10.5005/jp-journals-10057-0015

CASE REPORT

Methotrexate-induced Pulmonary Toxicity Bronchiolitis Obliterans Organizing Pneumonia: A Rare Entity

[1]Mahesh Mishra, [2]Vikram Kumar Jain, [3]Anubhav Sharma, [4]Gaurav Bhardwaj, [5]Lokesh Maan

ABSTRACT

Methotrexate is one of the most widely used broad-spectrum immunomodulator. It can be used as a primary option or as in combination of drugs in various immunological conditions. Generally, it is safe when use in lower dosages. However, a clinician has to be alert regarding some of its less common but toxic side-effects. Here, we discuss a rare case who developed methotrexate-induced pulmonary toxicity.

Keywords: Bronchiolitis obliterans organizing pneumonia, Methotrexate, Pulmonary toxicity.

How to cite this article: Mishra M, Jain VK, Sharma A, Bhardwaj G, Maan L. Methotrexate-induced Pulmonary Toxicity Bronchiolitis Obliterans Organizing Pneumonia: A Rare Entity. J Mahatma Gandhi Univ Med Sci Tech 2016;1(2):64-65.

Source of support: Nil

Conflict of interest: None

INTRODUCTION

"Bronchiolitis obliterans organizing pneumonia" (BOOP) term initially dominated the North American literature and was included in the seminal paper by Katzenstein and Myers in 1998.[1] Bronchiolitis obliterans organizing pneumonia an inflammatory lung disease involving the distal bronchioles, respiratory bronchioles, alveolar ducts and alveoli, generally idiopathic but may associated with systemic diseases.[2]

CASE REPORT

A 42-year-old female, with known case of rheumatoid arthritis on methotrexate (7.5 mg) weekly since 6 months, presented with gradually progressive exertional breathlessness and dry cough of 15 days duration. She was nonsmoker and belongs to an urban area using liquefied petroleum gas for cooking. On general physical examination, patient was afebrile tachypnoeic with a respiratory rate of 28/min, pulse 96/min, blood pressure 110/70 mm Hg, and SpO_2 92% on room air, no pallor, clubbing, cyanosis, adenopathy, and edema. Chest auscultation revealed fine inspiratory creptations bilateral all over the chest. Rest of systemic examination was normal. On laboratory evaluation, patient's routine hematology was normal, rheumatoid factor was positive, spirometry was suggestive of restrictive pattern, skiagram chest shows bilateral lower zone homogeneous opacities (Fig. 1) and high resolution computed tomography (HRCT) was suggestive of peribronchovascular consolidation with interlobar septal thickening and ground glass haziness (Fig. 2).

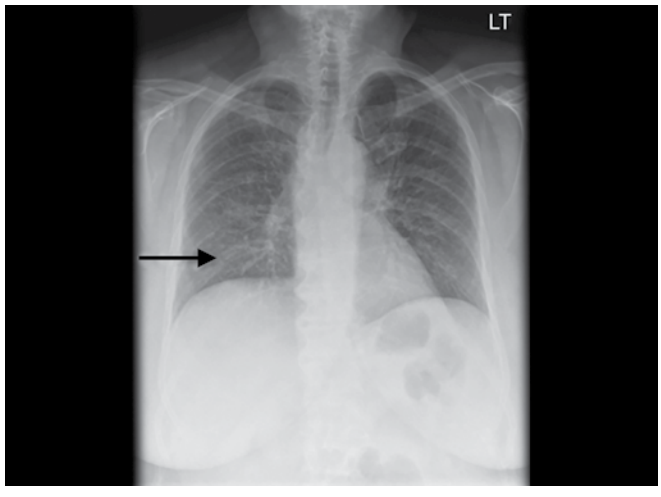

Fig. 1: Chest skiagram shows basal haziness

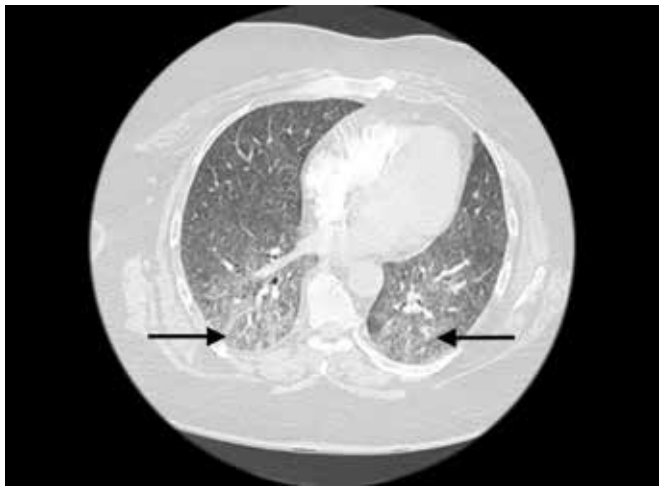

Fig. 2: Axial computed tomography image through the line showing diffuse, bilateral ground glass opacities

[1]Associate Professor, [2]Professor and Head, [3-4]Postgraduate student, [5]Assistant Professor

[1-5]Department of Respiratory Medicine, Mahatma Gandhi Medical College and Hospital, Jaipur, Rajasthan, India

Corresponding Author: Mahesh Mishra, A 217 B Jai Nagar Murlipura, Jaipur, Rajasthan, India, Phone: +91-9414460198 e-mail: maheshmishradr@gmail.com

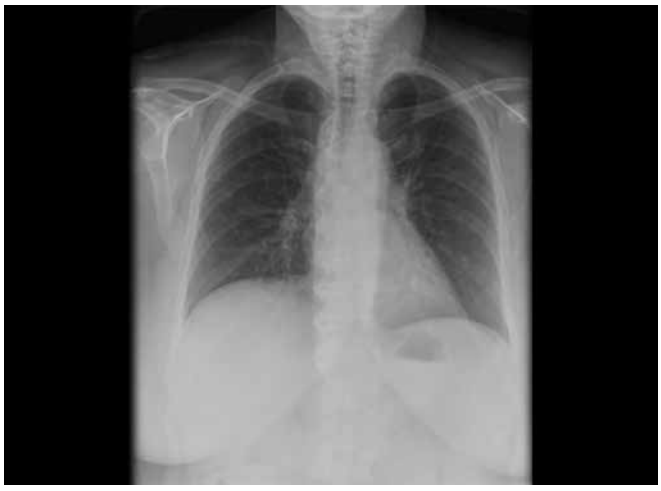

Fig. 3: Two weeks posttreatment skiagram chest shows improvement with increasing lung aeration

Looking at casual temporal association possibility of methotrexate-induced diffuse parenchymal lung disease (DPLD) was considered. The drug was discontinued and patient was administered with prednisolone with a dose of 1 mg/kg body weight and on follow-up after 4 weeks of steroid therapy, patient showed significant clinico-radiological improvement (Fig. 3).

DISCUSSION

Bronchiolitis obliterans organizing pneumonia is a form of DPLD. Approximately, 1 to 7% of patients who received methotrexate drug have BOOP.[3,4] Patients characteristically present with history of progressive respiratory complaints usually within one year of initiating methotrexate therapy.[5] The symptoms are progressive dry or productive cough and dyspnea, with or without fever[1,4] our patient presented with these symptoms.

Radiological features, CT scan and high-resolution CT (HRCT) scan findings include the following: Patchy ground-glass opacities in a subpleural and/or peribronchovascular distribution (80%), bilateral basal airspace consolidation (71%), bronchial wall thickening and cylindrical bronchial dilatation in areas of air bronchogram (71%), centrilobular nodules 3 to 5 mm in diameter (50%), mediastinal lymphadenopathy (27%), small, nodular opacities measuring from 1 to 10 mm in diameter, typically ill defined (50%), cavitating lung mass (rare) and pleural effusions (33%).[6]

Histologically, BOOP shows organized polypoid granulation inflammatory tissue in the distal bronchiole airways, respiratory bronchioles, alveolar ducts, and alveoli. There is no disruption of the lung architecture and there is no traction bronchiectasis and no histological honeycombing.[2]

Cessation of methotrexate itself sufficient for symptom resolution and condition reversal.[2] Corticosteroid treatment shown to be effective in symptom improvement.[3] Outcomes for patients with methotrexate toxicity usually good, with low rate of progression to pulmonary fibrosis. However, a literature review involving 123 patients with suspected methotrexate lung toxicity reported a mortality rate of 13%.[7]

CONCLUSION

Methotrexate is one of the most widely used broad-spectrum immunomodulator. It can be used as a primary option or as a combination of drugs in various immunological conditions. Generally, it is safe in dosage used. However, a clinician has to be alert regarding some of its less common side-effects too.

REFERENCES

1. Fishmans pulmonary diseases and disorders, 2 Volume Set, 5th edi.863.
2. Epler G. Bronchiolitis obliterans organizing pneumonia (BOOP), 25 years: a variety of causes, but what are the treatment options? Expert Rev Respir Med 2011 Jun;5(3):353-361.
3. Kremer JM, Alarcon GS, Weinblatt ME, et al. Clinical, laboratory, radiographic, and histopathologic features of methotrexate-associated lung injury in patients with rheumatoid arthritis: a multicenter study with literature review. Arthritis Rheum 1997 Oct;40(10):1829-1837.
4. Saravanan V, Kelly CA. Reducing the risk of methotrexate pneumonitis in rheumatoid arthritis. Rheumatology. 2004;43(2):143-147.
5. Lateef O, Shakoor N, Balk RA. Methotrexate pulmonary toxicity. Expert Opin Drug Saf 2005 Jul;4(4):723-730.
6. Khan AN. Imaging in bronchiolitis obliterans organizing pneumonia: emedicine.medscape.com/article354-305.
7. Imokawa S, Colby TV, Leslie KO, Helmers RA. Methotrexate pneumonitis: review of the literature and histopathological findings in nine patients. Eur Respir J 2000 Feb;15(2):373-381.