

Table 2: Distribution of radiographic findings in patients with coronavirus disease-19 pneumonia

Variable	n	Ground-glass opacity, n (%)	Consolidation, n (%)	Paving stone, n (%)	Vascular enlargement, n (%)	Subpleural stripes, n (%)	Lobe score >10, n (%)
Gender							
Female	58	58 (100.00)	41 (70.70)	17 (29.30)	38 (65.50)	13 (22.40)	15 (25.90)
Male	68	66 (97.10)	50 (73.50)	26 (38.20)	50 (73.50)	20 (29.40)	14 (20.60)
P		0.498	0.723	0.292	0.329	0.373	0.483
Age (years)							
<65	74	73 (98.60)	51 (68.90)	23 (31.10)	48 (64.90)	18 (24.30)	14 (18.90)
>65	52	51 (98.10)	40 (76.90)	20 (38.50)	40 (76.90)	15 (28.80)	15 (28.80)
P		1.000	0.323	0.390	0.147	0.570	0.192
Onset of symptoms before CT (days)							
<5	53	52 (98.10)	38 (71.70)	17 (32.10)	38 (71.70)	9 (17.00)	10 (18.90)
>5	49	48 (98.00)	39 (79.60)	22 (44.90)	39 (79.60)	19 (38.80)	19 (38.80)
P		1.000	0.354	0.183	0.354	0.014	0.026
Comorbidity							
<2	47	46 (97.90)	36 (76.60)	21 (44.70)	37 (78.70)	13 (27.70)	15 (31.90)
>2	55	54 (98.20)	41 (74.50)	18 (32.70)	40 (72.70)	15 (27.30)	14 (25.50)
P		1.000	0.810	0.216	0.483	0.965	0.471
Mortality							
Discharged	109	107 (98.20)	75 (68.80)	35 (32.10)	72 (66.10)	28 (25.70)	21 (19.30)
Dead	17	17 (100.00)	16 (94.10)	8 (47.10)	16 (94.10)	5 (29.40)	8 (47.10)
P		1.000	0.039	0.227	0.019	0.770	0.025

P is significant at the $P < 0.005$ (Chi-Square tests). CT: Computer tomography

Table 3: Distribution of extrapulmonary findings in patients with coronavirus disease-19 pneumonia

Variable	n	Lymph node, n (%)	Pleural effusion, n (%)	Pleural thickening, n (%)
Gender				
Female	58	9 (15.50)	11 (19.00)	14 (24.10)
Male	68	8 (11.80)	6 (8.80)	12 (17.60)
P		0.539	0.097	0.370
Age (years)				
<65	74	9 (12.20)	6 (8.10)	9 (12.20)
>65	52	8 (15.40)	11 (21.20)	17 (32.70)
P		0.602	0.035	0.005
Onset of symptoms before CT (days)				
<5	53	7 (13.20)	8 (15.10)	11 (20.80)
>5	49	9 (18.40)	8 (16.30)	15 (30.60)
P		0.474	0.864	0.254
Comorbidity				
<2	47	7 (14.90)	6 (12.80)	10 (21.30)
>2	55	9 (16.40)	10 (18.20)	16 (29.10)
P		0.839	0.453	0.367
Mortality				
Discharged	109	14 (12.80)	13 (11.90)	19 (17.40)
Dead	17	3 (17.60)	4 (23.50)	7 (41.20)
P		0.701	0.245	0.047

P is significant at the $P < 0.005$ (Chi-Square tests). CT: Computer tomography

76.2% had peripheral-central involvement, and none had pure central involvement.

The predominant CT findings mainly were ground-glass opacity and consolidation with a peripheral, bilateral, and widespread distribution similar to those previously reported.^[8,19-25] The development of consolidations was associated with the progression of the disease and was a warning sign for a serious course that was similar to

those previously reported.^[5,20] Other unusual imaging findings included mediastinal and hilar lymph nodes, pleural effusion, pleural thickening, pneumothorax, pericardial effusion, cavitation, and pulmonary emphysema.^[5,6,7,25] The presence of pleural effusion and pneumothorax was considered to be an important indicator of poor prognosis.^[5] Unlike other studies, we found no association between pleural effusion and prognosis.

Table 4: Logistic regression analysis for 30 days mortality among patients with coronavirus disease-19 pneumonia

	B	SE	Wald	df	P	Exp(B)	95% CI for EXP(B) (lower-upper)
Gender	-0.048	0.523	0.008	1	0.927	0.953	0.342-2.655
Age (years)	0.051	0.017	9.073	1	0.003	1.052	1.018-1.087
Duration of symptoms (<5 days)	1.296	0.612	4.492	1	0.034	3.656	1.102-12.125
The number of comorbidities	0.471	0.172	7.509	1	0.006	1.601	1.143-2.242
Lobe score (0-25)	0.169	0.049	11.693	1	0.001	1.184	1.075-1.075
Vascular enlargement	2.107	1.050	4.023	1	0.045	8.222	1.049-64.435
Consolidation	-1.981	1.051	3.552	1	0.059	0.138	0.018-1.082
Comorbidities (≥ 2)	-1.611	0.672	5.744	1	0.017	0.200	0.053-0.746

P is significant at the $P < 0.05$. CI: Confidence interval, SE: Standard error

One striking result of our study was that two-thirds of patients had vascular enlargement [Figure 2]. However, we found that consolidation and vascular enlargement were associated with a poor prognosis. Among the radiological findings of COVID-19 pneumonia, there are only a few studies reporting the incidence of vascular enlargement and its effect on prognosis. Recent studies show that vascular abnormalities can also be observed on chest CT. In addition, some authors attached diagnostic and prognostic significance to these findings.^[6] Our study is important in that it shows that vascular enlargement has an effect on the course of the disease and should be taken into consideration on prognostic evaluation.

Guan *et al.* reported a mortality rate of 1.4%, while Huang *et al.* reported a mortality rate of 14%.^[3,15] In our study, since asymptomatic or mild patients were treated at home, these patients did not undergo thorax CT; therefore, no history of the disease existed. We can explain the high mortality rates (13.5%) based on the fact that the majority of patients were inpatients whose COVID-19 pneumonias were more severe.

This study has some important limitations. First, our study is a single-center retrospective study. Second, the data were produced based on clinical histories. The fact that the histories were taken by different physicians and also a failure of patients to remember the exact dates of the onset of the symptoms might have inevitably affected our evaluations. Third, only baseline chest CTs were evaluated. Radiological diagnostic evaluations were not performed with control CTs achieved at intervals during the disease.

Conclusion

It is important to take account of lesions noted on radiological images and the extent of lesions of the COVID-19 along with age, duration of symptoms, and the number of comorbidities to predict prognosis. More comprehensive and systematic studies are needed to fully clarify the diagnostic and prognostic effects of radiological findings with serial chest CTs during the course of the disease, especially considering the



Figure 2: A 36-year-old man with coronavirus pneumonia (COVID-19). Axial computed tomography image shows ground-glass opacity, air bronchogram, and significant vascular enlargement (white arrow)

importance of lobes score and the vascular enlargement lesion.

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Conflicts of interest

There are no conflicts of interest.

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