Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the Editor

Short-term outcomes in individuals aged 75 or older with severe coronavirus disease (COVID-19): First observations from an infectious diseases unit in Southern Italy

Dear Editor,

We read with great interest the article by Zhaohai Zheng et al., recently published in *The Journal of Infection*.[1] In this systematic review and meta-analysis male gender, age over 65 years, current smoking habit and the presence of underlying diseases were associated with severe coronavirus disease (COVID-19) and poor outcomes.

As of May 03, 2020, there were 210,717 confirmed cases of COVID-19 in Italy and 28,884 deaths, mostly aged 70 or more, thus severely testing the national healthcare system.[2]

To date, published studies describing short-term outcomes in elderly with severe COVID-19 disease admitted in the Italian Infectious Diseases units, are still limited.[3]

Therefore, we would like to describe short-term outcomes in all consecutive patients, aged 65 or more, with severe COVID-19 infection, hospitalized in our Infectious Diseases Unit. To our knowledge, this is the first report regarding elderly with COVID-19 from Southern Italy.

Our inpatient unit is composed of 37 beds served continuously by eleven infectious diseases specialists, and is designed by the regional COVID-19 pandemic plan as one of the reference institutions for the hospital care of COVID-19 in Apulia region.

Among the 67 patients with confirmed COVID-19 hospitalized from February 25, 2020, to April 29, 2020, 31 (46.2%), aged ≥ 65 years, were evaluated. Clinical, laboratory and radiological findings of these patients at baseline are illustrated in Table 1 and compared by age (group A: 65–74 years, group B: >75 years). Median age was 74 years and 19 (61.3%) were males. Baseline clinical and laboratory features of the two groups were similar. The most frequent comorbidities were hypertension (87.1%), cardiovascular disease (16.1%) and neurological disease (19.6%).

Short-term outcomes were classified as follows: discharged, not discharged and death. Clinical findings according to the short-term outcomes are reported in Table 2. Pneumonia was radiologically confirmed in 30 individuals (96.7%), 27 of whom were defined severe according to the American Thoracic Society guidelines for community-acquired pneumonia.[4]

Oxygen supplement was administered in 28 cases (90.3%) including 8 patients (25.8%) who required invasive ventilation and were transferred to the intensive care unit. No patient underwent non-invasive ventilator support. A total of 28 severe clinical events were observed in 16 patients (51.6%), six of whom showed at least two severe events. Six deaths occurred due to acute respiratory distress syndrome, complicated by septic shock in three cases and acute hearth injury in one patient.

Overall, median length of hospitalization was 23 days including 18 patients who are still hospitalized thus suggesting that prolonged hospital stay might have been depended on several factors, including onset of complications, frailty, slower healing, social and behavioural issues.[5]

Our results are in agreement with other studies reporting higher rates of severe outcomes in patients with COVID-19 aged 65 or more.[6,7]

Moreover, the remarkable burden of comorbidities of this peculiar population probably plays a role in increasing the rate of

Table 1
Clinical characteristics of the patients at baseline, radiological findings and therapy.

	A (65–74)	B ≥75	Total	p-value
N	17	14	31	
Median age	72 (67.5–73.5)	81 (77.5–85.5)	74 (71–81)	0.01
Male	12 (70.5)	7 (50)	19 (61.3)	0.28
BMI ≥ 30	8 (47.1)	3 (21.4)	11 (35.4)	0.25
Smoking or smoking history	7 (41.1)	1 (7.1)	8 (25.8)	0.04
Chronic Comorbidities				
Hypertension	16 (94.1)	11 (78.5)	27 (87.1)	0.3
Cardiovascular disease	2 (11.7)	3 (21.4)	5 (16.1)	0.63
Chronic kidney disease	1 (5.8)	2 (14.2)	3 (9.6)	0.57
All respiratory disease	2 (11.7)	3 (21.4)	5 (16.1)	0.63
Neurological Disease	2 (11.7)	4 (28.5)	6 (19.3)	0.36
Diabetes	2 (11.7)	2 (14.2)	4 (12.9)	1
Endocrine disease	1 (5.8)	0	1 (3.2)	1
Malignancy	0	2 (14.2)	2 (6.4)	0.19
Clinical symptoms				
Fever	14 (82.3)	11 (78.5)	25 (80.6)	1

(*continued on next page*)

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Table 1 (*continued*)

	A (65–74)	B ≥75	Total	p-value
Dry cough or sputum	16 (94.1)	9 (64.2)	25 (80.6)	0.06
Fatigue	3 (17.6)	3 (21.4)	6 (19.3)	1
Shortness of breath or dyspnea	7 (41.1)	8 (57.1)	15 (48.3)	0.48
Gastrointestinal disorders	1 (5.8)	0	1 (3.2)	1
Laboratory indicators at admission				
White blood cell, cells/μL	6530 (4925–8322)	6190 (3330–9630)	6430 (4677–8885)	0.4
Lymphocyte, cells/μL	870 (620–1172)	760 (490–1647)	825 (607.5–1197.5)	0.66
Hemoglobin, mg/dL	13.3 (12.1–15.4)	11.9 (10.9–13.2)	12.5 (11.7–14.2)	0.09
Platelet (count, x 109/L)	188 (143–327)	196 (147–255)	193 (143–293)	0.82
C-reactive protein, mg/L	68.7 (37–148)	79.2 (24.5–130)	79.2 (34.7–133.5)	0.96
Procalcitonin, ng/mL	0.11 (0.02 - 0.18)	0.13 (0.08–0.18)	0.12 (0.07–0.18)	0.25
Lactate dehydrogenase, UI/L	305.5 (251–344)	214 (197–289)	268 (213.5–335)	0.78
Serum Creatinine, mg/dL	0.93 (0.88–1.22)	1.01 (0.7–1.33)	1.01 (0.76–1.23)	0.53
Blood urea nitrogen, mg/dL	45 (37.5–70.5)	53.5 (37.5–76.2)	49.5 (37.5–73.2)	0.23
SpO2 (%)	91 (88–93.5)	92.5 (91–94.5)	92 (91–94)	0.13
qSOFA score $\geq$ 2	2 (11.7)	3 (21.4)	5 (16.1)	0.63
SOFA score $\geq$ 2	8 (47.1)	9 (64.2)	17 (54.8)	0.47
Radiological evidence of Pneumonia	17 (100)	13 (92.8)	30 (96.7)	0.45
Radiological findings at admission				
Unilateral Consolidation	0	1 (7.1)	1 (3.2)	0.45
Bilateral Consolidation	6 (35.3)	3 (21.4)	9 (29)	0.45
Multiple mottling/ground-glass bilateral	11 (64.7)	9 (64.2)	20 (64.5)	1
Treatment				
Hydroxychloroquine	14 (82.3)	10 (71.4)	24 (77.4)	0.6
Lopinavir/ritonavir	12 (70.5)	7 (50)	19 (61.2)	0.28
Heparine	12 (70.5)	11 (78.5)	23 (74.1)	0.69
Azitromycin	1 (5.8)	1 (7.1)	2 (6.4)	1
Antibiotic therapy	11 (64.7)	10 (71.4)	21 (67.7)	0.72
Glucocorticoids	9 (52.9)	8 (57.1)	17 (54.8)	1
Tocilizumab	4 (23.5)	0	4 (12.9)	0.1
Oxygen supplement	15 (88.2)	13 (92.8)	28 (90.3)	1

Abbreviations: BMI, body mass index; qSOFA, quick Sepsis related organ failure assessment. Results are presented as frequencies (%) for qualitative values and median (interquartile range) for quantitative values.

Table 2
Clinical findings according to the short-term outcomes.

	Discharged	Not discharged	Died	Total
N	7	18	6	31
Male	5 (71.4)	10 (55.5)	4 (66.7)	19 (61.3)
Median age	71 (68–72)	81 (77.7–85.5)	77.5 (72–91)	74 (71–81)
65–70	2 (28.5)	3 (16.6)	1 (16.6)	6 (19.3)
71–74	4 (57.1)	5 (27.7)	2 (33.3)	11 (35.4)
75–80	1 (14.2)	4 (22.2)	0	5 (16.1)
81–89	0	5 (27.7)	1 (16.6)	6 (19.3)
$\geq$ 90	0	1 (5.5)	2 (33.3)	3 (9.6)
$\geq$ *Two comorbidities*	6 (85.7)	13 (72.2)	5 (83.3)	24 (77.4)
Severe Pneumonia	6 (85.7)	15 (83.3)	6 (100)	27 (87)
Patients requiring Oxygen supplement	6 (85.7)	16 (88.8)	6 (100)	28 (90.3)
Low flow (nasal cannula/simple mask)	3 (42.8)	7 (38.8)	0	10 (32.2)
High flow (Venturi or reservoir masks)	2 (28.5)	6 (33.3)	2 (33.3)	10 (32.2)
Non invasive-ventilation	0	0	0	0
Invasive Ventilation	1 (14.2)	3 (16.6)	4 (66.7)	8 (25.8)
Transferred to the ICU	1* (14.2)	3 (16.6)	4 (66.7)	8 (25.8)
baseline qSOFA score $\geq$ 2	0	3 (16.6)	2 (33.3)	5 (16.1)
baseline SOFA score $\geq$ 2	4 (57.1)	8 (44.4)	5 (83.3)	17 (54.3)
Severe clinical events	7	7	14	28
ARDS	2 (28.5)	3 (16.6)	6 (100)	11 (35.4)
Septic shock	0	0	3 (50)	3 (9.6)
Secondary infections	3 (42.8)	4 (22.2)	2 (33.3)	9 (29.1)
Acute hearth injury	0	0	1 (16.6)	1 (3.2)
Multiple organ failure	0	0	2 (33.3)	2 (6.4)
Pancreatitis	2 (28.5)	0	0	2 (6.4)
Duration of hospital stay	23 (21–33)	27.5 (20.5–32)	12 (5.7–17)	23 (16–30)

Abbreviations: ARDS, acute respiratory distress disease.

severe outcomes, prolonging the duration of hospital stay and, consequently, raising healthcare costs.

Altogether, these considerations call for further studies aiming to improve clinical management of serious disease complications in the elderly with COVID-19.

Declaration of Competing Interests

None.

Contributors

We all contributed to editing the tables, and writing and editing the manuscript.

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