

# Clinical course and risk factors for mortality of inpatients with COVID-19 at a secondary hospital

대구 파티마 병원

정나영, 김연재, 김혜인, 이상아, 강종완

**Background/Aims:** Although epidemiological and clinical characteristics of Korean COVID-19 patients have been reported, the risk factors affecting mortality and the risks of detailed clinical processes have not been well documented.

**Methods:** In this retrospective cohort study, we included 91 adult inpatients with laboratory confirmed COVID-19 from Fatima Hospital (Daegu, Korea). Demographic, clinical, laboratory data including serial samples for viral RNA detection, and treatment were extracted from electronic medical records and compared between survivors and non-survivors. We used univariable and multivariable age-matched logistic regression to explore the risk factors associated with in-hospital death.

**Results:** 91 inpatients were included in this study, of whom 68 (74.7%) were discharged (survivors) and 23 (25.3%) died (non-survivors). The median age of the patients was 68 years; 53.8% were female. The non-survivors were significantly older than survivors. The most common symptoms were fever, cough, and sputum (39.6%, 37.4%, 36.3%, respectively). In non-survivors, the rates of dyspnea and altered consciousness were significantly higher than those of survivors. The frequencies of decreased oxygen saturation, poor performance status, and infiltration on chest radiography were significantly higher in non-survivors. The median time from admission to dyspnea aggravation was 5.66 days. The age-matched multivariable regression showed increasing odds of in-hospital death associated with altered consciousness (odds ratio 1.085, 95% CI 1.085-1.113;  $p < 0.001$ ), chest radiography infiltration (1.694, 1.001-3.582;  $p = 0.006$ ), higher CRP (12.694, 1.001-77.582;  $p = 0.006$ ), procalcitonin (1.009, 1.001-1.016;  $p = 0.021$ ), and aPTT (2.474, 1.070-4.347;  $p = 0.001$ ) on admission. The median time of viral shedding after COVID-19 diagnosis was 24.5 days in survivors; the longest observed duration was 60 days.

**Conclusions:** The potential risk factors, such as altered consciousness, chest x-ray infiltration, procalcitonin, higher CRP, and aPTT could help clinicians to identify patients with poor prognosis at an early stage.

Table. Summary of the important results of this study

					Age matched logistic regression analysis			
					Univariable analysis	Multivariable analysis		
	Total (n=91)	Non-survivor (n=23)	Survivor (n=68)	p value	p value	Odds ratio	95% CI	p value
Demographic findings								
Age, years	68 ± 16.1	74 ± 7.85	66 ± 17.7	0.039*				
Sex								
Female	49 (53.8%)	8 (34.8%)	41 (60.3%)					
Male	42 (46.2%)	15 (65.2)	27 (39.7%)					
Symptoms								
Fever	36 (39.6%)	11 (47.8%)	25 (36.8%)					
Cough	34 (37.4%)	4 (17.4%)	30 (44.1%)	0.022*	0.04*			
Sputum	33 (36.3%)	5 (21.7%)	28 (41.2%)					
Sore throat	12 (13.2%)	2 (8.7%)	10 (14.7%)					
Dyspnea	18 (19.6%)	10 (43.5%)	8 (11.8%)	0.001*	0.014*			
Chest pain	8 (8.8%)	1 (4.3%)	7 (10.3%)					
Myalgia	20 (22.2%)	3 (13.0%)	17 (25.0%)					
Headache	5 (5.5%)	0	5 (7.4%)					
Fatigue	7 (7.7%)	1 (4.3%)	6 (8.8%)					
Altered consciousness	9 (9.9%)	7 (30.4%)	2 (2.9%)	< 0.001*	< 0.001*	1.085	1.058 - 1.113	< 0.001*
Gastrointestinal symptoms	21 (23.1%)	3 (13.0%)	18 (26.5%)					
Oxygen saturation	89.4 ± 14.6	84.7 ± 19.06	94.4 ± 3.86	< 0.001*	< 0.001*	2.173	1.126 - 4.195	0.021
Performance status				< 0.001*				
Independent	59 (64.8%)	7 (30.4%)	52 (76.5%)					
Partially dependent	16 (17.6%)	6 (26.1%)	10 (14.7%)					
Totally dependent	16 (17.6%)	10 (43.5%)	6 (8.8%)					
Chest PA				0.009*	0.032*	1.694	1.001 - 3.582	0.006*
Normal	41 (45.1%)	5 (21.7%)	36 (52.9%)					
Infiltration	50 (54.9%)	18 (78.3%)	32 (47.1%)					
Laboratory findings								
CRP, mg/dl	5.4 ± 6.48 (0.04 - 38)	10.8 ± 8.53	3.6 ± 4.52	< 0.001*	< 0.001*	12.694	1.001 - 77.582	0.006*
Pro-calcitonin, ng/ml	0.6 ± 3.5 (0.03 - 27.97)	2.2 ± 7.15	0.14 ± 0.41	0.047*	0.044*	1.009	1.001 - 1.016	0.021*
APTT, sec	32 ± 14.9 (20.2 - 120.7)	43 ± 27.9	28.7 ± 3.57	< 0.001*	< 0.001*	2.474	1.070 - 4.347	0.001*
Duration of viral shedding after COVID-19 diagnosis, days								
	19.6 ± 13.6 (1 - 60)	5.26 ± 8.2	24.5 ± 11.5	< 0.001*				

Values are presented as mean ± SD or number (%).

\* Student's t test, \* Chi-squared test.