

# C-28 Clinical Characteristics of COVID-19 Patients who Deteriorated after Hospitalization



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## INTRODUCTION

Coronavirus Disease 2019 (COVID-19) patients presented to the hospital with various clinical patterns leading to different clinical progression and outcome. This study aimed to describe the proportion of non-severe COVID-19 patients who deteriorated after hospitalization and their clinical characteristics.

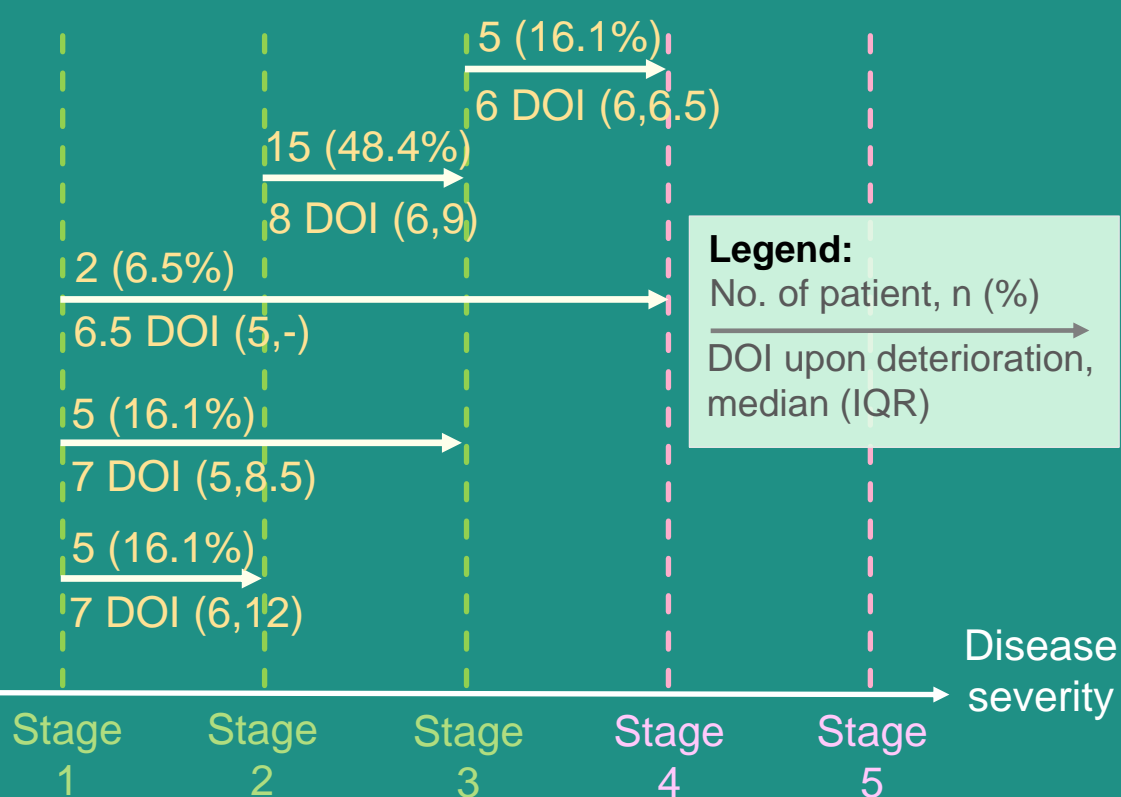
## METHODOLOGY

Cross-sectional study was conducted on adult cases of Covid-19 presented with severity stage 3 and below at a tertiary public hospital in Perak from February to July 2020. Data were collected from medical records. Deterioration is defined as clinical progression to severe stages after admission. All analysis were performed using SPSS version 20.0 (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0, Armonk, NY: IBM Corp). *P*-value of <0.05 is considered statistically significant.

## RESULTS

The study population included 178 hospitalized COVID-19 cases with laboratory confirmation by reverse-transcription polymerase chain reaction (RT-PCR). Seventeen percent (31/178) of COVID-19 cases deteriorated after admission at median day 7 (IQR: 6,9) of illness (Figure 1). Sociodemographic characteristics between deteriorated and non-deteriorated groups were shown in Table 1. More than half of those who deteriorated had hypertension (13[59.1%]) and diabetes mellitus (12[54.5%]). Those who deteriorated had mean white cell count of  $7.2 \times 10^9/L$  (SD: 2.2), median neutrophil/lymphocyte ratio of 2.55 (IQR: 1.77,3.59), median C-reactive protein (CRP) of 5.50mg/L (IQR: 2.10,18.20) and mean blood sugar of 12.57mmol (SD: 8.46). Median creatinine was 88.5 mmol/L (IQR: 77.0, 103.5) and median aspartate aminotransferase (AST) was 37.0 U/L (IQR: 27.0, 41.0). Table 2 showed chest X-ray abnormalities upon admission. Aged patients with comorbidities, smoking status, high CRP, high creatinine level, high AST level and interstitial opacities involving lower zone were more likely to deteriorate after hospitalization ( $p < 0.05$ ).

**Figure 1:** Number of patients deteriorated after hospitalization and Day of Illness (DOI) upon deterioration



## DISCUSSION AND CONCLUSION

Age and comorbidities had the propensity to deteriorate further, similar to findings seen in other early studies.<sup>1</sup> As concluded in a meta-analysis, this study also showed smoking status was not necessary lead to disease deterioration.<sup>2</sup> Elevated creatinine, AST and CRP were indicators of organ involvement that drives patient deterioration further. This was supported by studies on severity predictors and survival abroad.<sup>1,3</sup> Lower zone involvement on the chest radiograph was the most common finding noted, consistent with the findings of ARDS.<sup>4</sup> Risk profiling patients who may deteriorate using clinical characteristics can help clinicians intensify clinical monitoring and trigger possible early interventions to reduce associated mortality risks.

**Table 1: Sociodemographic Characteristics of Patients**

Characteristics	Deteriorated [n=31]	Non-deteriorated [n=147]	p-value
Age in years, Median (IQR)	56.0 (32.0, 60.0)	38.0 (27.0, 56.0)	0.027 <sup>a</sup>
Gender, n (%)			0.079 <sup>b</sup>
Male	22 (71.0)	79 (53.7)	
Female	9 (29.0)	68 (46.3)	
Ethnicity			0.262 <sup>c</sup>
Malay	29 (93.5)	114 (77.6)	
Chinese	0 (0.0)	9 (6.1)	
Indian	2 (6.5)	16 (10.9)	
Others	0 (0.0)	8 (5.4)	
Smoking#	[n=30]	[n=135]	0.003 <sup>c</sup>
Active smoker	13 (31.0)	29 (69.0)	
Ex-smoker	2 (6.7)	1 (33.3)	
Non-smoker	15 (12.5)	105 (87.5)	
With Comorbidity, n(%)	22 (71.0)	57 (38.8)	0.001 <sup>b</sup>
Number of Comorbid, Median (IQR)	2 (1, 3)	2 (1, 3)	0.690 <sup>a</sup>
Days of illness upon admission, Median (IQR)	4 (3, 6)	4 (2, 7)	0.839 <sup>a</sup>
Duration of hospital stay in days, Mean (SD)	12.6 (3.5)	11.4 (4.2)	0.143 <sup>d</sup>
Asymptomatic, n(%)	12 (38.7)	53 (36.1)	0.952 <sup>b</sup>
Symptomatic	[n=19]	[n=94]	
Fever	15 (78.9)	56 (59.6)	0.111 <sup>c</sup>
Dry cough	12 (63.2)	52 (55.3)	0.498 <sup>d</sup>
Cough with sputum	2 (10.5)	15 (16.0)	
Sore throat	3 (15.8)	27 (28.7)	0.244 <sup>c</sup>
Runny nose	4 (21.1)	25 (26.6)	0.777 <sup>d</sup>
Chest pain	0 (0.0)	3 (3.2)	>0.95 <sup>d</sup>
Muscle ache	1 (5.3)	13 (13.8)	0.458 <sup>d</sup>
Joint pain	0 (0.0)	9 (9.6)	0.353 <sup>d</sup>
Fatigue	7 (36.8)	8 (8.5)	0.004 <sup>d</sup>
Shortness of breath	2 (10.5)	6 (6.4)	0.620 <sup>d</sup>
Headache	1 (5.3)	14 (14.9)	0.460 <sup>d</sup>
Abdominal pain	2 (10.5)	5 (5.3)	0.334 <sup>d</sup>
Vomiting	0 (0.0)	1 (1.1)	>0.95 <sup>d</sup>
Nausea	0 (0.0)	2 (2.1)	>0.95 <sup>d</sup>
Diarrhoea	5 (26.3)	12 (12.8)	0.159 <sup>d</sup>
Loss of smell	2 (10.5)	5 (5.3)	0.334 <sup>d</sup>
Loss of appetite	2 (10.5)	1 (1.1)	0.073 <sup>d</sup>

<sup>a</sup>Mann-Whitney U test; <sup>b</sup>Chi-square test; <sup>c</sup>Fisher-Exact test; <sup>d</sup>Independent t-test; #percentages for deteriorated and non-deteriorated groups are row percentage

**Table 2 Chest X-ray Abnormalities of Patients Upon Admission**

Characteristics	Deteriorated [n=31]	Non-deteriorated [n=140]*	p-value
With abnormalities, n(%)	23 (74.2)	44 (31.4)	<0.001 <sup>a</sup>
Types of abnormalities, n(%)			
Ground glass appearance	7 (22.6)	14 (10.0)	0.069 <sup>b</sup>
Consolidation	5 (16.1)	11 (7.9)	0.173 <sup>b</sup>
Interstitial opacity	15 (48.4)	27 (19.3)	0.001 <sup>a</sup>
Nodular opacity	4 (12.9)	12 (8.6)	0.495 <sup>b</sup>
Pleural effusion	4 (12.9)	4 (2.9)	0.037 <sup>b</sup>
Lymphadenopathy	0 (0.0)	1 (0.7)	>0.95 <sup>b</sup>
Peribronchial cuffing	5 (16.1)	5 (3.6)	0.019 <sup>b</sup>
Cavitation	0 (0.0)	1 (0.7)	>0.95 <sup>b</sup>
Zone Involvement, n(%)			
Upper zone	4 (12.9)	10 (7.1)	0.286 <sup>b</sup>
Middle zone	8 (25.8)	26 (18.6)	0.361 <sup>a</sup>
Lower zone	21 (67.7)	37 (26.4)	0.001 <sup>a</sup>

<sup>a</sup>Chi-square test; <sup>b</sup>Fisher-Exact test; \*No Chest X-ray done for 3 cases

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