
بسم الله الرحمن الرحيم
أثر ١٤٣٦
احسان الهستانية
١٣٩٤٠

Clinical Characteristics of Elderly Patients with COVID-19

- Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a novel type of beta coronavirus with high pathogenicity to the human being, and has resulted in the large-scale transmission of novel coronavirus disease 2019 (COVID-19) worldwide since December 2019 from Wuhan, China.

- The most common clinical manifestations of COVID-19 include fever, cough, dyspnea, fatigue, and myalgia.

- A few patients have developed severe pneumonia and they may present with acute respiratory distress syndrome (ARDS), extra pulmonary organ dysfunction, or even death.

- patients admitted to the intensive care unit (ICU) were older than non-ICU patients.

- Another recent study from Wuhan also indicates that old age is a risk factor for in-hospital death.

- Outside of Wuhan, research from Beijing showed there were more severe cases among patients aged over 65 years.

- All these studies suggest the elderly are more susceptible to COVID-19 and likely to have poor outcomes.

Table 1. Different clinical types of patients with SARS-CoV-2 infection

Types	Characteristics
Asymptomatic carriers[1]	Laboratory-confirmed SARS-CoV-2 infection without symptoms and imaging findings
Mild	Mild clinical symptoms without imaging findings of pneumonia
Moderate	Fever or respiratory symptoms with imaging findings of pneumonia
Severe	Meet any of the following: 1. Respiratory distress with respiratory frequency ≥30 breaths/min 2. Pulse oximeter oxygen saturation (SpO_2) ≤93% in resting state 3. PaO_2/FiO_2 ≤300 mm Hg (1 mm Hg = 0.133 kPa) 4. Showing a rapid progression (>50%) on CT imaging within 24–48 h
Critical severe	Meet any of the following: 1. Respiratory failure in need of mechanical ventilation 2. Shock 3. With other organ dysfunction

[1] Asymptomatic carriers were not classified as confirmed cases of COVID-19.

- Among confirmed cases with COVID-19, the proportion of confirmed elderly patients was 18.6% (105/565).

- The median age of all elderly patients was 67.0 years.

- Overall, 69.5% of elderly patients had chronic medical illness, and the most common comorbidities included hypertension (43.8%), diabetes (25.7%), and cardiac disease (16.2%).

- On admission, 66.7% of elderly patients showed fever, 64.8% had cough, and 33.3% had fatigue.

- Other symptoms included dyspnea (29.5%), diarrhea (9.5%), anorexia (8.6%), headache (8.6%), myalgia (7.6%), and vomiting (5.7%).

- The median time of incubation in elderly patients was 8.0 days

- The median time from the onset of symptoms to hospital admission was 5.0 days.

- Regarding clinical types according to the severity of disease, 61.9% of elderly patients were moderate, 22.9% were severe, and 10.5% were critical.

- Among 105 elderly patients, 85 (81.0%) were young-old patients and 20 (19.0%) were old-old cases.

- There were no differences regarding sex, smoking history, comorbidities, family cluster cases, clinical types, signs and symptoms on admission, and time of incubation or days from onset of symptoms to admission between the young-old group and old-old group.

- On admission, the median leukocyte levels were 4.9 × 109/L (IQR 3.8–6.5) in elderly patients and leukocytes below the normal range were in 30.5% in elderly cases.

- In elderly patients, lymphocytes were below the normal range in 31 (31.4%) and 38.1% had an elevated D-dimer level.

- Lactate dehydrogenase (LDH) was above the normal range in 43 (41.0%).

- Of the elderly patients, 79.0% showed increased C-reactive protein (CRP) levels, and 88.7% had images of bilateral pneumonia on admission.

- The median prothrombin time (PT) was longer in old-old patients compared with young-old patients (median 12.3 s [IQR 11.2–12.9] vs. 13.1 s [IQR, 12.4–13.4]; p = 0.007).

- The activated partial thromboplastin time (APTT) in old-old patients was longer than in young-old patients (median 39.0 s [IQR 29.9–43.5] vs. 33.5 s [IQR, 30.3–37.3]; p = 0.045).

- Levels of LDH were increased in 14 (47.1%) young-old patients, and this proportion was lower in the old-old group (15.0%; p = 0.011).

- Old-old patients showed a higher median level of creatine than young-old patients.

- During the hospitalization, 19.0% of elderly patients had complications, including ARDS (10.5%), acute cardiac injury (4.8%), acute kidney injury (4.8%), acute hepatic injury (1.0%), sepsis (5.7%), allergic eruption (1.9%), and pneumothorax (1.0%; Table 4).

- Old-old patients required invasive mechanical ventilator support more than young-old patients (25.0 vs. 3.5%, p = 0.045).

- There were no differences in the discharge rates and mortality between the young-old and old-old groups.

- The time of negative RT-PCR results and days from admission to discharge were not statistically significance between the two groups.

Table 3. Laboratory and image findings of elderly patients infected with SARS-CoV-2 on admission to hospital

	Normal range	All patients (n = 105)	Young-old (n = 85)	Old-old (n = 20)	p value
White blood cell count, $\times 10^9$/L	4–10	4.9 (3.8–6.5)	4.9 (3.8–6.4)	5.6 (4.1–7.4)	0.177
<4 $\times 10^9$/L		32 (30.5)	28 (32.9)	4 (20.0)	
4–10 $\times 10^9$/L		67 (63.8)	54 (63.5)	13 (65.0)	0.099
>10 $\times 10^9$/L		6 (5.7)	3 (3.5)	3 (15.0)	
Neutrophil count, $\times 10^9$/L	2–7	3.6 (2.6–4.5)	3.5 (2.6–4.6)	3.8 (2.8–4.3)	0.672
<2 $\times 10^9$/L		9 (8.6)	8 (9.4)	1 (5.0)	
2–7 $\times 10^9$/L		90 (85.7)	71 (83.5)	19 (95.0)	0.363
>7 $\times 10^9$/L		6 (5.7)	6 (7.1)	0	
Lymphocyte count, $\times 10^9$/L	0.8–4	1.1 (0.7–1.4)	1.0 (0.7–1.4)	1.2 (0.6–1.5)	0.713
<0.8 $\times 10^9$/L		33 (31.4)	27 (31.8)	6 (30.0)	0.878
Hemoglobin, g/L	110–160	125 (115–136)	125 (115–136)	121 (114–135)	0.624
<110 g/L		16 (15.2)	13 (15.3)	3 (15.0)	>0.999
Platelet count, $\times 10^9$/L	100–300	171.0 (135.8–228.8)	173 (139–241)	149 (118–180)	0.052
<100 $\times 10^9$/L		9 (8.6)	7 (8.2)	2 (10.0)	0.680
PT, s	10–15	12.5 (11.4–13.1)	12.3 (11.2–12.9)	13.1 (12.4–13.4)	0.007
>15 s		8 (7.6)		2 (10.0)	0.646
Activated partial thromboplastin time, s	26.2–46	33.9 (30.0–37.9)	33.5 (30.3–37.3)	39.0 (29.9–43.5)	0.045
>46 s			2 (2.4)	2 (10.0)	0.108
D-Dimer, mg/L	0–1	0.6 (0.3–1.9)	0.6 (0.3–1.9)	0.8 (0.5–2.5)	0.106
>1 mg/L		40 (38.1)	31 (36.5)	9 (45.0)	0.480
Albumin, g/L	35–55	36.2 (33.3–39.1)	36.1 (33.1–38.4)	37.6 (35.2–41.7)	0.130
<35 g/L		38 (36.2)	34 (40.0)	4 (20.0)	0.094
Globulin, g/L	20.2–29.5	26.8 (24.9–28.8)	26.8 (25.1–28.6)	26.5 (23.1–31.8)	0.940
>29.5 g/L		20 (19.0)	14 (16.5)	6 (30.0)	
20.2–29.5 g/L		81 (77.1)	68 (80.0)	13 (65.0)	0.332
<20.2 g/L		4 (3.8)	3 (3.5)	1 (5.0)	
Alanine aminotransferase, U/L	0–42	19.8 (15.0–28.3)	19.4 (15.2–28.6)	20.4 (12.3–27.8)	0.658
>42 U/L		14 (13.3)	11 (12.9)	3 (15.0)	0.764
Aspartate aminotransferase, U/L	0–37	26.0 (20.9–33.9)	26.0 (21.4–33.6)	26.0 (19.0–38.9)	0.959
>37 U/L		22 (21.0)	16 (18.8)	6 (30.0)	0.358
Creatine kinase, U/L	10–190	84.5 (53.1–143.4)	85.4 (50.6–127.7)	84.5 (61.4–167.0)	0.287
>190 U/L		12 (11.4)	8 (9.4)	4 (20.0)	0.229
≤190 U/L		93 (88.6)	77 (90.6)	16 (80.0)	
LDH, U/L	135–225	208.8 (173.1–239.4)	217.9 (168.5–251.7)	202.2 (174.5–218.9)	0.236
>225 U/L		43 (41.0)	40 (47.1)	3 (15.0)	0.011
≤225 U/L		62 (59.0)	45 (52.9)	17 (85.0)	
Creatinine, μmol/L	54–106	66.9 (55.0–80.0)	64.5 (52.4–77.8)	78.7 (66.9–106.5)	0.003
>106 μmol/L		11 (10.5)	6 (7.1)	5 (25.0)	0.033
Blood urea nitrogen, mmol/L	2.86–8.2	5.5 (4.2–7.3)	5.2 (4.1–6.7)	7.7 (4.9–8.6)	0.005
>8.2 mmol/L		17 (16.2)	12 (14.1)	5 (25.0)	0.309
≤8.2 mmol/L		88 (83.8)	73 (85.9)	15 (75.0)	
CRP, mg/L	0–8	33.6 (9.4–56.9)	33.2 (9.4–55.3)	43.1 (8.3–91.1)	0.282
>8 mg/L		83 (79.0)	68 (80.0)	15 (75.0)	0.760
Chest X-ray and CT findings					
Normal		5 (4.8)	5 (5.9)	0	
Unilateral pneumonia		7 (6.7)	5 (5.9)	2 (10.0)	0.522
Bilateral pneumonia		93 (88.7)	75 (88.2)	18 (90.0)	
Multiple mottling and ground-glass opacity		42 (40.0)	35 (41.2)	7 (35.0)	0.885

Table 4. Treatment and outcomes of elderly patients infected with SARS-CoV-2

	All patients (n = 105)	Young-old (n = 85)	Old-old (n = 20)	p value
Complications	20 (19.0)	12 (14.1)	8 (40.0)	0.0014
ARDS	11 (10.5)	5 (5.9)	6 (30.0)	0.0003
Acute cardiac injury	5 (4.8)	1 (1.2)	4 (20.0)	0.002
Acute kidney injury	5 (4.8)	2 (2.4)	3 (15.0)	0.028
Acute hepatic injury	1 (1.0)	1 (1.2)	0	>0.9999
Sepsis	6 (5.7)	2 (2.4)	4 (20.0)	0.006
Allergic eruption	2 (1.9)	2 (2.4)	0	>0.9999
Pneumothorax	1 (1.0)	0	1 (5.0)	0.160
Treatment				
Antiviral therapy	98 (93.3)	79 (92.9)	19 (95.0)	>0.999
Antibiotic therapy	63 (60.0)	53 (62.4)	10 (50.0)	0.447
Corticosteroid	51 (48.6)	42 (49.4)	9 (45.0)	0.806
Intravenous immunoglobulin therapy	45 (42.9)	37 (43.5)	8 (40.0)	0.808
Oxygen support	89 (84.8)	71 (83.5)	18 (90.0)	0.527
Nasal cannula	67 (63.8)	57 (67.1)	10 (50.0)	0.197
High-flow nasal cannula	8 (7.6)	7 (8.2)	1 (5.0)	0.702
Non-invasive ventilation	7 (6.7)	5 (5.9)	2 (10.0)	0.616
Invasive mechanical ventilation	8 (7.6)	3 (3.5)	5 (25.0)	0.006
ECMO	3 (2.9)	1 (1.2)	2 (10.0)	0.092
Prognosis				
Discharge	90 (85.7)	75 (88.2)	15 (75.0)	0.744
Death	3 (2.9)	1 (1.2)	2 (10.0)	0.066
Onset of symptoms to negative RT-PCR results, days	18.0 (14.0–24.8)	18.0 (14.0–24.0)	18.0 (12.0–27.0)	0.870
Onset of admission to discharge, days	17.0 (13.0–23.0)	17.0 (13.0–20.0)	20.0 (14.0–27.0)	0.359

Data are presented as the median (IQR) or n (%). ARDS, acute respiratory distress syndrome.

- The elderly patients with comorbid conditions were more likely to progress to severe illness, so the management of chronic disease is vital in elderly patients with COVID-19, with special attention, in our experience, on monitoring and controlling blood pressure and glucose.

- fever might be blunted or even absent in elderly patients with bacterial or viral infection, because of a low basal temperature, disturbance in thermal ho Meostasis by aging, and frequent use of medications, such as aspirin.

- Elderly patients with COVID-19 may only have fatigue, myalgia, headache, or digestive symptoms, including anorexia, vomiting without fever, or cough.

- Therefore, clinical care for elderly patients should be aware of these non-classical presentations.

- Combined with chronic medical illnesses, the possibility of atypical symptoms, and high incidence of severe illness, elderly patients require much more attention and nursing during the COVID- 19 pandemic.

- In conclusion, elderly patients are liable to develop a severe or critically severe condition with SARS-CoV-2 infection.

- They could show atypical symptoms and multiple organ abnormalities.

- Old-old patients tend to have more complications than young-old patients during hospitalization, but with timely and effective treatment they could also achieve comparably good out Comes as young-old patients.

Thank you