



## Is cystic fibrosis a risk factor for COVID-19 infection or related complications?

Rodrigo A Athanazio<sup>1</sup> 

Since the beginning of the COVID-19 pandemic, pulmonologists all around the world have had to deal with several new challenges and uncertainties. As if the need to understand a new disease and how to manage it was not enough, another major challenge was to assess the impact of COVID-19 on people with respiratory diseases. Rapidly, the presence of respiratory comorbidities has emerged as an independent risk factor for complications related to SARS-CoV-2 infection.<sup>(1)</sup> However, has every patient with a chronic respiratory disease been at an increased risk of infection and unfavorable evolution related to the new coronavirus?

The cystic fibrosis (CF) community raised great concern about the impact of COVID-19 in CF patients since other viral infections had already been associated to worse outcomes and a considerable number of CF patients have impaired lung function.<sup>(2)</sup> With the social distancing measures suggested to control the pandemic, most CF patients adopted strict preventive measures that included the use of masks and lockdown. These measures, highly recommended and beneficial for patients, made it difficult to assess the real impact of SARS-CoV-2 infection on CF population.

In this issue of the *Jornal Brasileiro de Pneumologia*, Camargo et al.<sup>(3)</sup> described clinical characteristics and outcomes of incident cases of COVID-19 in unvaccinated adult CF individuals during the first year of pandemic. The cumulative incidence rate in the CF cohort was similar to that observed for the general population when adjusted for age. Also, severity of disease seemed not to be negatively influenced by the presence of CF. Almost the entire sample recovered completely from the infection, with few patients needing hospitalization, and only one death occurred in a patient with advanced lung disease ( $FEV_1 < 30\%$  of the predicted value).

The first large description involving 181 CF patients diagnosed with COVID-19 described similar findings.<sup>(4)</sup> In that study, infection with SARS-CoV-2 exhibited a similar spectrum of outcomes to that seen in the general population. A more severe clinical course was associated with older age, CF-related diabetes, and poorer lung function in the year prior to infection, as well as in cases of organ transplant recipients.<sup>(4)</sup> Camargo et al.<sup>(3)</sup> highlighted the absence of transplanted or immunosuppressed patients, which may have reduced the possibility of unfavorable events related to SARS-CoV-2 infection. A more recent and larger publication with 1,452 cases of CF patients infected with SARS-CoV-2 confirmed

that most CF patients have mild symptoms and good recovery after the infection.<sup>(5)</sup> However, comorbidities such as CF-related diabetes, impaired lung function, and immunosuppression once again have proven to be risk factors for severe complications.<sup>(5)</sup> Several reports and case series have confirmed the association of lung transplantation in patients with CF and severe forms of COVID-19.<sup>(6-8)</sup> These data reinforce that transplant-related immunosuppression would be a contributing factor to a greater risk of complications than CF itself. However, we are far from assuming that there are no COVID-19-related risks for CF patients. It is important to be aware of the constant and rapid changes related to the pandemic. The initiation of vaccination undoubtedly reduced the number of complications and severity of conditions associated with SARS-CoV-2 infection. Nevertheless, the emergence of new variants requires constant monitoring of potential new complications.<sup>(9)</sup>

Even experiencing a harrowing scenario such as the COVID-19 pandemic, it is necessary to seek for positive learnings during the process. The need for social distancing has allowed the development of numerous tools and strategies for the follow-up of patients with CF by using telemedicine and telemonitoring.<sup>(10)</sup> In addition, greater adherence to treatment, use of masks, and social distancing were associated with a significant reduction in the number of exacerbations.<sup>(11)</sup> These learnings must be incorporated into the new scenario of CF management in order to maintain better quality of life as well as preservation of lung function.

The COVID-19 pandemic is far from over. New variants have triggered new waves of infection across the world. Despite the positive results presented by most of the CF population infected with SARS-CoV2 so far, we must maintain preventive care and implement the acquired lessons. It is important to emphasize the relevance of vaccination, adherence to treatment, and use of masks, especially in hospital environments. The use of masks, in addition to protecting against viral infections, is an important measure to avoid cross-contamination by bacteria in the airways of these individuals. CF patients appear not to be at an increased risk of infection or developing complications related to COVID-19 when compared with the general population. However, this does not mean that there are no risks. As the pandemic evolves, new discoveries are emerging, as are new challenges. Given this, we must remember an important motto: "prevention is always the best medicine."

1. Divisão de Pneumologia, Instituto do Coração, Hospital das Clínicas, Faculdade de Medicina, Universidade de São Paulo, São Paulo (SP) Brasil.

## REFERENCES

1. Berlin DA, Gulick RM, Martinez FJ. Severe Covid-19. *N Engl J Med*. 2020;383(25):2451-2460. <https://doi.org/10.1056/NEJMcp2009575>
2. Wat D, Doull I. Respiratory virus infections in cystic fibrosis. *Paediatr Respir Rev*. 2003;4(3):172-177. [https://doi.org/10.1016/S1526-0542\(03\)00059-9](https://doi.org/10.1016/S1526-0542(03)00059-9)
3. Camargo CC, Jacobsen LB, Wilsmann J, Silveira MN, Rossi EP, Oliveira CT, et al. Clinical characteristics and outcomes of incident cases of COVID-19 in unvaccinated adult cystic fibrosis patients in southern Brazil: a prospective cohort study conducted during the first year of the COVID-19 pandemic. *J Bras Pneumol*. 2022;48(6):e20220265. <https://doi.org/10.36416/1806-3756/e20220265>
4. McClenaghan E, Cosgriff R, Brownlee K, Ahern S, Burgel PR, Byrnes CA, et al. The global impact of SARS-CoV-2 in 181 people with cystic fibrosis. *J Cyst Fibros*. 2020;19(6):868-871. <https://doi.org/10.1016/j.jcf.2020.10.003>
5. Carr SB, McClenaghan E, Elbert A, Faro A, Cosgriff R, Abdrakhmanov O, et al. Factors associated with clinical progression to severe COVID-19 in people with cystic fibrosis: A global observational study. *J Cyst Fibros*. 2022;21(4):e221-e231. <https://doi.org/10.2139/ssrn.3990936>
6. Myers CN, Scott JH, Criner GJ, Cordova FC, Mamary AJ, Marchetti N, et al. COVID-19 in lung transplant recipients. *Transpl Infect Dis*. 2020;22(6):e13364. <https://doi.org/10.1111/tid.13364>
7. Messika J, Eloy P, Roux A, Hirschi S, Nieves A, Le Pavec J, et al. COVID-19 in Lung Transplant Recipients. *Transplantation*. 2021;105(1):177-186. <https://doi.org/10.1097/TP.0000000000003508>
8. Athanazio RA, Costa AN, Carraro RM, Gonzalez D, Rached SZ, Samano MN, et al. Early COVID-19 infection after lung transplantation in a patient with cystic fibrosis. *Clinics (Sao Paulo)*. 2020;75:e2274. <https://doi.org/10.6061/clinics/2020/e2274>
9. Hadj Hassine I. Covid-19 vaccines and variants of concern: A review. *Rev Med Virol*. 2022;32(4):e2313. <https://doi.org/10.1002/rmv.2313>
10. Rad EJ, Mirza AA, Chhatwani L, Purington N, Mohabir PK. Cystic fibrosis telemedicine in the era of COVID-19. *JAMIA Open*. 2022;5(1):ooac005. <https://doi.org/10.1093/jamiaopen/ooac005>
11. Patel S, Thompson MD, Slaven JE, Sanders DB, Ren CL, Patel S, Thompson MD, Slaven JE, Sanders DB, Ren CL. Reduction of pulmonary exacerbations in young children with cystic fibrosis during the COVID-19 pandemic. *Pediatr Pulmonol*. 2021;56(5):1271-1273. <https://doi.org/10.1002/ppul.25250>