0.3415
PCT (µg/L)	0.37(0.15-1.2)	0.5(0.2-1.89)	0.35(0.11-0.61)	0.343
LDH (U/L)	331(246-492)	340(207-524)	313(269-445)	0.9943
D Dimer (µg/L)	972.2 (630.7-2058)	1057 (633.4-1631)	797.35 (619.3-2065)	0.7424
ICU management, n(%)				
Respiratory support	63(100)	28(100)	35(100)	
Mechanical ventilation	58(92.06)	24(85.71)	34(97.14)	0.095
Non-invasive ventilation	47(74.6)	17(60.71)	30(85.71)	**0.023**
Decapneization	4(6.35)	0	4(11.43)	0.065
Pharmacological therapy, n(%)				
Hydroxychloroquine	16(25.40)	16(57.14)	0	**<0.0001**
Tocilizumab	9(14.29)	8(28.57)	1(2.86)	**0.004**
Steroids	32(50.79)	14(50)	18(51.43)	0.910
Antivirals	29(46.03)	14(50)	15(42.86)	0.572
Heparin	31(49.21)	9(32.14)	22(62.86)	**0.015**
Days of hospitalization in the ICU	39(21-69)	44.5(20.5-69)	32.5(21-49)	0.7664

Data are expressed as median (25-75 interquartile range)

Abbreviations: ICU, intensive care unit; CRRT, Continuous Renal Replacement Therapy; CVD, Cardiovascular disease; CKD, Chronic Kidney disease; ICU, intensive care unit; Cr., Creatinine; eGFR, Estimated glomerular filtration rate; CRP, C-reactive Protein; PCT procalcitonin; LDH, lactate dehydrogenase.

1st wave from March to August 2020 t; 2nd wave from September to December 2020.

FIGURE 1: Clinical characteristics and ICU management of critically ill COVID-19 patients undergoing CRRT.

	All (n=63)	1st wave (n=28)	2nd wave (n=35)	P value
sCr on admission to the hospital, (mg/dl)*	1.2 (0.9-1.7)	1.35 (1-2.75)	1.1(0.9-1.6)	0.13
eGFR on admission to the hospital (mL/min/1,73mq)	64 (43-84)	60 (26.5-78.5)	70 (46-87)	0.20
sCr at the ICU admission, (mg/dl)	1.1 (0.8-1.9)	1.4 (0.9-3.35)	1 (0.8-1.7)	0.20
AKI at ICU admission, n (%)	24 (38)	13 (46)	11 (31)	0.3
Days of ICU stay before CRRT	11 (3-20)	10 (1-18)	15 (6-22)	0.1
sCr at the beginning of the CRRT	2.3 (1.5-4.2)	2.9 (1.95-5.2)	2.2 (1.3-3.3)	0.17
Days of CRRT	13 (4-30)	15 (3.5-36.5)	11 (4-26)	0.86
CRRT techniques, n (%)				0.26
CVVHD	51 (80.9)	24 (85.7)	27 (77.1)	
CVVHDF	11 (17.4)	3 (10.7)	8 (22.8)	
Hemoperfusion	1 (1.5)	1 (3.5)	0	
Hemodialysis membranes, n (%)				
av1000	44(69.84)	21 (75)	23 (65.7)	0.42
st150	10(15.87)	5 (50)	5 (50)	0.7
Additional CRRT devices	43 (68.2)	17 (60)	26 (74.3)	**0.03**
HCO-membranes	19 (30.1)	8 (28.5)	11 (31.4)	0.80
Adsorption-based membranes	7(11.11)	0	7(20)	**0.012**
Sorbent cartridges	17(26.9)	9(32.1)	8 (22.8)	0.40
Anticoagulation, n (%)				0.81
Trisodium citrate	59 (93.6)	26 (92.8)	33 (94.2)	
Heparin	4 (6.3)	2 (7.1)	2 (5.7)	

Data are expressed as median (interquartile range, IQR).

Abbreviations: CRRT, Continuous Renal Replacement Therapy; sCr, serum creatinine; CVVHD, Continuous venovenous haemodialysis; CVVHDF, Continuous venovenous hemodiafiltration; HCO, high-cutoff; 1st wave from March to August 2020; 2nd wave from September to December 2020.

FIGURE 2: Kidney function and management of critically ill COVID-19 patients undergoing CRRT.

MO293 EVALUATION OF URIC ACID CONCENTRATION AND ACUTE RENAL IMPAIRMENT IN PATIENTS ON ADMISSION FOR HOSPITAL TREATMENT

Danijela Tasic[1], Zorica Dimitrijevic[1], Sonja Radenkovic[1], Gordana Kocic[2], Aleksandra Ignjatović[3] and Katarina Djordjević[4]

[1]Clinic of Nephrology, Faculty of Medicine, UCC Niš, University of Niš, Niš, Serbia, [2]Faculty of Medicine, Institute of Biochemistry, University Niš, Niš, Serbia, [3]Faculty of Medicine, Public Health Institute, University of Niš, Niš, Serbia; Vinca Institute of Nuclear Sciences—National Institute of the Republic of Serbia, and [4]University of Belgrade, Belgrade, Beograd, Serbia

BACKGROUND AND AIMS: Elevated uric acid (UA) is associated with comorbidities such as hypertension, diabetes, cardiovascular disease and chronic kidney disease. There are more studies that discuss the importance of uric acid (UA) for acute kidney failure. Anaemia is a common risk factor for the development of AKI in hospitalized patients. There is an association between elevated iron and urate production in healthy people. The aim of this study was to evaluate value of UA as a risk factor for the development of acute kidney damage on admission for hospital treatment. We also determined, risk factors related to UA value and its relationship with anaemia.

METHOD: The study included 86 hospitalized patients with acute renal impairment who were divided according to the stage of renal impairment at admission to hospital treatment into three groups. The assessment of acute renal impairment and the classification of disease stages were based on the diagnostic stages by the KDIGO group. All the examined patients were >18 years of age. In the first stage of the disease, it was 12.79%, in the second stage, it was 15.12% and in the third, it was 72.09% of patients.

RESULTS: UA values were the lowest in the first stage 551.00 ± 225.64 μmol/L and highest in the third stage 670.02 ± 86.72 μmol/L, but without statistical significance. The lowest percentage with renal function was 12.9% in patients with stage 3 acute renal impairment. There was a statistically significant difference with patients with stage 1 and stage 2 ($P < .017$) renal impairment. The ROC curve for the cut-off value of uric acid 903.00 μmol/L based on the Youden index method with a sensitivity of 91.70% and a predictive value of 17.00% as a marker of acute kidney damage in stage 2 disease is larger than in other stages acute kidney injury. Although there is a significant relationship with risk of UA with haemoglobin values according to the following results: OR 1.036 [95% confidence interval (95% CI) 1.003–1.071; $P = .030$]