



## CARTAS AL EDITOR

### Can COVID-19 pandemic influence frozen shoulder outcomes?



### ¿Puede influir la pandemia de covid-19 en los resultados del hombro congelado?

Dear Editor:

Coronavirus disease 2019 (COVID-19) outbreak is likely a result of a zoonotic transmission firstly occurred in China in December 2019.<sup>1</sup> Specifically, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is capable of human-to-human transmission, which allowed a rapid spread worldwide.<sup>1</sup> COVID-19 can result in acute interstitial pneumonia, myocarditis, leucopenia with lymphopenia as well as thrombocytopenia, similarly observed in rheumatic diseases.<sup>2</sup> Moreover, rheumatic manifestations such as arthralgias and arthritis may be prevalent in about a seventh of individuals.<sup>2</sup> Most likely, this could be advocated to an uncontrolled release of inflammatory cytokines such as interleukin IL-1 $\beta$ , IL-6 as well as monocyte chemoattractant protein 1, associated with increased serum ferritin levels and decreased natural killer cell function. The whole process may result in cytokine storm syndromes.<sup>2</sup>

Concerning orthopedic pathologies, frozen shoulder shows a multifactorial pathogenesis, also reconducted to immunological, biomechanical, endocrine as well as inflammatory disbalance, leading to a chronic inflammation and subsequent fibrosis.<sup>3</sup> As a matter of fact, it has been demonstrated a certain association with immunological diseases, such as diabetes<sup>3</sup> and thyroiditis.<sup>4</sup> Moreover, it has been shown that frozen shoulder development can likely be influenced by depression state or anxiety.<sup>5</sup>

Given these considerations, it seems reasonable to speculate that COVID-19 infection could likely exacerbate the abovementioned condition, which likely show similar immunologic mechanism. For that reason, the authors suggest a possible increase in frozen shoulder diagnosis among patients with individual predispositions, in high COVID-19 prevalence areas.

The main reasons we propose are:

- Patients living in lock-down areas with a pre-existent shoulder tendinopathy did not undergo an appropriate physical therapy, leading to a painful rigidity of the shoulder
- Depression and/or anxiety due to COVID-19 pandemic as well as uncertainty of the future<sup>6</sup>

- Extrapulmonary manifestations of COVID-19, particularly due to immunologic mechanisms can likely contribute to frozen shoulder development in patients with individual predisposition

Considering our hypothesis, our aim is to arouse the interest of orthopedic clinicians to pay attention to this clinical condition, especially in the most involved areas. Moreover, this would be a starting point for further research, aiming a better understanding of COVID-19 influence in orthopedic clinical practice.

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