



Short Commentary

Geriatric Patients with COVID-19 Infection

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SARS-CoV-2 is an RNA virus, one of the five human coronaviruses of Beta coronavirus genus, which has expanded to humans from a zoonotic source, probably from bats or pangolins. It is a human transmission infection through droplets and the virus joins the pneumocytes type II ACE2 receptors, with an incubation period from 3 up to 12 days. Asymptomatic course has also been reported, making the infection more difficult to contain [1].

The outbreak of a typical pneumonia in Wuhan in December 2019, prompted the discovery of acute respiratory distress syndrome (ARDS) produced by SARS-CoV-2. World Health Organization (WHO) declared a global pandemic on 11th of March 2020. By September 23th, 2020, 31,375,325 cases had been confirmed and 966,399 deaths reported all around the world [2]. Spain has been one of the most affected countries, with more than 600,000 infected subjects and more than 30,000 deaths registered until the end of September 2020 [3].

Elderly patients are the most vulnerable part of the population [4]. Based on current epidemiological data, SARS-CoV-2-infected patients aged above 80 are at a great greater risk of death compared to younger patients [5]. In a review carried out in Italy on 355 patients, the mean age at the moment of the death was 79.5 years, and in the Chinese WHO report published in March, almost the 22% of the patients infected above 80, died [6,7].

Findings suggest different risk factors to blame for worse clinical outcome and higher mortality in elderly COVID-19 patients. Advanced age remains to be the highest independent risk factor associated with mortality [8]. Hypertension, DM2, cardiovascular diseases, COPD and chronic renal failure, were also found to be risk factors in an American sample [9]. Male sex, older age, leukocytosis, high lactate dehydrogenase level, cardiac injury and hyperglycemia were associated also with death in patients with severe COVID-19 in a Chinese sample [10].

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On admission, the most frequent symptoms in elderly patients included fever, cough, dyspnea, fatigue, and myalgia and few of them develop an acute respiratory distress syndrome (ARDS) [11]. Elderly patients with COVID-19 may have a typical presentation, fatigue, myalgia, headache, or digestive symptoms, alone, including anorexia, vomiting without fever, or cough. Combined with chronic medical illnesses, the possibility of atypical symptoms, and high incidence of severe illness, elderly patients do require considerably much more attention and nursing during the COVID-19 pandemic [12]. In the case of very elderly patients (older than 90 years-old), death rate was similar to that reported in younger patients, however, the very-elderly patients manifested in atypical clinical symptoms and atypical changes in the X-ray studies [13].

Laboratory findings frequently show lymphopenia, in 30 to 70% of the cases, with normal or abnormal leukocytes; the lower the lymphocyte count, the more serious the prognosis is. Rising of RCP, ferritin, transaminases, bilirubin, D-Dimer (almost 40% of the cases) and LDH with decrease of albumin are also typical laboratory findings in COVID-19 infection. The abnormal albumin and LDH suggest that SARS-CoV-2 infection is associated with extra pulmonary organ injury, including hepatic injury or myocardial injury [12]. A high level of procalcitonin is unlikely. A recent study indicated a high pro-inflammatory cytokine storm (including high levels of IL-6, IL-10, IL-2, and IFN- γ) in severe COVID-19 patients [14].

The most common complications in geriatric COVID-19 patients are: sepsis, respiratory and cardiovascular complications. Patients with cardiac conditions are a special vulnerable group [15].

Respiratory co-infections rise the severity and mortality with COVID-19, almost 50% of these patients have it [5] and around 70% require antibiotics as Ceftriaxone [5,16].

In Wang et al. series, 16.7% of COVID-19 patients developed arrhythmia, 7.2% myocardial injury and 8.7% cardiogenic shock; these figures were higher in critically ill patients [17]. In these cases, high troponin and natriuretic peptide levels were described. Myocardial injury and heart failure are common and responsible for up to 40% of the mortality in these patients [18].

Because elderly patients are prone to multi-organ system dysfunction, it becomes increasingly important to prevent other systemic complications, including gastrointestinal bleeding, renal failure, disseminated intravascular coagulation (DIC) or deep vein thrombosis and delirium [19].

No specific treatment has been officially recommended for the SARS-CoV-2 infection. Up to this day, no antiviral treatment provided clear effectiveness in patients with COVID-19. The most effective approach to control this disease is early diagnosis, effective quarantine and life support treatments. Non-steroidal anti-inflammatory drugs, and ACE/ARB inhibitors, were initially considered but later abandoned [20,21].

Remdesivir, an inhibitor of the viral RNA-dependent RNA-polymerase, was identified early as a promising anti viral drug for Covid-19 becoming the first treatment approved in that indication by the FDA and EMA. Remdesivir reduces the time to recovery or clinical improvement, none the less, has not been shown to reduce mortality [22-28].

Lopinavir-ritonavir, a HIV-1 protease inhibitor, has been suggested as a treatment due to *in-vitro* inhibitory activity against SARS-CoV-2. Recent studies have not found evidence to support the use of lopinavir-ritonavir for treatment of patients with COVID-19 [25,29]. Treatment with hydroxyl chloroquine, an anti malarial drug, also showed a beneficial effect in vitro against SARS-CoV-2. However, it has not showed a clinical beneficial effect or an improvement in the survival with important adverse effects as enlargement of the QT interval and the possibility of secondary arrhythmias [22,28]. Combination between Ceftriaxone and Azithromycin, an antibiotic with immune modulatory and anti-inflammatory effect has been also used; a study published in March 2020 showed some improvement in the infection parameters however, further studies have not showed this effect [22,23].

Up to now, dexamet has one is the only drug that has shown to reduce mortality of COVID-19 patients with acute respiratory distress syndrome (ARDS), especially among those receiving invasive mechanical ventilation [24].

Other drugs have been proposed to be effective against SARS-CoV-2 like monoclonal antibodies, anti-IL-6 (tocilizumab, sarilumab and siltuximab), and anti-IL1 (anakinra), Januskinase inhibitors (baricitinib, ruxolitinib) or interferon beta-1b and alfa-2a. Clinical controlled trials are needed to demonstrate the efficacy of these treatments against the COVID-19 infections.

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