

Mycobacterial infection after COVID-19 pneumonia

Infección por micobacterias tras neumonía por COVID-19

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Abstract

A 69-year-old man with a history of hypertrophic cardiomyopathy and major depressive disorder was admitted to the Emergency Department with fever, weakness, and shortness of breath. He was diagnosed with acute respiratory distress syndrome due to COVID-19 and received oxygen and steroids during a one-month hospital stay. After discharge, he continued steroids and home oxygen therapy for nearly two years. CT scans revealed bronchiectasis and ground glass opacities related to COVID-19. He developed pulmonary nodules and *M. intracellulare* infection, which were treated with rifampicin, ethambutol, and azithromycin. After six months of treatment, the patient showed clinical and radiological improvement.

Keywords: COVID19. NTM. Bronchiectasis. Steroids. Immunosuppression. Pulmonary nodules.

Resumen

Un hombre de 69 años con antecedentes de miocardiopatía hipertrófica y trastorno depresivo mayor acudió a urgencias por fiebre, debilidad y dificultad respiratoria. Se le diagnosticó síndrome de distrés respiratorio agudo debido a COVID-19 y fue ingresado en planta de neumología, donde recibió oxígeno y esteroides durante 1 mes. Después del alta continuó con esteroides y oxigenoterapia domiciliaria durante casi 2 años. Las tomografías objetivaron bronquiectasias y opacidades en vidrio deslustrado relacionadas con la COVID-19. Desarrolló nódulos pulmonares e infección por *Mycobacterium intracellulare*, siendo tratado con rifampicina, etambutol y azitromicina. Después de 6 meses de tratamiento, el paciente mostró mejoría clínica y radiológica.

Palabras clave: COVID-19. MNT. Bronquiectasias. Esteroides. Inmunosupresión. Nódulos pulmonares.

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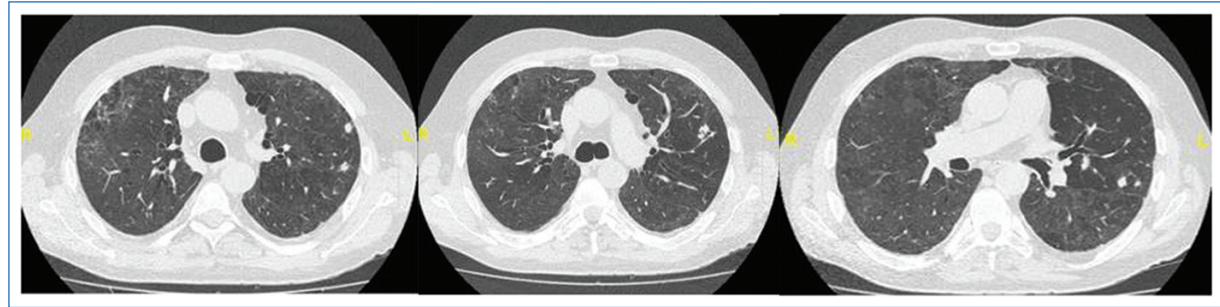


Figure 1. Pulmonary nodules in CT scan.

Introduction

A 69-year-old man, ex-smoker with a history of hypertrophic cardiomyopathy and major depressive disorder was admitted to the Emergency Department with 7-day fever, general weakness, and shortness of breath. He was diagnosed with acute respiratory distress syndrome due to COVID-19 and admitted to the Pneumology Department, where he required high FiO₂ throughout the one-month admission, along with steroids.

After being discharged, the patient continued steroids and home oxygen therapy for almost two years. A CT scan during the admission revealed diffuse bronchiectasis and multiple ground glass opacities due to COVID-19.

After being discharged, the patient reported weight loss, asthenia, and anorexia, and a high-resolution CT scan showed that the ground glass opacities had cleared but the bronchiectasis persisted, with multiple pulmonary nodules appearing after a year of steroid therapy. (Figure 1).

A *M. intracellulare* was isolated in a bronchoalveolar lavage from a bronchoscopy, and he began treatment with Rifampicin, Ethambutol, and Azithromycin three times a week with good tolerance except for some tiredness on the days he took the drugs. After six months of treatment, the patient showed clinical recovery and radiological improvement of the nodules in a control CT scan.

Clinical management of infections by non-tuberculous mycobacteria (NTM) has become one of the main questions in respiratory medicine nowadays. In this family we include all mycobacteria that is not *M. tuberculosis* or *M. leprae*. They are classified in two groups according to their growth rate: slow (> 7 days) as MAC and rapid (< 7 days) such as *M. abscessus*¹.

Clinical manifestations depend on the species of mycobacteria as well as the patients' comorbidities (low body weight, COPD, immunosuppression, bronchiectasis being the ones with the highest relative risk). In these last years, both bronchiectasis and NTM have seen their prevalence quite increased².

In our patient's case, he was treated with high dose steroids for a long time resulting in an immunosuppressed state as well as the structural damage resulting from the post COVID bronchiectasis³.

NTM infection diagnosis must be done from a multidisciplinary approach: clinical, radiologic and microbiologic. According to the ATS/IDSA statement, certain criteria must be met: both pulmonary or systemic symptoms and nodular or cavitary opacities with bronchiectasis on a chest scan are required. Moreover, we need: a positive culture from at least two separate sputum samples; or a positive culture from at least one bronchial lavage or wash; or a lung biopsy with mycobacterial histologic features and a positive culture for NTM or either a positive sputum or bronchial washing cultures⁴.

The significance of positive sputum cultures must be adapted for each patient as these isolations can be produced by environmental contamination. Once NTM infection has been diagnosed, initiation of treatment is suggested and it should be susceptibility-based as long as possible. More specifically, when treating MAC, a three-drug combination regimen should be administered, consisting of macrolides with rifampicin and ethambutol⁵.

The main goal will always be the symptomatic recovery, followed by culture negativization as well as radiological improvement.

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Conflicts of interest

None declared.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that no patient data appear in this article.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Use of artificial intelligence for generating text. The authors declare that they have not used any type of generative artificial intelligence for the writing of

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