

## **Covid-19 ARDS: a Multidisciplinary Challenge**

Dear Colleagues,

Within a few months, we have witnessed a profound revolution in medical knowledge as medicine has been enriched with a new chapter. The scientific world has focused its attention on the phenomenon and to date, at the end of September 2020, a PubMed search with the word 'COVID-19' results in approximately 60,000 publications.

The most important clinical and pathological element of this disease is pneumonia. It can result in acute respiratory distress syndrome (ARDS) characterized by hypoxemic respiratory failure of different degrees with bilateral lung infiltrates. The pathogenic mechanism that produces the COVID-induced ARDS (CARDS) is particularly complex. It involves a direct viral attack on pulmonary and endothelium cells combined with immune-mediated inflammation. The so-called 'cytokine storm' is expressed as a high release of proinflammatory cytokines such as interleukin-6 (IL-6), tumor necrosis factor  $\alpha$  (TNF- $\alpha$ ), IL-1 $\beta$ , IL-8, and IL-12 as well as interferon-gamma inducible protein (IP10), macrophage inflammatory protein 1A (MIP1A), and monocyte chemo attractant protein 1 (MCP1). This excessive immune reaction in the host can produce extensive tissue damage with dysfunctional coagulation.

Treatment of CARDS represents a clinical challenge. Although the non-invasive ventilation can improve oxygenation, limiting the work of the respiratory muscles and preventing the onset of the patient self-inflicted lung injury, CARDS management often requires tracheal intubation and invasive mechanical ventilation.

In this context of the pandemic, therapeutic implications concern various professional fields, including but not limited to intensivists, pulmonologists, infectious diseases specialists. Again, fascinating is the diagnostic aspect of the CARDS in terms of imaging, pathology, and laboratory medicine. Yet, translational and clinical research must necessarily act as a driving force for identifying new therapeutic strategies.

On these premises, the Special Issue can be expected to be of interest to a variety of medical subdisciplines. Also, virologists, and biologists, may be interested in submitting their research. The psychological aspects related to the isolation of patients is a further area of interest of the Special Issue. Similarly, as an important question concerns the impact of the disease on organ function in survivors, not only respiratory but also cardiovascular, renal, neurological functions and pain, we are strongly interested in studies focused on the sequelae of the disease.

In the present Special Issue, we aim to collect a number of important manuscripts for both helping readers to get an up-to-date on the topic and for stimulating further research. Thus, we invite original research articles and state-of-the-art reviews focused on current knowledge and future perspectives on CARDS. In particular, we are interested in preclinical and clinical research on the pathophysiology of CARDS as well as, clinical research on diagnosis, and therapy. Summary data expressed as narrative reviews, and evidence-based medicine analysis are welcome. Interesting and innovative case reports and case series are welcome too. Finally, recognized experts on the subject are invited to propose editorials or perspective articles.

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