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Скопје

# MORTALITY AND RISK FACTORS FOR COVID-19 IN PATIENTS ON HEMODIALYSIS: SINGLE CENTER STUDY

Vlatko Karanfilovski, MD

University Clinic of Nephrology, Skopje,  
Republic of N. Macedonia

# COVID-19 IN PATIENTS ON HEMODIALYSIS

- Hemodialysis (HD) patients are particularly vulnerable to SARS-CoV-2 infection due to uremia-related immune system dysfunction and coexistence of comorbid conditions like obesity, hypertension, diabetes mellitus (DM) and cardiovascular diseases (CVD)<sup>1</sup>.
- The prognosis of HD patients was poorer than in the general population, with the majority requiring hospitalization and more than one in five deaths<sup>1</sup>.
- The **aim** of our study was to assess outcome and risk factors for mortality from COVID-19 among patients on chronic hemodialysis.
- Methods:
  - Retrospective, observational, single-center study included 71 patients on HD with SARS CoV-2 infection confirmed by RT-PCR, hospitalized in the COVID unit at University Hospital of Nephrology in Skopje (Nov. 2020 to Feb. 2022).
  - Medical histories were used to collect data for demographic characteristics, laboratory parameters, treatment, and outcomes of the patients.

# COVID-19 IN PATIENTS ON HEMODIALYSIS

## Characteristics of the study cohort

Characteristic	Result	
Gender	39 patients (54.9%) male	32 patients (45.1%) female
Mean age	66.9 ± 11.3 years	
Mean HD vintage	57.4 ± 62.8 months	
Etiology of kidney failure	Hypertension (28.2% - 20 patients)	Diabetes (19.7% - 14 patients)
Mean period from a positive COVID-19 test to hospitalization in the COVID unit	5.7 ± 5.8 days	
Mean hospital duration in the COVID unit	9.8 ± 5.8 days	
Need for O2 therapy on admission	83.1% were on O2 therapy (O2 saturation 87.9±9.4%)	
	16.9% were not on O2 therapy (O2 saturation 92±6.4%)	
Comorbidities	50.7% had hypertension, 47.9% had CVD, 8.5% had DM, 29.6% had gastrointestinal disorders, 15.5% had malignancy, and 70.4% had KF plus 2 other comorbidities	
Therapy	All patients were treated with antibiotics, 83.1% received oxygen therapy, and 85.9% received corticosteroids.	

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## Comparison between survived and deceased patients

Characteristic	Survived patients (42 patients – 59.2%)	Deceased patients (29 patients – <b>40.8%</b> )	p - value
Albumin on 1 <sup>th</sup> day	<b>34.4 ± 4.3 g/l</b>	31.6 ± 7.7 g/l	0.000
Lactate dehydrogenase (LDH) on 1 <sup>th</sup> day	309.5 ± 108.5 U/l	<b>396.4 ± 234 U/l</b>	0.002
D-dimer on 1 <sup>th</sup> day	2209.3 ± 3487.1 ng/ml	<b>4994.2 ± 6462.4 ng/ml</b>	0.002
Albumin on 5 <sup>th</sup> day	<b>32.6 ± 3.8 g/l</b>	29.9 ± 6.8 g/l	0.005
LDH on 5 <sup>th</sup> day	252.2 ± 101 U/l	<b>474.4 ± 262.2 U/l</b>	0.000
Creatine kinase (CK) on 5 <sup>th</sup> day	209.4 ± 961.0 U/l	<b>1144.3 ± 4310.4 U/l</b>	0.015
C-reactive protein (CRP) on 5 <sup>th</sup> day	45.5 ± 40.8 mg/L	<b>96.3 ± 84.3 mg/L</b>	0.040
Need for O2 Therapy	29 patients	<b>42 patients</b>	0.020

For all other analyzed demographic and laboratory parameters there was no statistically significant difference between survived and deceased patients.

**The serum level of LDH on the 5<sup>th</sup> day was the only independent predictor associated with mortality in HD patients with COVID-19 (p<0.009) and was higher in deceased pts**

# COVID-19 among Hospitalized Chronic Hemodialysis Patients: Clinical Features and Predictors of Mortality

Dahlan, Randah A<sup>1\*</sup>, Faqihi, Ahmed Y<sup>2</sup>, Alsulami, Hajar A<sup>2</sup> and Alkatheeri, Ali M<sup>1</sup>

**Objectives:** Chronic hemodialysis patients have an increased susceptibility to COVID-19 infection, and worse outcomes compared to the general population. This study aims to describe the clinical course and outcomes of hemodialysis patients with COVID-19 infection, and to describe predictors of mortality.

**Methods:** This retrospective observational study included adult chronic hemodialysis patients hospitalized to a tertiary care center with COVID-19 infection between January 1, 2020 and December 31, 2022. Data about their clinical features at time of diagnosis, and rate of complications were collected.

**Results:** 49 hemodialysis patients were hospitalized with COVID-19. The mortality rate was 26.5%, 45% required ICU admission, 28% required mechanical ventilation, 12% developed VTE, and the average length of hospitalization was 17 ± 15 days. When comparing survivals with non-survivals, age, initial level of C-reactive protein, LDH, haemoglobin, and initial abnormal chest X-ray were predictors of mortality.

**Conclusion:** The need for oxygen therapy, low albumin levels, and high LDH, D-dimer, CK, and CRP levels were associated with the outcome of HD patients with COVID-19 infection, but only LDH level on the 5th day was the independent predictor associated with mortality.

Thank You for Your  
attention