

Editorial

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SARS-CoV-2 is here to stay: do not lower our guard

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The recent coronavirus disease 2019 (COVID-19) pandemic, caused by the severe acute respiratory syndrome coronavirus 2019 (SARS-CoV-2), has led to an unprecedented global health crisis that is still having profound impact on societies, economies and healthcare systems worldwide. Although SARS-CoV-2 is no longer the destructive pathogen it was at the beginning of the pandemic, the infection has now reached endemic proportions and continues to harm the most vulnerable segments of the population (i.e. elderly, immunocompromised individuals, patients with multiple comorbidities). Thus, irrespective of recent claims, the pandemic is not completely over, and we will need to find a “new normal” to live with this coronavirus by limiting the immediate impact of an acute infection on human health and the consequences that long-COVID (also known as “post-COVID” syndrome) may cause on the medium/long-term on health and fitness [1, 2]. It is precisely for this reason that the journal is still publishing some contributions on COVID-19, and will predictably continue to do so for the foreseeable future. Some of these articles are comprised in this issue of the journal.

The first of these contributions, published by Lane et al. [3], describes a high-throughput peptide immunoaffinity liquid chromatography-mass spectrometry (SISCAPA-LC-MS) assay using polyclonal capture antibodies to detect and measure the nucleoprotein (N) of SARS-CoV-2 in human saliva. In the author’s hands, the method exhibited acceptable specificity (i.e. 89.8 %), counterbalanced by a considerably poor sensitivity (i.e. 37.7 %), making its diagnostic performance even lower than that of some high-throughput SARS-CoV-2 antigen immunoassays currently available on the market [4].

In the second article, published by Ge et al. [5], a different approach for SARS-CoV-2 detection is presented,

based on assessment of subgenomic RNA (sgRNA). The major advantage of this assay over standard molecular biology techniques that measure viral RNA is that sgRNA is only produced during virus replication and can hence be used as a valuable surrogate for individual infectivity. Therefore, notwithstanding the large heterogeneity of detection techniques, current evidence suggests that sgRNA could be used as a marker of viral replication, allowing the identification of individuals that are still spreading viable viruses, along with establishment of more appropriate treatments and/or isolation strategies.

The following article by Schoenmakers et al. [6] examined the clinical significance of measuring a simple score called CoLab, based on age and ten laboratory tests (i.e., erythrocytes, leukocytes, eosinophilic granulocytes, basophilic granulocytes, bilirubin, lactate dehydrogenase, alkaline phosphatase, gamma-glutamyltransferase, albumin and c-reactive protein) in patients with severe forms of COVID-19 who had to be admitted to the intensive care unit (ICU). The authors found a significant association between the CoLab score and viral load on admission and, more importantly, patient de-isolation could be predicted by CoLab, as a change in its score was significantly associated with gradual reduction in viral load. Since high viral load is a significant predictor of illness severity and unfavorable outcome in COVID-19 patients, the CoLab score could therefore be considered as a potential tool for prognostication and clinical management of patients with severe COVID-19 disease.

In line with the previous article, Mink et al. [7] conducted a systematic literature review to decipher the potential prognostic value of anti-SARS-CoV-2 antibodies. The result of the literature search is remarkable, in that the authors included 33 studies with over 30 million individuals in their analysis. Overall, a highly significant association was found between anti-SARS-CoV-2 antibodies and lower risk of SARS-CoV-2 infection and better outcomes (including mortality). It was concluded that measurement of anti-SARS-CoV-2 antibodies may be a useful tool for timely identification of patients at higher risk of infection and/or clinical deterioration who may require booster vaccination or more aggressive therapeutic treatment.

The search for reliable predictors of unfavorable clinical course of COVID-19 disease continues with the article published by Krčmová and colleagues [8]. In brief, the authors

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collected urine and blood for one week from 108 patients hospitalized with COVID-19 (55 vaccinated; 51 %), and used LC-MS/MS assays to measure neopterin, kynurenine, tryptophan, fat-soluble vitamins, and biomarkers of DNA damage. Overall, neopterin, kynurenine and the kynurenine/tryptophan ratio were found to decrease significantly between 4 and 7 days after hospitalization, but their concentration remained elevated in patients with unfavorable clinical course or post-COVID syndrome. In addition, significantly decreased levels of vitamins A, E and D were found in patients with poor prognosis.

The long-COVID (or post-COVID syndrome) presented in the previous article is further analyzed by Fernández-de-Las-Peñas et al. [9], who performed a systematic literature search to determine whether prolonged SARS-CoV-2 persistence could be a significant predictor of this condition. The electronic search in MEDLINE, CINAHL, PubMed, EMBASE, Web of Science and medRxiv/bioRxiv allowed to identify 6 studies with 678 COVID-19 survivors. The persistence of SARS-CoV-2 RNA in patients with post-COVID symptoms ranged between 15 and 59 % within two months of recovery from an acute infection, but was also detected in a number of patients without post-COVID symptoms. Although the persistence of replicating SARS-CoV-2 can hence be seen as a potential factor in the pathogenesis of long-COVID, the association with post-COVID symptoms remains controversial.

The last article published in this issue is by Cernera et al. [10], and investigates the role of a broad spectrum of laboratory biomarkers in patients with thymic epithelial tumors (i.e. a known condition that can predispose to development of autoimmune and hypimmune disorders), who may be at higher risk of developing COVID-19 complications. Overall, the study included 44 patients with thymic epithelial tumors and 30 healthy controls. An increase in some biochemical markers of inflammation and endothelial injury was noted after COVID-19 vaccination, which occurred early after the first vaccine dose in the control group, while it did not occur until after the second vaccine dose in patients with thymic epithelial tumors. All these changes disappeared 3 months after vaccination and did not recur even after administration of an additional booster vaccine dose. It can therefore be concluded that COVID-19 vaccination can be considered safe in patients with thymic epithelial tumors.

In the continuously evolving landscape of the ongoing COVID-19 pandemic, predicting its future is more difficult than ever, as it requires a complicated balance between scientific analysis, public health interventions and societal

adaptation. As we move through different phases of vaccination, new virus variants and changing public attitudes, the trajectory of the pandemic will continue to be influenced by a variety of factors. In this unpredictable scenario, scientific research, which relies heavily on laboratory data, will continue to be critical for a number of reasons such as filling knowledge gaps, monitoring and surveilling the intricate interaction between SARS-CoV-2 and its human host in the short and long term, and – last but not least – preparing for future pandemics [11].

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