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compared their clinico-laboratory profile and outcomes in terms of mortality or discharge or time to COVID negative, with thirty non-CKD patients with COVID-19 infection admitted at our hospital.

Results: Total of sixty COVID-19 infected patients were analysed, thirty with CKD5D status and thirty were non-CKD patients. The mean age was lesser among CKD5D patients (50.70 years). The most common comorbidity was hypertension (83.33% in CKD5D patients and 70% in non-CKD group) followed by diabetes mellitus (70% in CKD5D patients and 50% in non-CKD patients) in both the groups. There was no significant difference between the two groups based on the comorbidity profile. The proportion of patients with CKD 5D having dysgeusia (60% vs 16.67%) and anosmia (53.33% vs 16.67%) was significantly higher compared to the non-CKD group of patients. The most common symptom being cough in both the CKD 5D (73.33%) and non-CKD (83.33%) group. The proportion of patients with moderate disease was significantly higher in the CKD patients (50% vs 10%). There was no significant difference in terms of Neutrophil-Lymphocyte ratio. The mean levels of serum ferritin and D dimer were slightly higher for the non-CKD group whereas the average IL-6 levels were higher for the CKD 5D groups of patients (329.7 pg/ml vs 30.74 pg/ml in non-CKD patients). Mortality was higher in the CKD 5D group (33.33% in CKD5D vs 23.33% in non-CKD, $p=0.3940$). The higher proportion of patients were discharged without deterioration in the non-CKD group (66.67% vs 53.33% in CKD5D, $p=0.2957$). The mean duration to discharge or death was significantly higher for the CKD 5D group (27.10 days vs 16.20 days, $P=0.0004$) with a higher duration of hospital stay for the CKD 5D patients ranging from 8 to 58 days. The CKD5D patients needed 26 ± 11.14 days to turn COVID negative and recover, significantly higher than 15.39 ± 7.79 days among non-CKD patients. Among CKD5D patients, the higher IL-6 and D-dimer levels were associated with increased severity of COVID-19. The CKD 5D patients with higher D-dimer levels (977.5 vs 574.5 ng/ml, $P<0.01$) required critical care with ICU stay and higher support of ventilations. A higher IL-6 (894.27 vs 47.41pg/ml, $P=0.0214$), NL ratio (12.35 vs 5.03, $P=0.0013$) and lower lymphocyte count (9.70/uL vs 19.50/uL) was significantly associated with increased mortality when compared to those recovered.

Conclusions: The CKD stage 5 patients on dialysis took significantly longer time to clear SARS-Cov-2 with a mean of 26 days. Mortality was particularly high in CKD 5D patients with severe COVID-19. Among the hospitalised COVID-19 patients, the CKD 5D status had higher adjusted odds ratio (aOR) for mortality of 3.3; 3.2 and 7.19 when adjusted for age and gender; age and comorbidities (hypertension and diabetes mellitus) and age, biochemical and inflammatory markers respectively.

No conflict of interest

POS-031

RENAL HISTOMORPHOLOGY IN COVID AUTOPSIES - AN INSTITUTIONAL EXPERIENCE



Joshi, R¹, Sekar, A¹, Nada, R¹, Nahar, U¹, Bal, A¹, Mitra, S¹, Singh, M², Rathi, M³, Kohli, HS³, Aggarwal, A⁴, Singh, I⁴, Jain, S⁵, Radotra, BD¹

¹PGIMER, Histopathology, Chandigarh, India; ²PGIMER, Virology, Chandigarh, India; ³PGIMER, Nephrology, Chandigarh, India; ⁴PGIMER, Pulmonary Medicine, Chandigarh, India, ⁵PGIMER, Internal Medicine, Chandigarh, India

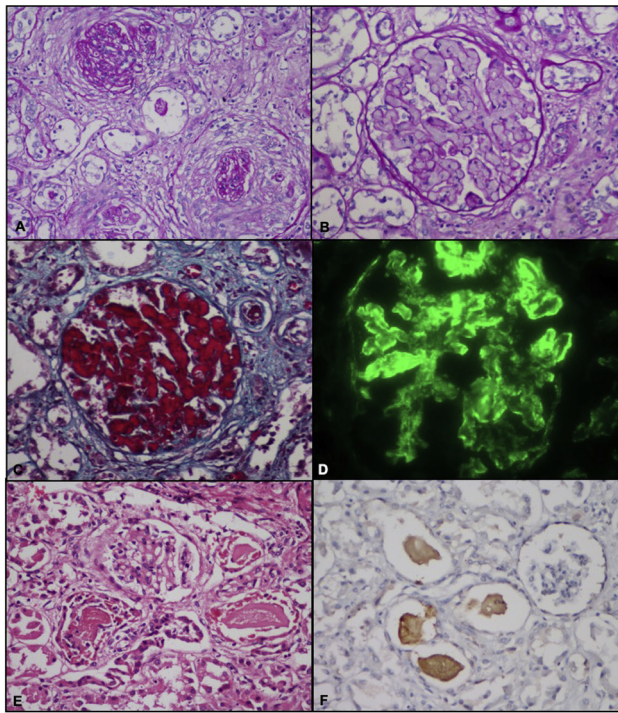
Introduction: COVID 19 is caused by severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) and clinical manifestations varied from asymptomatic to severe illness leading to death. Acute kidney injury was one of the presenting features and was documented in most patients during hospitalization. Renal

histomorphology reported in these cases ranged from ATI, pigment cast nephropathy to collapsing glomerulopathy. The COVID-19 autopsies in developing countries were finite due to limited infrastructure for highly infectious autopsies and cultural barriers. The reported cases were limited and based on post mortem biopsies. We undertook this study to describe renal histomorphological changes in the complete COVID-19 autopsies performed in our institute.

Methods: We retrospectively evaluated renal histomorphology of COVID-19 positive patients admitted in PGIMER Chandigarh, India. These cases were COVID-19 negative at the time of autopsy. The light microscopic findings in kidney sections of six autopsy cases and one post mortem biopsy were evaluated. Immunofluorescence and electron microscopy were also performed.

Results: A total of seven cases; 6 complete autopsies and one post mortem kidney biopsy were examined grossly and microscopically. The age ranged from 28-68 years with a mean of 46 years. Male-female ratio was 6:1. Four patients had comorbidities of which one patient had systemic lupus erythematosus (SLE) and three had type II diabetes mellitus. SLE patient had lupus nephritis, however, the diabetes mellitus cases did not have any renal related clinical manifestations prior to COVID-19 infection. In case # 1 after COVID-19 infection, there was upscaling of lupus nephritis from class III to IV. Mesangiolytic was present in two patients (lupus nephritis-1, diabetes mellitus-1). Two cases showed myoglobin pigment casts and one case showed mucormycosis. All cases had moderate to severe ATI with recognizable etiology in 5 cases. In one case it is due to mucormycosis, in 2 cases each it was observed due to myoglobin cast and mesangiolytic. There was no evidence of collapsing glomerulopathy in our series. RTPCR for COVID-19 and IHC were negative in kidney tissues in all the autopsy cases.

Case s	Age/Sex	Prior comorbidities	Renal histomorphology at autopsy	RTPCR from kidney	Duration of stay in hospital in days
Case 1	28/F	Systemic lupus erythematosus with lupus nephritis class III, tuberculosis, idiopathic thrombocytopenic purpura	Lupus nephritis with Class IV+V with mesangiolytic (progression from class III after COVID-19), activity score: 12/24, chronicity score: 4/12, moderate acute tubular injury	Negative	9
Case 2	58/M	Type II diabetes mellitus	Mesangiolytic with severe acute tubular injury and myoglobin pigment cast	Negative	29
Case 3	45/M	None prior. Found to have triple vessel coronary artery disease on autopsy	Moderate acute tubular injury with myoglobin pigment cast	Negative	07
Case 4	53/M	Type II diabetes mellitus	Severe acute tubular injury	Negative	17
Case 5	68/M	Type II diabetes mellitus, hypertension, coronary artery disease	Class III diabetes mellitus, severe acute tubular injury and moderate arteriosclerosis	Negative	01
Case 6	32/M	None	Severe acute tubular injury	Negative	46
Case 7	38/M	None	Acute cortical necrosis with Mucormycosis		08



Representative section from kidney of case 1 showing glomerulus with circumferential cellular crescents (A, 200x, PAS stain) and mesangiolysis depicted as paralyzed glomeruli (B, 400x, PAS stain and C, 400x, MSB stain). The immunofluorescence highlighted membranous 3+ staining for IgG (D, 400x, Immunofluorescence). The representative section of case 3 showing brick red cast in the tubules, eliciting inflammation (E, 200x; H&E). The casts are positive for myoglobin on immunohistochemistry (F, 200x, IHC).

Conclusions: Medical autopsies give us an opportunity to examine the whole organ in detail which is equivalent to many medical biopsies. Our observations confirm that COVID-19 patients had an acute tubular injury in all, which was due to thrombotic microangiopathy and myoglobin casts in two patients each and mucormycosis in one. These were possibly unrelated to SARS-CoV-2 as tissue PCR and IHC was negative for SARS-CoV-2 virus.

No conflict of interest

POS-032

CLINICAL OUTCOMES OF HEMOPERFUSION USING HA330 FILTER AMONG PATIENTS WITH SEVERE AND CRITICAL COVID-19 AT THE UNIVERSITY OF SANTO TOMAS HOSPITAL: A ONE-YEAR RETROSPECTIVE STUDY

Dizon, JM^{*1}, Pe, DC¹

¹University of Santo Tomas Hospital, Section of Nephrology, Manila, Philippines

Introduction: Coronavirus disease-2019 (COVID-19) became a global pandemic in March 12, 2020. Currently, there is no definitive treatment for the disease. Severe and critically ill COVID-19 patients are admitted due to respiratory illness and failure leading to multiple-organ dysfunction syndrome. Cytokine release syndrome (CRS) is prevalent among these patients. Hemoperfusion is a form of extracorporeal therapy that effectively removes the inflammatory cytokines that lead to lung damage. This study was conducted to determine the clinical outcomes of patients diagnosed with Severe and Critical COVID-19 who underwent hemoperfusion at the University and Santo Tomas Hospital.

Methods: This retrospective study included 135 severe and critical COVID-19 patients who underwent hemoperfusion using an HA330 cartridge. Demographic, clinical data, and outcomes were described. APACHE II score, Hemoglobin, platelet count, leukocytes, neutrophils, lymphocytes, serum creatinine, inflammatory markers such as serum ferritin, hs-CRP, IL-6, LDH, procalcitonin, D-dimer, PaO₂/FiO₂ (PF) ratio were compared pre and post hemoperfusion (HP) among those survivors and non-survivors. The effects of the timing of hemoperfusion on different clinical parameters and outcomes were described.

Results: The most common cause of death is respiratory (20%). There were 98 patients (73%) who survived. Mortality rates were elevated among chronic kidney disease and cancer patients. APACHE II score was lower post hemoperfusion compared to baseline levels among survivors.

After 4 sessions of hemoperfusion, hemoglobin and platelet counts were lower among non-survivors. WBC levels were increased for all patients. Neutrophils increased compared to baseline among those who expired. Lymphocytes were decreased compared to baseline among non-survivors. There is no significant change in creatinine levels compared to baseline.

Post HP ferritin, LDH, and D-dimer were elevated among non-survivors. Among survivors, hs-CRP and procalcitonin were lower compared to baseline. Post HP ferritin and D-dimer increased among survivors. IL-6 levels showed no significant difference post-HP from baseline but we reported higher levels among non-survivors versus survivors. PF ratio was higher post hemoperfusion among patients who survived compared to those who died.

The effect of timing of hemoperfusion was divided into 14 days versus more than 14 days of illness. The APACHE II score for those who underwent hemoperfusion within 14 days showed a lower score. There was no significant difference in the baseline levels of hematologic counts, inflammatory markers, and PF ratio among those who underwent hemoperfusion beyond 14 days. For those who underwent hemoperfusion within 14 days, hemoglobin, hs-CRP, IL-6, and procalcitonin were lower compared to baseline while neutrophils, ferritin, d-dimer, and PF ratio had increased levels. Most patients who underwent hemoperfusion within 14 days of illness required high flow O₂ supplementation than an invasive mechanical ventilator.

Conclusions: Hemoperfusion results in lower APACHE II score, hemoglobin, HsCRP, and procalcitonin levels. There was no significant difference from baseline clinical parameters among those who underwent hemoperfusion beyond 14 days of illness. Those who underwent hemoperfusion within 14 days of illness required less invasive mechanical O₂ support.

No conflict of interest

POS-033

EFFECT OF HEMOPERFUSION ON THE CLINICAL OUTCOME OF SEVERE AND CRITICAL COVID-19 PATIENTS ADMITTED AT THE UNIVERSITY OF SANTO TOMAS HOSPITAL: AN ANALYTICAL COHORT STUDY

Umlas, CA^{*1}, Pe, DC¹

¹University of Santo Tomas Hospital, Section of Nephrology, Manila, Philippines

Introduction: Severe sepsis is a life-threatening end organ dysfunction resulting from dysregulated host response to infection and poses a significant burden to healthcare systems worldwide. Since the advent of COVID-19, cytokine release syndrome has also been attributed to clinical deterioration presenting as acute respiratory distress syndrome and acute kidney injury of infected individuals. Objective: To determine the clinical outcome of Severe and Critical COVID-19 patients who underwent hemoperfusion compared with patients who did not undergo hemoperfusion.

Methods: This study entailed a retrospective cohort analysis of patients aged ≥ 18 and < 90 years old admitted at University of Santo Tomas Hospital who were diagnosed with Severe or Critical COVID-19. Subjects were grouped between those who underwent hemoperfusion (HP group) using HA 330 cartridge and those who did not undergo the procedure (non-HP). Demographic and clinical data collected for both groups included age, sex, comorbidities present, time to initiation of hemoperfusion, total hemoperfusion time, use of other medications specifically: immunomodulator and anti-viral drugs, antibiotics and steroid, length of hospital stay and in-hospital mortality. Mean arterial pressure, cardiac rate, oxygen saturation, arterial blood gas, complete blood count, oxygen requirement, inotropic score, serum creatinine, urine output, LDH, ferritin, HsCRP, Interleukin-6 values and Acute Physiology and Chronic Health Evaluation II (APACHE II) score were compared from baseline and after 4 sessions of hemoperfusion for the HP group. The clinical outcomes: length of hospital stay, in-hospital mortality and time to off high flow nasal cannula (HFNC) between two groups were also compared.

Results: A total of 98 cases were included, 49 subjects underwent hemoperfusion using HA 330 and 49 patients did not undergo hemoperfusion. Demographic data is similar between both groups. Baseline