KSN 2022
SEOUL, KOREA MAY 26 - 29

Abstract Submission No. : 1018

Clinical Outcomes of Hemodialysis Patients with COVID-19 in a Tertiary Hospital: A Single-Center Retrospective Study

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Objectives: The primary objective of this study is to determine the clinical outcomes of hemodialysis patients with COVID-19 infection. Specifically, to determine demographic data and risk factors associated with mortality and compare hemodialysis patients who survived from those who do not survived in terms of clinical features, laboratory findings and treatment regimen.

Methods: A single-center retrospective study of fifty two (52) hemodialysis patients infected with COVID-19 in a tertiary hospital in the Philippines from April 2020 to April 2021 was performed. Demographic data, clinical features, laboratory parameters, intervention and outcomes were analyzed between survivors and non-survivors. Independent risk factors associated with mortality were identified.

Results: Among 52 hemodialysis patients infected with COVID-19, most of them were male (61.54%), older with mean age of 65 ± 16 years and with underlying condition such as hypertension (96.15%), diabetes mellitus (71.15%), heart disease (42.31%) and cancer (7%). The most common presenting symptoms were fever (77%), cough (50%) and dyspnea (48%). The overall rates of ICU admission and mortality were 10% (95% CI 3%–21%) and 23% (95% CI 13%–37%), respectively. Between survivors and non-survivors, the latter were older (p 0.020), has lower PF ratio of £300 (p 0.002) and has elevated ferritin (p 0.023).

Conclusions: The mortality rate of hemodialysis patients with COVID-19 infection in a tertiary hospital in the Philippines was comparable with other countries. Older age, elevated ferritin and low PF ratio were identified as independent risk factors associated with mortality.

Risk Factors associated with mortality among hemodialysis patients with COVID-19

Table 5. Risk factors associated with mortality among hemodialysis patients with COVID-19 (n=52)

	Univariable	
	OR (95% CI)	***p***
Age (years)	**1.075 (1.01–1.14)**	**.020**
Age 50 and up (vs <50)	7.540 (0.41-139.56)	.175
Age 60 and up (vs <60)	**20.556 (1.14-370.92)**	**.041**
Age 65 and up (vs <65)	**9.324 (1.53-56.94)**	**.016**
Age 70 and up (vs <70)	3.108 (0.84-11.46)	.089
Female	1.828 (0.52–6.45)	.349
Comorbidities		
Hypertension	0.291 (0.03-3.07)	.305
Diabetes	1.190 (0.30-4.80)	.806
Heart disease	0.985 (0.28-3.48)	.981
Cancer	2.988 (0.62-14.35)	.171
Ferritin (ng/mL) (n=46)	**2.009 (1.10-3.67)**	**.023**
Normal (21.81 to 274.66)	Reference	-
Elevated (>274.66)	12.234 (0.66-225.34)	.092
LDH (U/L) (n=44)	1.592 (0.51-5.01)	.426
Normal (125-220)	Reference	-
Elevated (>220)	0.898 (0.18-4.60)	.898
CRP (mg/dL) (n=45)	1.554 (0.98-2.47)	.063
<0.50	Reference	-
≥ 0.50	5.246 (0.27-100.91)	.272
D-dimer (ng/mL) (n=35)	1.856 (0.93-3.72)	.081
<500	Reference	-
≥ 500	3.255 (0.16-67.05)	.444
Interleukin-6 (pg/mL) (n=19)	1.545 (0.90-2.65)	.115
Normal	Reference	-
Elevated (1.5-7)	3.571 (0.15-85.68)	.432
Hemoglobin g/dL (n=50)	0.520 (0.04-6.81)	.619
<12	0.980 (0.24-4.06)	978
≥ 12	Reference	-
WBC (x10/L) (n=50)	0.854 (0.39-1.86)	.693
<4.4	1.253 (0.29-5.46)	.764
4.4 – 11	Reference	-
>11	0.927 (0.13-6.72)	.940
Segmenter (n=51)		
40 – 70	Reference	-
>70	1.469 (0.40-5.40)	.563
Lymphocyte (n=51)		
<22 or >43	0.672 (0.18-2.57)	.562
22 – 43	Reference	-
Platelets (x109/L) (n=50)	0.883 (0.40-1.97)	.762
<150	1.055 (0.28-4.01)	.937
>150	Reference	-
Procalcitonin (ng/mL) (n=37)	1.066 (0.79-1.44)	.679
≤0.50	Reference	-
>0.50	1.462 (0.29-7.44)	.648
Albumin		
<3.5	2.905 (0.80-10.59)	.106
3.5-5.5	Reference	-
PF ratio ≤300 (n=36)	2.994 (1.06-4.93)	.002
Significant chest x-ray finding (n=51)	2.388 (0.52-10.95)	.262