Open Respiratory Archives 6 (2024) 100361

Sociedad Española de Neumología y Cirugía Torácica SEPAR

Open Respiratory Archives

www.elsevier.es/ora

Scientific letter

Treatment-Refractory *Mycobacterium avium* Complex Pulmonary Disease: A Case Report

Enfermedad pulmonar por Mycobacterium avium complex *refractaria al tratamiento convencional: A propósito de un caso clínico*

Dear Editor,

We present the case of a 51-year-old woman, non-smoker, with no significant past medical history. She attended the emergency department with cough and hemoptoic expectoration, exertional dyspnea, asthenia and a right-sided pleuritic chest pain of 2 months of evolution. Physical examination and laboratory tests were normal. Chest radiography (Fig. 1A) showed parenchymal involvement in the middle lobe and images that suggested bronchiectasis. Computed tomography showed a volume loss with bilateral bronchiectasis in the middle lobe and lingula with a tree-in-bud pattern (Fig. 1B).

Bronchoaspirate and bronchoalveolar washing were obtained and *Mycobacterium avium* subspecies *avium* was isolated. No resistance mutations to aminoglycosides or macrolides were detected. Treatment was started with azithromycin 500 mg 3 times a week, rifampicin 600 mg 3 times a week and ethambutol 1600 mg 3 times a week, with good compliance. Although there was partial clinical–radiological improvement, 12 months after treatment, follow-up cultures remained positive. The case was discussed with an expert in the field, who proposed the following treatment instead: azithromycin 500 mg/day, moxifloxacin 400 mg/day, clofazimine 100 mg/day, linezolid 600 mg/day and nebulized amikacin 500 mg/12 h.

After 3 months under the new treatment, she showed a clinical improvement. Mycobacterial cultures remained negative for 12 months after the first negative culture. The patient did not experience any relevant side effects during the treatment. Fig. 1C shows radiological improvement at the end of the treatment. Due to the good evolution, antimicrobial therapy was discontinued and the patient was deemed cured.

M. avium complex (MAC) is the most frequent cause of respiratory infection by nontuberculous mycobacteria (NTM), the three predominant species being *M. avium, Mycobacterium intracellulare* and *Mycobacterium chimaera*.[1] NTM disease remains a pathology that is hard to diagnose, whose treatment depends on several factors, such as the species of the infecting microorganism and the clinical–radiological form of presentation. Conventional treatment is based on a three-drug regimen: a macrolide in combination with ethambutol and rifampicin.

MAC *in vitro* susceptibility to macrolides such as clarithromycin and azithromycin can predict *in vivo* response and, therefore, the success of treatment with the conventional regimen,[2] although the cure rate of this regimen, according to several meta-analyses, is only 60–69%.[3] In our case, as it was a nodular-bronchiectatic form, and in accordance with the current clinical guidelines,[2] we started an oral regimen 3 times per week, but the patient maintained

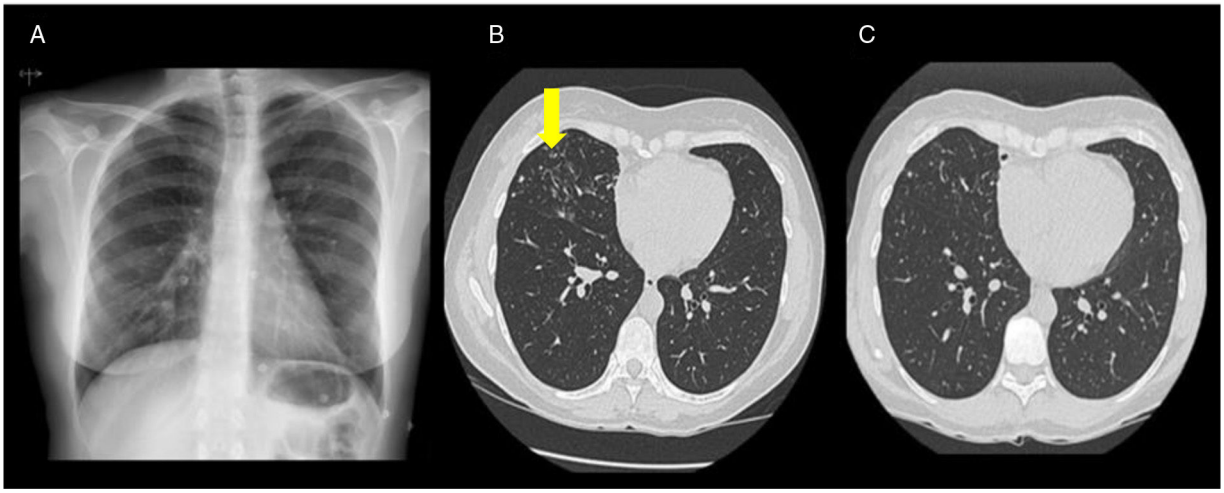

Fig. 1. (A) Chest X-ray: parenchymal involvement in the middle lobe, with images that suggested a bronchiectasis. (B) Chest CT (before treatment): Volume loss with bilateral bronchiectasis and bronchiolectasis in the middle lobe and the lingula, several of them occupied with peribronchial thickening and tree-in-bud pattern. Small centrilobular nodules were detected, as well as some patchy areas. (C) Chest CT (after treatment): bronchiectasis and bronchiolectasis in the medial segment of the middle lobe. Improvement of the distal bronchiolar involvement in the pulmonary lobes previously described, in connection with a favorable evolution of the underlying infectious process.

https://doi.org/10.1016/j.opresp.2024.100361

hemoptoic sputum and positive cultures beyond the 12 months of treatment, so it was necessary to modify the therapeutic regimen to include clofazimine and inhaled amikacin. This regimen can provide favorable results in some patients, achieving both a microbiological cure and a clinical one, as in our case, and without notable adverse effects.[4] In addition, the therapeutic scheme can be reinforced with linezolid and moxifloxacin to achieve a greater eradication success.[5]

In conclusion, our case reflects an example of refractory disease due to MAC with the need of an unusual therapeutic scheme, not contemplated in usual clinical guidelines, which confers great interest to the management of these complex cases of NTM.

Informed consent

We have the patient's informed consent to publish her case.

Funding

The authors declare that they have not received any financial support for the preparation of this article.

Authors' contributions

All authors have contributed to the preparation, review and writing of the article.

Conflicts of interest

The authors declare that they have no conflict of interest in relation to the subject matter.

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