



# COVID-19 reinfection in a Bolivian patient. Report of the first possible case

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## Dear Editor

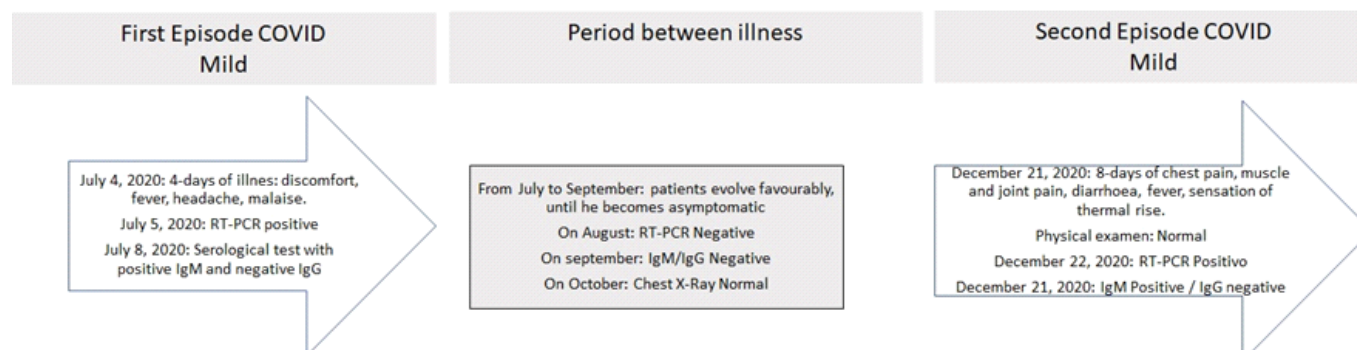
COVID-19 infection is the most crucial emerging disease of the 21st century. Since it began as an outbreak in a province of

China until it spreads to almost all the countries of the world are still many aspects of the disease that remain poorly understood(1). The reinfection of patients who have suffered the disease increased as soon as the magnitude of the disease was known, both due to the history of infections from other coronaviruses and the dynamics of the disease(2), however, to date there are very few confirmed cases of this situation, despite the large number of affected patients worldwide. This report is the description of a possible case of reinfection, the first described in Bolivia.

A 47-year-old man, active Physiotherapist health personnel, from La Paz, (3 680 meters above sea level), with no history of comorbidities. The course of illness is in figure 1.

There was no need for a new chest x-ray or chest scan due to the absence of respiratory symptoms or shortness of breath or decreased oxygen saturation. No alterations in his hemogram was showed, Lactate dehydrogenase: 534 and respiratory alkalosis in the analysis of arterial gases. Intradomiciliary management with azithromycin, C and B vitamin and ivermectin for five days were indicated plus ibuprofen and acetaminophen conditional on fever or general malaise. Seven days later, the patient was evaluated through a video consultation where he is stable with adequate saturation and with symptoms in resolution. The patient at the time of presentation of this case is 90% recovered.

Reinfection of COVID-19 is a very controversial topic at present, due to the little evidence of reported cases, as well as the lack of more extensive studies, so there is not enough evidence of the reinfection mechanism or the outcome(3). The pathogenic mechanism that can fundamentally explain both infection and reinfection is that cellular transport pathways are used through exosomal vesicles for viral reproduction and dissemination. These are typical double-membrane vesicles derived from the endoplasmic system that contains the newly synthesized viral genome and will be responsible for both viral



**Figure 1**

Timeline of probable reinfection

persistence and the immune evasion mechanism due to the lack of receptor recognition patterns. Something remarkable is that the great diversity of these double-membrane vesicles may explain why some reinfected patients will present positive RT-PCR while being asymptomatic, and others will present symptoms(4).

Our clinical case constitutes the first report of probable infection in the city of La Paz in Bolivia. The symptom-free period associated with the new positive test of the RT-PCR after the symptom-free period together with the demonstration of an RT-PCR test and the results of the positive IgM serological tests indicate that we are facing a case of reinfection by SARS-CoV-2 and a new Covid-19 episode(3). Both episodes have been of mild severity without pulmonary involvement. We must consider that for cities that are at altitude levels above sea level where the low partial pressure of oxygen modifies the "normal" saturation of the area, we still do not have a clear definition of a severe Covid-19 disease or critical(5). Whether the blood type of patient B Rh-factor positive could play a role in reinfection is something that we still cannot know with current knowledge about the disease(6).

Recognizing the possibility of reinfection in COVID-19 is essential for vaccination studies against the disease. There is currently a critical race to achieve a vaccine that gains immunity, so knowing what situations cause a lasting immunity not to occur is necessary(7).

The main limitation of this case lies in the lack of genetic sequencing of both samples, and consequently, lack of phylogenetic analyses. However, because they are not available in our region and the lack of storage of the samples, it has not been possible to send them to other laboratories(7). Reinfection represents a new clinical and epidemiological challenge in COVID-19. Our patient's report is a further contribution to the evidence that reinfection is not just a theory, but that as the disease continues, new cases appear. The description of the first cases of reinfection will be useful for future investigations in which this situation can be widely exposed with clinical, epidemiological, and genomic studies. Also considering that, so far, in the country, we are going through a situation in which only health promotion and prevention actions are implemented, such as hand washing, use of masks and social distancing. Expanding knowledge

about reinfection would help the population maintain control measures, and thus reduce the proportion of the population reinfected, as well as the possibility of presenting complications of the disease in its second episode.

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