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Lettera al Direttore

A Long-Term Rehabilitation Protocol to Limit Public Spending of COVID-19 Patients

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Dear Editor,

In December 2019, the wet market in the city of Wuhan, China saw the beginning of a deadly outbreak with an unexpected new strain of beta-coronavirus, severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), causing coronavirus disease 2019 (COVID-19). Beginning as an outbreak within China, this virus rapidly spread across many nations and continents making it a pandemic that is now posing the worst situation after the 1918 Spanish flu virus pandemic which killed millions of people. Presently, SARS-CoV-2 has rapidly spread to more than 215 countries while killing nearly 0.65 million people out of 16 million confirmed cases as of 26th July, 2020. In addition to a very severe global health concerns it also led to very high social and economic instability and huge panic and fear to the public (1). Fever, fatigue, cough and expectoration are the most frequent presenting symptoms, but muscle soreness, anorexia, chest tightness, dyspnea, nausea, vomiting, diarrhea, headache also occurred frequently. The majority of patients developing COVID-19 pneumonia had bilateral lung lesions (75.7%, 95% CI=65.7-84.5%) and respiratory failure or acute respiratory distress syndrome (ARDS) occurred in 9.5% (95% CI=5.0%, 40.3%) of patients (2). The most common neurologic complaints in COVID-19 are anosmia, ageusia, and headache, but other diseases, such as stroke, impairment of consciousness, seizure, and encephalopathy, have also been reported (3). This pattern of disease, somewhat similar to that described in earlier coronavirus outbreaks such as SARS and MERS, also dovetails with the blueprint thoracic radiologists recognize as the archetypal response to acute lung injury whereby an initial (often infectious or inflammatory) acute insult causes ground-glass opacities that may coalesce into dense consolidative lesions, and then progressively evolve and organize in often a more linear fashion with predilection for the lung periphery (and somewhat with a “crazy” paving pattern or emergence of a “reverse halo” sign) (4). In the early months of the coronavirus disease 2019 (COVID-19) pandemic, an iconic image has been the “proned” patient in intensive care, gasping for breath, in imminent need of artificial ventilation. This is the deadly face of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (5). Available data indicate that about 40% of patients with

COVID-19 develop ARDS, and 20% of ARDS cases are severe (6). Patients who survive the acute respiratory distress syndrome are at risk for physical and neuropsychological complications of the lung injury itself, associated multiorgan dysfunction, and their long stay in the intensive care unit (ICU) (7). Patients who survived acute respiratory distress syndrome have a persistent functional limitation one year after being discharged from intensive care, largely due to muscle waste and weakness and, to a lesser extent, trapping neuropathy, heterotopic ossification and intrinsic lung morbidity. The results suggest that the inability to exercise is primarily due to extrapulmonary disease; the impression is that impaired muscle function has had an important effect on long-term outcomes in these patients (8). Viral infections may act as triggers for the initiation of IPF or as agents exacerbating existing fibrosis. Especially the elderly population is prone to viral-induced fibrosis due to immunosenescence and with viral infections acting as cofactors (9). Survivors of the intensive care unit are at risk of neuropsychiatric and cognitive sequelae, referred to as post-intensive care syndrome (PICS), particularly patients who require prolonged mechanical ventilation and develop delirium-both of which are frequently encountered in severe COVID-19 infection. Approximately half of the survivors who require prolonged mechanical ventilation develop anxiety and depression, one-quarter develop post-traumatic stress disorder (PTSD), and half demonstrate neurocognitive impairments that, in some, might persist for 2 years following hospital discharge (10). Having said that, we understand that with the number of infected people worldwide increasing rapidly, we will soon have an increasing number of Sars-Cov-2 patients and an increasing percentage of patients with pulmonary fibrosis. To date, there are no proven protocols for respiratory rehabilitation in patients affected by Sars-Cov-2, both because of the lack of data given the new pandemic still in progress and because of the difficulty of health workers in contact with infected patients. The use of personal protective equipment and all anti-contage regulations make work very difficult. Public expenditure will be increasing for the treatment of patients suffering from pulmonary fibrosis, for which there is currently no definitive treatment. After the challenge of finding a valid vaccine to treat the sick, a new challenge will be the rehabilitation of post-Covid-19 patients. It would be useful to integrate as soon as possible rehabilitation protocols on patients in intensive care and immediately afterwards in the wards until the complete recovery of the patient, healing not only from the virus but until the resolution of respiratory problems, establishing protocols in long-term management and not only related to the acute event but also and especially after discharge from the hospital. Only in this way will we limit the damage of this pandemic and, above all, limit the public expenditure of states already deeply affected by the economic crisis for this pandemic.

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