

Images in Infectious Diseases

Methotrexate-Induced Pneumonitis in a Patient with Chronic Chikungunya Arthritis

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Methotrexate (MTX) is a cornerstone in the treatment of inflammatory arthritis owing to its immunomodulatory effects. Its use has expanded to the management of post-viral inflammatory conditions, including chronic arthritis caused by Chikungunya virus (CHIKV) infection, which may mimic rheumatoid arthritis (RA)¹. Although effective, MTX poses a risk of adverse effects, including rare but potentially life-threatening complications such as pneumonitis^{2,3}.

We present the case of a 50-year-old Brazilian woman who developed MTX-induced pneumonitis during treatment for post-CHIKV arthritis. Initial presentation included acute-onset fever, rash, and polyarthritis. Serological testing confirmed a recent CHIKV infection (IgM-positive), while investigations for other causes of inflammatory arthritis, including RA and systemic lupus erythematosus, were negative. Symptoms improved with corticosteroids, and MTX (15 mg/week) was initiated as a steroid-sparing agent.

Three weeks later, the patient developed progressive dyspnea, dry cough, and intermittent fever. Infectious etiologies, such as SARS-CoV-2 and HIV, were excluded, and high-resolution computed tomography (CT) revealed diffuse bilateral ground-glass opacities and interlobular septal thickening. These findings were predominantly observed in the upper lobes and peribronchovascular regions, consistent with hypersensitivity pneumonitis (**Figure 1**). MTX was discontinued. Methylprednisolone pulses was applied, resulting in rapid clinical improvement without symptom recurrence, thus supporting the diagnosis of MTX-induced pneumonitis.

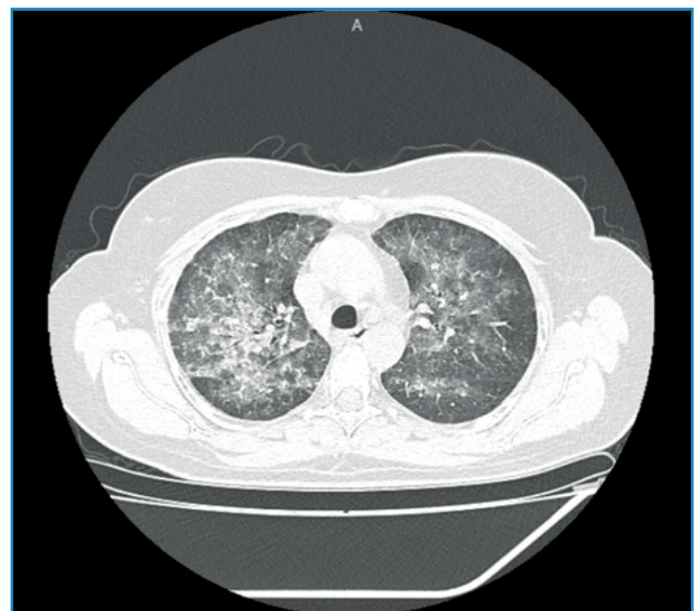


FIGURE 1: High-resolution computed tomography scan of the chest showing diffuse bilateral ground-glass opacities with interlobular septal thickening that predominantly affected the upper lobes and peribronchovascular regions. These radiological features are characteristic but not pathognomonic of MTX-induced pneumonitis.

MTX-induced pneumonitis typically manifests as an acute or subacute hypersensitivity reaction, which often occurs within the first year of therapy³. Radiological findings may resemble those of nonspecific interstitial pneumonia, with histopathology revealing lymphocytic infiltrates and non-caseating granulomas.

Given the efficacy of MTX in treating post-CHIKV arthritis, clinicians should be vigilant of pulmonary toxicity, particularly during the early stages of treatment. Risk factors include old age, pre-existing lung disease, diabetes mellitus, and hypoalbuminemia^{2,3}. Early recognition and prompt withdrawal

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of MTX are crucial for recovery and the prevention of disease progression.

AUTHORS' CONTRIBUTION

JLO: Conception and design of the study, Acquisition of data, Analysis and interpretation of data, Drafting the article, Final approval of the version to be submitted; IAN: Analysis and interpretation of data, Drafting the article; Final approval of the version to be submitted; ARE: Analysis and interpretation of data, Drafting the article; Final approval of the version to be submitted; LABGF: Analysis and interpretation of data, Drafting the article, Final approval of the version to be submitted.

REFERENCES

1. Amaral JK, Sutaria R, Schoen RT. Treatment of Chronic Chikungunya Arthritis With Methotrexate: A Systematic Review. *Arthritis Care Res (Hoboken)*. 2018;70(10):1501–8. Available from: <https://doi.org/10.1002/acr.23519>
2. Cottin V, Bendstrup E, Bonniaud P, Nasser M, Spagnolo P, Valenzuela C, et al. The case of methotrexate and the lung: Dr Jekyll and Mr Hyde. *Eur Respir J*. 2021;57(2):2100079. Available from: <https://doi.org/10.1183/13993003.00079-2021>
3. Fragoulis GE, Nikiphorou E, Larsen J, Korsten P, Conway R. Methotrexate-Associated Pneumonitis and Rheumatoid Arthritis-Interstitial Lung Disease: Current Concepts for the Diagnosis and Treatment. *Front Med (Lausanne)*. 2019;6:238. Available from: <https://doi.org/10.3389/fmed.2019.00238>