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# Could Preventing Thromboembolism be a New Hope for COVID-19 Patients?

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**ABSTRACT**

Several researches have been conducted in order to study treatment effects for COVID-19. Nevertheless, some of the current treatments have not been effective or recommended for severe cases. In this perspective article, we briefly discuss the latest developments in the COVID-19 management.

**Keywords:** COVID-19, SARS-CoV-2, severe acute respiratory syndrome coronavirus 2, pandemics, anticoagulants

## INTRODUCTION

In December 2019, an outbreak of pneumonia due to a novel coronavirus, namely severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus causing coronavirus disease 2019 (COVID-19); occurred in Wuhan, Hubei province, China. This virus has since spread to many other countries resulting in a pandemic (1-3).

The main symptoms of COVID-19 are similar to other viral upper respiratory illnesses, and include fever, cough, myalgia or fatigue, expectoration, and dyspnea. In addition, a small number of patients can have headache or dizziness, diarrhea, nausea, and vomiting (4), while older patients with comorbidities are more likely to have respiratory failure due to severe alveolar damage. The disease can also show in severe cases a rapid progression to organ dysfunction, with complications, such as shock, acute respiratory distress syndrome, acute cardiac injury, acute kidney injury, disseminated intravascular coagulation, and even death (5).

At present, there are almost 3 million confirmed cases of the disease and about 200,000 deaths worldwide (**Figure 1**) (6), which has been a major problem for health institutions and authorities (7), as well as to educational, economic and political sectors (8). Although several researches have been conducted in order to study treatment effects for COVID-19 and consequently reduce the mortality rate of the patients, some of the current treatments have not been effective (9) or recommended for severe cases (10). Here, we briefly discuss the latest developments in the COVID-19 management.

## COVID-19 AND THROMBOEMBOLISM

A few days ago, surprisingly, a study demonstrated that SARS-CoV-2 may predispose patients to thrombotic disease, both in the venous and arterial circulations (11). More specifically, this would be due to excessive inflammation, platelet activation, endothelial dysfunction, and stasis related to the infection (12), which can result in severe hypercoagulability and predispose to thrombosis (11). In the current scenario, concomitant venous thromboembolism has been found in many of these patients, especially in severe and critical ill COVID-19 cases. This complication, moreover, has been related to deaths (13).

With that in mind, it is hoped that the use of anticoagulants should be useful in the treatment of severe COVID-19 cases (14,15). However, it should be taken into account that many patients receiving antithrombotic therapy for thrombotic disease can have COVID-19; thus, some aspects, such as choice, dosing, and laboratory monitoring of this therapy may be important in this context (12).

Despite this, the management of COVID-19 patients with use of anticoagulants will not be an easy task due to the complexity between antithrombotic therapy and coagulation disorders (13). Furthermore, this should be even more difficult in countries with a dengue endemic, such as Brazil, where people infected by dengue virus may have contraindication to this therapy or predisposition to serious complications resulting from self-medication with anticoagulants (16).

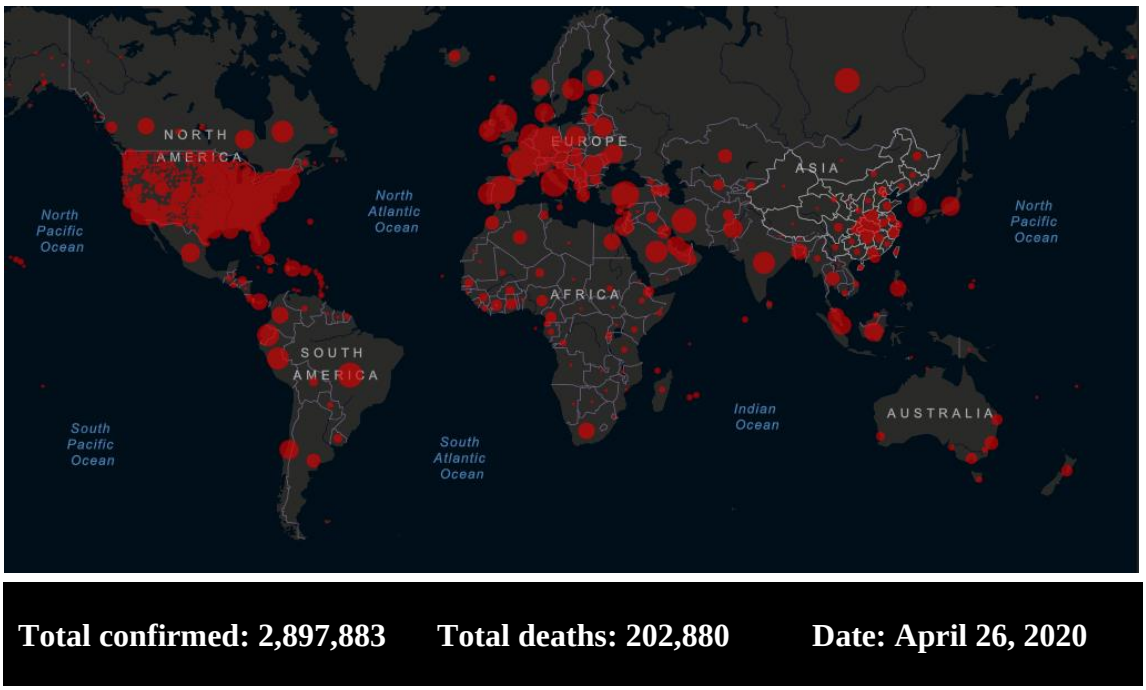


**Figure 1.** Mapping of cumulative confirmed cases of COVID-19
Source: Adapted from Johns Hopkins Coronavirus Resource Center (6)

## DISCUSSION ON THE IMPORTANCE OF PHYSIOTHERAPY

In addition to medical management, current evidences about thromboembolism prevention programs report preventive benefits related to physiotherapy (17,18). A recent and authoritative paper recommends that physiotherapists should also be actively involved in the management of COVID-19 patients (19). Indeed, early rehabilitation, consisting of range of motion exercises and passive movements may be indicated to prevent immobilization sequelae (19-21). Hence, we suggest researchers to consider investigating in depth the role of physiotherapists for COVID-19 patients, from the first phases of the disease, in order to maintain or improve their joint mobility as well as muscle function. Undoubtedly, our call to action should be intended as a proposal (in line with previous researches), which has to go hand in hand with 1) medical recommendations and 2) appropriate equipment.

## FINAL CONSIDERATION

Despite recent advances for the COVID-19 treatment, it is recommended that people comply with social and physical distancing measures, as well as other public health and social measures, given that prevention is the best way both to end this pandemic and to prevent possible collapses of health care systems. In this sense, affected countries should focus their efforts to balance the possible benefits and negative consequences of each intervention. Moreover, it is essential the implementation of strategies to encourage actions, including community engagement, gain trust, and limit social or economic harm (22).

Finally, we believe that an effective COVID-19 vaccine will should be a key tool in achieving a drastic decrease in the circulation of the virus, since it is not known whether there will be continued seasonal circulation of SARS-CoV-2 in some region of the world. Thus, until the situation returns to normal, it is necessary that everyone must be cautious and adhere to all guidelines issued by local, regional or national public health authorities. Good luck to all!

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