The COVID-19 challenge. What have we learned?

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Since COVID-19 (the disease caused by SARS-CoV-2) broke out in December of 2019 in China and became a pandemic in March of 2020, health care systems of every country have had the challenge of dealing with the disease. Specific conditions in Latin-American countries, such as previous shortcomings in the health care system, financial problems, the complexity in the geography and infrastructure of the region, and the emergence of new variants (gamma and lambda), hindered the fight against the pandemic.

Data collected and studies performed during the pandemic were important to investigate the performance of health care systems, evaluating their strengths and limitations.

Ranzani et al.[1] analyzed a large cohort of COVID-19-related hospitalized patients during the first months of the pandemic in Brazil and found that mortality was high and that the differences among regions were notable. The overall in-hospital mortality was 38%, whereas mortality in the ICU was 59%. Although mortality rates were comparable with those in other countries, younger patients were included in this cohort.

Data from other countries are available. In Mexico, the mortality rate reported in August of 2020 in patients receiving invasive mechanical ventilation was extremely high (73.7%).[2] Nevertheless, other reports coming from Latin-American countries showed mortality rates comparable with those from high-income countries. Reyes et al.[3] observed in an international cohort including patients from eight Latin-American countries an in-hospital mortality rate of 35%.

Many countries had to open new beds with access to ventilators in high-dependency care units or increase the number of beds in the ICU. Controversies about increased mortality have been observed in these units or during periods of high demands,[4,5] highlighting the importance of qualified personnel and appropriate resources.

In this issue of the *Jornal Brasileiro de Pneumologia*, Ramos et al.[6] reported data obtained from three ICUs in São Paulo, Brazil, during the first pandemic wave. Of the 645 patients included, about 10% acquired the disease in the hospital. Approximately 55% required invasive mechanical ventilation, 35% needed renal replacement therapy, and 52.2% received vasopressor therapy. The in-hospital mortality was high, reaching 42.4%, mainly in those patients who required organ support. Unlike other cohorts, septic shock and multiple organ dysfunction were the most common causes of death.[6]

Interestingly, the presence of complications, including liver failure, arrhythmias, hand/foot ischemia, hemorrhage, and health care-associated infections, were independently related to lower survival rates. Health care-associated infections have been reported to be high in COVID-19 patients, as well as the mortality associated with these infections.[7,8] It is not well known why the occurrence of secondary infections increased; however, immune tolerance in critically ill/septic patients, the use of corticosteroids, and the overwhelmed health care system during the pandemic could be related. According to the study,[6] only 46.8% of the patients received corticosteroids. Early in the pandemic, in March of 2020, an observational study showed that methylprednisolone was associated with lower mortality[9] in patients with ARDS; however, corticosteroids were not recommended because of concerns raised by the experience with other viral diseases, such as influenza or Middle East respiratory syndrome. Quickly, several studies evaluated the efficacy/effectiveness of corticosteroids in patients with COVID-19, the study designated RECOVERY[10] being the first to be published and showed a reduced risk of death only in those patients who required supplementary oxygen. Corticosteroids are cheap and widely available, even though they are not exempt from risk. Corticosteroids have been associated with an increased risk of secondary infections, mainly hospital-acquired pneumonia.[11] More studies are warranted to clarify which phenotypes could benefit from the use of corticosteroids and which ones should avoid the use of these medications because the risks would exceed the benefits. However, several drugs were prescribed in the early phase of the pandemic without a piece of clear evidence showing benefits. Data were extrapolated from in vitro studies or from the experience gathered with the first SARS. Ramos et al.[6] reported that more than 40% of the patients were exposed to drugs with low levels of evidence (or even none) that supported their use. Moreover, oseltamivir, an antiviral recommended for influenza, was associated with an increased risk of death in this population.

In summary, the COVID-19 pandemic has provided several lessons. First, infectious diseases are a constant threat, and governments should invest in research to be prepared to fight them. Second, although the health care system has shown the capacity to increase the number of beds for critically ill patients, the lack of availability of trained personnel to give support to severely/critically ill patients is an unresolved problem. Third, the prescription of off-label drugs might have increased the risk of harm

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without a clear benefit, and therefore physicians should act following recommendations based on evidence. Fourth, COVID-19 survivors can experience severe pulmonary sequelae and other morbidities. Finally, we have to highlight the quick response of the research community to the pandemic, based on basic, observational, and interventional collaborative studies. Appling new technologies and knowledge allowed the development of new vaccines in a short time, changing the course of the pandemic.

It is unclear whether the COVID-19 pandemic is about to end; however, we must continue learning from these experiences, aiming to improve our clinical practice and be ready for future epidemics.

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CONFLICT OF INTEREST

None declared.

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