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The 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

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Objectives : Determine the clinical outcome of Severe and Critical COVID-19 patients who underwent hemoperfusion compared with patients who did not.
Methods : This is a retrospective cohort analysis of patients aged ≥ 18 and < 90 years old admitted at University of Santo Tomas Hospital 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 (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, 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 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 clinical data between the two study groups did not show statistical difference. However, Baseline LDH, HsCRP, Ferritin, IL-6, PF ratio and APACHE II score were statistically different. There is no statistical difference between the two groups in terms of primary therapy for COVID-19 and presence of co-morbid conditions except for presence of chronic kidney disease. Length of hospital stay and time to off HFNC was shorter in the non-HP group. Time to hemoperfusion and total treatment time did not show any statistical difference between expired and discharged patients who underwent the procedure.
Conclusions : Study did not show survival benefit with the use of hemoperfusion.

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	Total (n=98)	HP (n=49)	Non-HP (n=49)
	Frequency (%); Mean ± SD; Median (IQR)		
Age	58.84 ± 16.31	59.96 ± 14.78	57.71 ± 17.79
Sex*			
Male	54 (55.1)	36 (73.47)	18 (36.73)
Female	44 (44.9)	13 (26.53)	31 (63.27)
COVID-19 status*			
Severe	14 (14.29)	2 (4.08)	12 (24.49)
Critical	84 (85.71)	47 (95.92)	37 (75.51)
Weight*	73.23 ± 17.90	79.08 ± 18.17	67.37 ± 15.72
Medication			
Antibiotic	98 (100)	49 (100)	49 (100)
Antiviral	98 (100)	49 (100)	49 (100)
Steroid	96 (97.96)	49 (100)	47 (95.92)
Enoxaparin	94 (95.92)	49 (100)	45 (91.84)
Tocilizumab	41 (41.84)	25 (51.02)	16 (32.65)
Others	8 (8.16)	3 (6.12)	5 (10.20)
Comorbid conditions			
Hypertension	71 (72.45)	37 (75.51)	34 (69.39)
Diabetes mellitus	38 (38.78)	17 (34.69)	21 (42.86)
Coronary artery disease	24 (24.49)	13 (26.53)	11 (22.45)
Stroke	7 (7.14)	4 (8.16)	3 (6.12)
Obesity	4 (4.08)	3 (6.12)	1 (2.04)
Chronic kidney disease*			
None	81 (82.65)	37 (75.51)	44 (89.8)
3a	6 (6.12)	5 (10.20)	1 (2.04)
3b	4 (4.08)	4 (8.16)	0
5d	6 (6.12)	2 (4.08)	4 (8.16)
5kt	1 (1.02)	1 (2.04)	0
Other comorbidity	10 (10.20)	3 (6.12)	7 (14.29)

** p-value <0.05*

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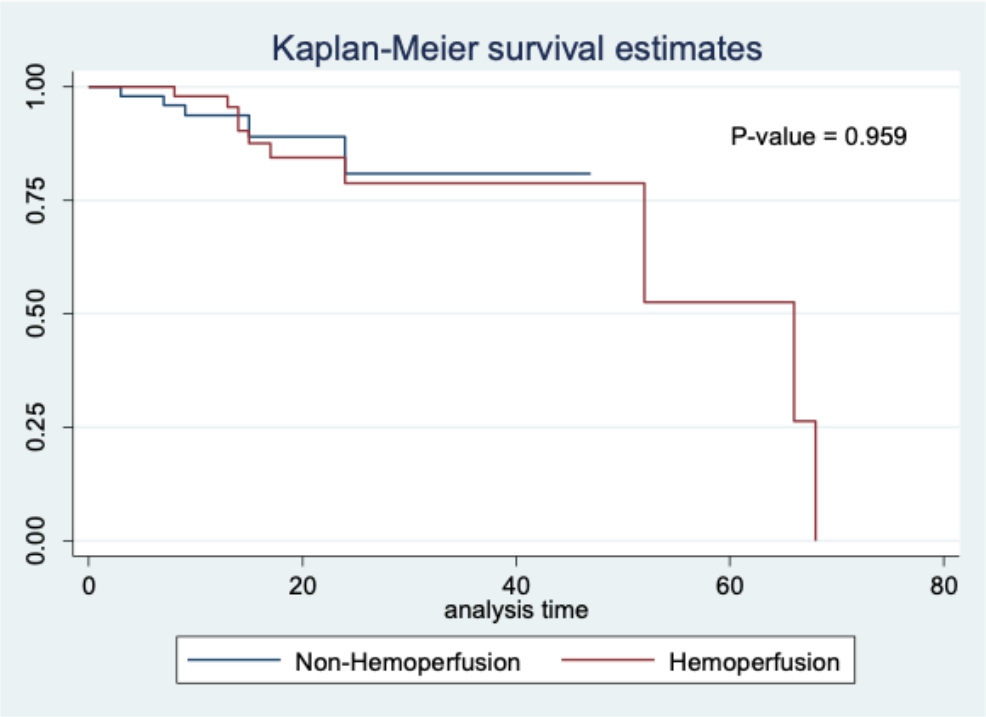
Kaplan-Meier survival estimates
P-value = 0.959
1.00
0.75
0.50
0.25
0.00
0
20
40
60
80
analysis time
Non-Hemoperfusion
Hemoperfusion