



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

and severity score were defined based on KDIGO and WHO classification, respectively. Our Therapeutic management included low dose CNI and antimetabolites withdrawal. The selection of steroid dose was related to severity score. Critical and severe patients received methylprednisolone pulse for three consecutive days.

Results: Fifty nine renal allograft recipients were included in this study, 38 (64.5%) were male and 21(35.6%) were female. The most frequent comorbidities were diabetes mellitus (52.5%) and hypertension (30%). The mortality rate was 22% (13 out of 59). Forty six (78%) patients were discharged from the hospital with good condition. According to defined WHO classification severity score, 15 (25.4%) had mild, 14 (23.7%) moderate, 17 (28.8%) severe, and 13 (22%) were in a critical situation on admission. Acute kidney injury developed in 13.6% of patients. Univariate analysis showed that Severity score, age, transplant duration, CRP and lymph/neutrophil ratio, LDH, and need for intubation were the major predictive risk factors of mortality ($P < 0.05$).

Conclusions: The mortality rate in hospitalized kidney allograft recipients was 1.5 to 3 fold higher than general population. Those with acute kidney injury need long term follow up for the detection of permanent sequel. As the COVID-19 infection in renal allograft recipients considerably increases the risk of morbidity and mortality, these patients should be monitored closely to prevent poor outcomes

No conflict of interest

POS-874

DEATH AND KIDNEY DISEASE: IS COVID-19 COLOR-BLIND?

SHANMUGANATHAN, M^{*1}, Goh, BL², Peariasamy, K³, Misnan, NA⁴, Chidambaram, SK⁴, Wong, EFS⁵, Pathmanathan, MD³, Ang, KL¹, Wong, HS⁶

¹Hospital Serdang, Clinical Research Centre, Kajang, Malaysia; ²Hospital Serdang, Department of Nephrology & Clinical Research Centre, Kajang, Malaysia; ³National Institute of Health, Institute for Clinical Research, Shah Alam, Malaysia; ⁴Hospital Sungai Buloh, Department of Infectious Disease, Sungai Buloh, Malaysia; ⁵Hospital Sungai Buloh, Haemodialysis Unit, Sungai Buloh, Malaysia; ⁶Hospital Selayang, Department of Nephrology, Selayang, Malaysia

Introduction: It is imperative for us to identify predictors of COVID-19 deaths in order to improve patient management and outcome. COVID-19 infection and kidney disease (KD) carry a considerable risk of death. Centre factors and ethnicity may also have an influence on death. In general, bigger hospitals and hemodialysis facilities have been linked to lower number of deaths. In the west, it has been reported that socio-economic background contributes significantly to high COVID-19 infection and death among minority ethnic groups. However, similar studies have not been conducted in multiracial Asian settings. Malaysia is unique as our 32.75 million population consists of 3 major racial groups in Asia, namely the Malays (69.7%) who are from the Malay Archipelago, the Chinese (22.5%) from East Asia and the Indians (6.8%) from South Asia. The aim of this study was to identify risk factors for death and acute kidney injury (AKI) in hospitalised COVID-19 patients. We also explored racial disparities in mortality within our multiracial Asian population.

Methods: We conducted a prospective multi-centre observational study involving 18 hospitals designated to treat COVID-19 in Malaysia. Patients aged 12 years and above, who were admitted from January to June 2020, following positive reverse transcription polymerase chain reaction (RT-PCR) test were included.

Results: This study involved 6078 patients with mean age of 37.3(±16.8) years, comprising 71% males, 59.4% Malays, 6.7% Chinese, 2.3% Indians and 31.7% other ethnicities. The overall case fatality rate (CFR) was 1.3% while patients with KD (AKI and chronic kidney disease) had CFR of 20%. A number of risk factors have been associated with death and AKI among COVID-19 patients. After adjustment for covariates, KD, advanced age, Chinese ethnicity and diabetes mellitus (DM) were found to be highly significant in this study. Adjusted predictors of AKI were age (>51 years), DM and disease severity at presentation. CFR varied between racial groups (Chinese 3.7%, Malay 1.3%, Indian 1.5% and other ethnicities 0.7%). In Malaysia, Chinese mainly reside in urban areas, receive relatively more secondary education and have respectable mean monthly household income. Despite being socio-economically well off, they were 2.5 times more likely to die of COVID-19 infection (OR 2.58 [95% CI:1.06, 6.26], $P=0.036$). We postulate that age and comorbidities may be the cause for their high death rate. Their longer life expectancy (male 75.4 years,

female 80.5 years) supports our findings. Centre capacity to treat, ventilate and provide more kidney replacement therapy to patients (OR 0.37 [95% CI: 0.17, 0.79], $P=0.001$), was also found to be associated with lower fatalities.

Conclusions: Severity, complications and outcome of hospitalised COVID-19 patients are determined by age, ethnicity, KD and DM. Patients with KD had 15 times higher CFR. Centre factors had an effect on mortality as well. Hence, it is crucial to recognise kidney involvement in hospitalised COVID-19 patients. The results of this study emphasise the importance of early nephrologist referral when there is kidney involvement. This study also shows racial disparities in mortality among Asian population, that warrants further evaluation. A follow-up study is proposed to determine the long-term sequelae of COVID-19 patients with kidney involvement.

No conflict of interest

POS-875

THE CLINICAL PROFILE AND OUTCOME OF PATIENTS WITH COVID 19 WHO UNDERWENT HEMOPERFUSION IN BATAAN GENERAL HOSPITAL AND MEDICAL CENTER

SIASAT, A^{*1}, Ilagan, BC², Reyes, A³, Ronquillo, RA⁴, Clemente, C⁵, Chan, AG⁶, Baltazar, G⁷

¹bataan general hospital and medical center, internal medicine, Balanga Bataan, Philippines; ²bataan general hospital and medical center, internal medicine - nephrology, Balanga- Bataan, Philippines; ³bataan general hospital and medical center, internal medicine - nephrology, balanga bataan, Philippines; ⁴bataan general hospital and medical center, internal medicine - pulmonology, Balanga- Bataan, Philippines; ⁵bataan general hospital and medical center, internal medicine - cardiology, Balanga-Bataan, Philippines; ⁶bataan general hospital and medical center, internal medicine - infectious disease, Balanga- Bataan, Philippines; ⁷bataan general hospital and medical center, Chief of Hospital- MPH- MHA, Balanga- Bataan, Philippines

Introduction: The outbreak of COVID-19 was declared a pandemic without definitive therapies. Extracorporeal blood purification has been proposed as one of the therapeutic approaches in patients with Covid-19 because of its beneficial impact on elimination of inflammatory cytokines. Considering the association of increased cytokine release with severity of COVID disease and the effect of hemoperfusion on removal of these cytokines, this study was conducted to determine the outcome of hemoperfusion in patients with severe and critical COVID admitted at Bataan General Hospital and Medical Center (BGHMC).

Methods: Convenient sampling was done in this retrospective study from August 2020 to November 2020. A total of 29 patients (10 severe, 19 critical) were included in the study. Patient underwent 2 to 4 hemoperfusion sessions using HA330 cartridges. Baseline characteristics of participants were noted including age, gender, and comorbidities. Vital signs were noted and laboratory parameters were recorded including CBC, BUN, creatinine, SGPT, and SGOT. Primary outcome variables include the following: change of pneumonia severity on chest x-ray, oxygen saturation, length of hospital stay, and mortality. Secondary outcomes measured prior to, and after each hemoperfusion sessions, included inflammatory markers such as LDH, ESR, ferritin, CRP, procalcitonin, and D-dimer.

Results: The age of the subjects ranged from 46-79 years old with mean age of 65. Majority of patients were male. Severe cases belong to age group 46-64 years old while most of critical cases belong to age group >65 years old.

Baseline laboratories showed mean elevation of the following parameters: CRP, ferritin, LDH, SGOT, SGPT, creatinine, WBC, neutrophil, procalcitonin and D dimer, and decrease in lymphocyte counts.

LDH significantly decrease throughout the 4 cycles of hemoperfusion, most significant post 3rd cycle ($p < 0.01$). There was likewise significant decrease in CRP ($p < 0.002$), ferritin ($p < 0.007$), ESR ($p < 0.01$), LDH ($p < 0.02$), SGOT ($p < 0.001$) and SGPT ($p < 0.001$) after 4 cycles of hemoperfusion.

Plain Chest CT scan showed ground glass opacities in both lung fields in all subjects with significant regression of infiltrates seen after 3rd hemoperfusion among severe ($p < 0.003$) and critical cases ($p < 0.005$). All patients initially had desaturations with average pao_2 of 76.83 ± 8.83 . Marked improvement in oxygenation status were seen after the 3rd hemoperfusion ($p < 0.003$).

Nine out of ten (90%) severe cases and three out of nineteen (16%) critical cases survived. All patients were given the same regimen of antivirals, enoxaparin, multivitamins, dexamethasone and hemoperfusion.

Conclusions: Hemoperfusion, as an add-on treatment for patients with severe and critical COVID resulted in significant decrease in inflammatory markers, improvement in radiographic pulmonary infiltrates, and improvement in oxygenation status. Findings were more apparent in severe more than critical COVID cases. Severe COVID patients who underwent hemoperfusion likewise had better mortality outcomes which was not seen in critical COVID cases. These findings support the use of hemoperfusion early in the course of the disease to possibly improve clinical outcomes.

No conflict of interest

POS-876

CHARACTERISTICS AND OUTCOME OF VENTILATED COVID-19 PATIENTS WITH ACUTE KIDNEY INJURY REQUIRING KIDNEY REPLACEMENT THERAPY IN THE INTENSIVE CARE UNIT AT A SINGLE COVID HOSPITAL



SIMATHERAI, D^{*1}, Goh, CY¹, Wong, HS^{1,2}, Yakob, S¹

¹Hospital Selayang, Department of Nephrology, Batu Caves, Malaysia,

²Hospital Selayang, Clinical Research Centre, Batu Caves, Malaysia

Introduction: Acute kidney injury (AKI) is common in coronavirus disease 2019 (COVID-19) and its severity is associated with poorer outcomes. AKI affects approximately 50% of critically ill COVID-19 patients admitted to intensive care units (ICUs) and is associated with a higher mortality.

Methods: This retrospective cohort study was conducted in a single COVID hospital involving all ventilated COVID positive AKI patients admitted to ICU from 1st July till 31st August 2021 requiring kidney replacement therapy (KRT). Patients with AKI were identified from the hospital database of all COVID ICU admissions and demographic, clinical and outcome data of these patients were retrieved from the hospital information system. Data were analysed using SPSS Version 23.

Results: Of a total of 353 patients admitted to COVID ICU during this study period, 53 (15%) patients had AKI requiring KRT. The mean patient age was 46.5 ± 10.4 years and 38 (71.7%) were males. Majority of patients had comorbidities with, 23 (43.4%) having hypertension, 18 (34%) diabetes mellitus, 5 (9.4%) bronchial asthma and 4 (7.5%) non-dialysis CKD. A total of 35 (66%) received continuous kidney replacement therapy (CKRT) and from this group, 11 patients received adsorption therapy. The remaining 18 (34%) underwent intermittent haemodialysis (IHD). Eight patients were commenced on immunomodulators, with three receiving Tocilizumab and five Baricitinib. All 53 patients were on steroids with 29 (54.7%) and 24 (45.3%) receiving dexamethasone and methylprednisolone respectively. The median length of ICU stay was 8 (interquartile range 5-12.5) days.

The overall mortality of ventilated COVID-19 AKI patients requiring KRT in ICU was 84.9%. The mean duration of COVID-19 illness upon death was 18.4 ± 6.1 days. A lower mean PaO₂/FiO₂ ratio $\{86.5 \pm 32.6$ vs 141.3 ± 46.9 , ($p < 0.001$)}, lower mean platelet $\{119.2 \pm 66.6$ vs 191.5 ± 69.8 , ($p = 0.007$)}, higher mean haemoglobin levels $\{10.2 \pm 2.5$ vs 8.0 ± 1.1 , ($p = 0.017$)} and severe organising pneumonia with more than 75% lung involvement ($p < 0.036$) were independently associated with mortality. Age, gender, presence of comorbidities, obesity, raised mean CRP, ferritin or procalcitonin levels did not demonstrate an association with death.

Conclusions: In this study, mortality amongst ventilated COVID-19 patients with AKI requiring KRT was extremely high. Severe organising pneumonia, lower PaO₂/FiO₂ ratio, lower platelet levels and higher haemoglobin readings were strong predictors of mortality.

No conflict of interest

POS-877

ACUTE KIDNEY INJURY AND IN-HOSPITAL MORTALITY AMONG PATIENTS WITH COVID-19 IN GHANA



Tannor MD, EK^{*1,2}, Ofori, E², Hutton-Mensah, K², Akutek, M², Afriyie, FA², Hardy, Y², Kontoh, SA², Opere-Addo, P², Amenuke, D²

¹Kwame Nkrumah University of Science and Technology, Department of Medicine/Nephrology Division, Kumasi, Ghana, ²Komfo Anokye Teaching Hospital, Department of Medicine, Kumasi, Ghana

Introduction: Acute kidney injury (AKI) occurs in patients with Coronavirus Disease 2019 (COVID-19) but this has not yet been described in

Ghana. We therefore set out to describe the proportion of COVID-19 patients with AKI and determine the in-patient mortality in a tertiary hospital in Ghana.

Methods: We conducted a retrospective study of all patients admitted to the Komfo Anokye Teaching Hospital with a Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) proven diagnosis of COVID-19 from March 2020 to February 2021. Demographics, clinical findings and laboratory investigations were recorded from patients records. Summary statistics was used to describe the data. Proportions of patients with pre-renal AKI, acute tubular necrosis as well as the stages of AKI presentation were described. Predictors of mortality were established in multiple logistic regression. A p-value of less than 0.05 was considered statistically significant.

Results: The analysis involved 250 patients with a mean age of 56.3 ± 17.4 years with 129 (52.4%) males. There were 24 (9.8%) patients with a history of chronic kidney disease. AKI occurred in 123 (49.2%) of patients. The most common causes of AKI were pre-renal AKI 65 (52.9%) and ischaemic acute tubular necrosis 37 (30.1%). Stage 3 (severe) AKI occurred in 39 (31.7%) cases and was significantly associated with mortality [OR=4.50 16(42.1%) vs. 19 (23.2)] as compared to those with mild-moderate AKI. Haemodialysis was required in 6 (4.9%) patients.

The in-hospital mortality of all the COVID-19 patients was 71(31.3%). The predictors of in-patient mortality in multiple logistic regression were hyperglycaemia (OR=18.48, 95% CI 2.1-165.2, $p = 0.009$), severe COVID-19 (OR=31.3, 95% CI 1.5-638.5, $p = 0.025$), elevated white blood cell count (OR=1.32, 95% CI 1.09 - 1.59, $p = 0.004$), low lymphocyte count (OR=0.16, 95% CI 0.03-0.81, $p = 0.027$).

Conclusions: AKI occurs commonly in hospitalized patients with COVID-19. Pre-renal AKI was the most common cause of AKI. Stage 3 AKI was associated with increased in-hospital mortality. Predictors of mortality were severe COVID-19 disease, lymphopenia and hyperglycaemia.

No conflict of interest

POS-878

PERITONEAL DIALYSIS DURING COVID-19 PANDEMIC. A REPORT FROM A THIRD LEVEL CENTER FROM MEXICO. THE COVMEX-PD COHORT



VILLA, A^{*1}, Velázquez Silva, R², Vásquez Jiménez, E¹, Herrera Arellano, L¹, Acosta García, N¹, Alemán Quimbiulco, D¹, Duarte Pérez, R¹, Carmona Bautista, CA¹, Armeaga Aguilar, S¹, Rodríguez Chagolla, JM¹

¹Centro Medico Arturo Montiel Rojas ISSEMyM, Nephrology, Metepec, Mexico, ²Hospital Central Dr. Ignacio Morones Prieto, Internal Medicine, San Luis Potosí, Mexico

Introduction: Kidney involvement is frequent in COVID-19 in many manifestations. Acute kidney injury (AKI) affects 20-40% of critically ill patients with COVID-19. Many of these patients require RRT, which implies a high demand for material resources and medical staff. During the most critical time of the pandemic, some RRT modalities were insufficient, forcing medical centers to diversify the RRT modalities offered. Chronic kidney disease (CKD) patients who require renal replacement therapy (RRT) commonly have comorbidities and chronic immunosuppressive state that could predispose them to worse outcomes during COVID-19. In Mexico, there is currently a PD-first policy in CKD patients who start RRT due to the lower cost and the efficiency of the treatment. In Latin America there is little information about the experience in PD in chronic patients and even less in AKI. In this study, we report the outcomes of chronic PD patients during COVID-19 and our experience with PD in critically ill patients in a third medical center in Mexico.

Methods: This cross-sectional study included 47 adult patients with confirmed SARS-CoV-2 infection admitted to the Centro Medico ISSEMYM in Toluca, Mexico from 1 April 2020 to 1 April 2021. Chronic PD patients and incident patients PD by AKI were included. Informed consent was obtained from all individual participants and the study complied with the Declaration of Helsinki. In the descriptive analysis, categorical variables were expressed in frequencies and percentages, Continuous variables with normal distribution (Kolmogorov-Smirnov test) were expressed as medians and interquartile ranges (IQR). In the bivariate analysis, the x2 test or Fisher's exact test was used for categorical variables. Continuous variables with normal distribution, the student's t test was used and for continuous variables with