Check for updates

OPEN ACCESS

DOI: 10.46903/gjms/20.02.1123

CASE REPORT

METHOTREXATE TOXICITY AS MYELOSUPPRESSION IN 66-YEAR-OLD FEMALE WITH RHEUMATOID ARTHRITIS IN CHENNAI, TAMIL NADU, INDIA

Manimekalai Periyasamy, Arvindh Manohar

Department of General Medicine, Sree Balaji Medical College and Hospital, Chennai, Tamil Nadu, India

ABSTRACT

Methotrexate can cause a range of toxicities. It is usually not life threatening in low dose even when taken for long term. Life threatening complications are usually seen in high dose methotrexate therapy which could even lead to malignancies. Life threatening complications and adverse effects can be seen at any dose except for nephrotoxicity which is most commonly seen in high dose methotrexate treatment. This case report deals with a case of rheumatoid arthritis on long term methotrexate therapy, who unknowingly took excessive dosage of methotrexate leading to myelosuppression. Patient was treated with folinic acid (leucovorin) rescue, G-CSF and a prolonged isolation following which patient improved.

KEY WORDS: Methotrexate; Leucovorin; Folinic Acid; G-CSF.

Cite as: Periyasamy M, Manohar A. Methotrexate toxicity as myelosuppression in 66-year-old female with rheumatoid arthritis in Chennai, Tamil Nadu, India [case report]. Gomal J Med Sci 2022 Jan-Mar; 20(1):110-11. https://doi.org/1046903/gjms/20.01.1123

INTRODUCTION

Methotrexate has been used for a broad range of conditions like rheumatoid arthritis, SLE, psoriasis etc. for its antiproliferative activity, anti-inflammatory and immunomodulating properties. If not monitored regularly, it may lead to complications due to its toxicity and here we present a case of methotrexate toxicity.[1,2]

CASE PRESENTATION

A 66-year-old female presented with history of difficulty in moving the upper and lower limbs, associated with restriction of movements and pain for four days. History of low grade fever and history of giddiness was also present. She was known hypertensive, type 2 diabetic, with seropositive rheumatoid arthritis and was on regular treatment. She had bilateral total knee replacement 14 years ago. On examination, patient had glossitis, angular cheilitis, swan neck deformity of the fingers and chronic ulcer changes in both feet. On local examination tenderness was present in the left wrist joint and both ankle joints with range of movements restricted in both shoulder joints with power 4/5. Triceps showed bilateral brisk reflexes. There was glossitis and angular cheilitis.

Corresponding Author:

Arvindh Manohar
Resident
Department of General Medicine,
Sree Balaji Medical College and Hospital,
Chennai, Tamil Nadu, India
E-mail: arvindhm.dr@gmail.com

Date Submitted: 16-01-2022
Date Revised: 27-03-2022
Date Accepted: 19-04-2022

CLINICAL COURSE

Investigations showed bone marrow suppression,[3] as pancytopenia with total count 330, platelet 18000, Hb 6.4, PCV 20% with creatinine 1.4 mg/dL and fatty liver on ultrasound abdomen. She had history of increased dose of methotrexate in the past two months. Hence a diagnosis of acute methotrexate toxicity was made. Methotrexate was immediately stopped. She was started on prednisolone 10 mg OD, injection G-CSF 300 mcg OD, injection folinic acid,[1,2] and etoricoxib, with empirical antibiotics and was shifted to isolation ward in view of leucopenia. Patient's blood and urine for culture, quantitative buffy coat (QBC) test for malaria and dengue serology were all negative. Patient was given folinic acid mouth wash for the mucositis. (Figure 1; a and b)

Patient stopped deteriorating but didn't show any improvement in the blood counts. We gradually increased[5] the dose of folinic acid from 20 mg qid to 150 mg qid over a period of 10 days and then patients blood counts started to show improvement gradually. Patient was clinically stable throughout the course of the treatment and her arthritis symptoms subsided within first two days of starting steroids treatment. Patient was regularly followed up and her total counts were in the normal range. Patient was followed up for four months and showed remarkable recovery and did not show any symptoms with steroids.

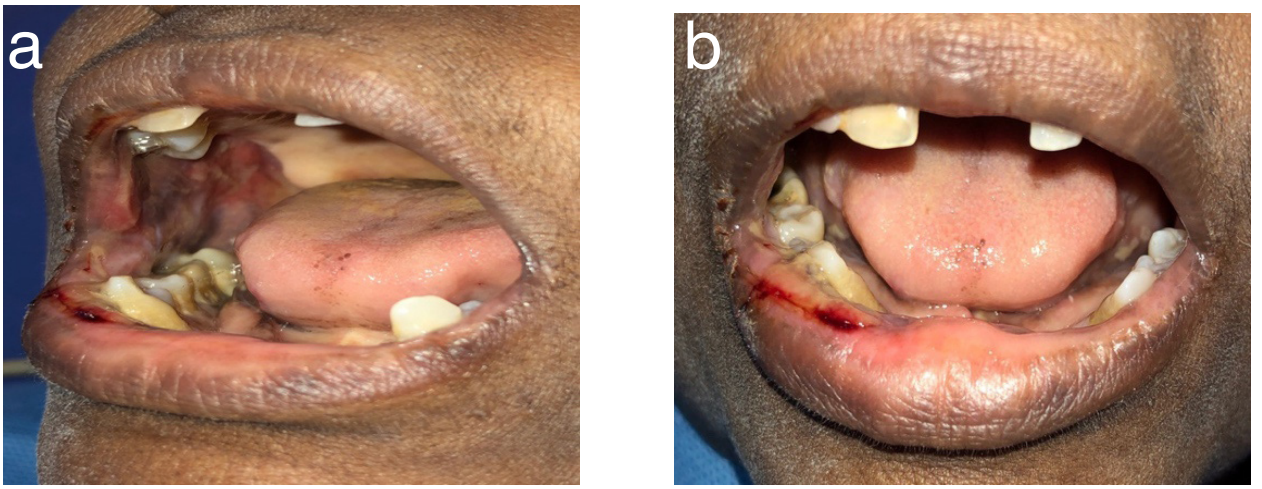

Figure 1: a-stomatitis and b –mucositis in 66-year-old female with rheumatoid arthritis on methotrexate in Chennai, Tamil Nadu, India

DISCUSSION

Methotrexate is a lifesaving drug and is used in number of conditions like rheumatoid arthritis, psoriasis, autoimmune disorders, malignancy etc., but it can also lead to a number of adverse effects ranging from common toxicities, like nausea, diarrhoea, stomatitis, cutaneous eruptions, headache, alopecia, fever etc. to potential severe adverse effects, like hepatotoxicity, pulmonary toxicity, risk of infection, myelosuppression, risk of lymphoproliferative disorders,[4] nephrotoxicity and pregnancy risk. To avoid these adverse effects, folic acid supplementation is given and in severe toxicity leucovorin (folinic acid) is used. Patients on methotrexate should be followed up regularly in order to avoid any complications.

REFERENCE

1. Van Ede A, Laan R, Rood M, Huizinga T, Van De Laar M, Denderen C, et al. Effect of folic or folinic acid supplementation on the toxicity and efficacy of methotrexate in rheumatoid arthritis: A forty-eight-week, multicenter, randomized, double-blind, placebo-controlled study. Arthritis Rheum 2001;44(7):1515-24. https://doi.org/10.1002/1529-0131(200107)44:7<1515::AID-ART273>3.0.CO;2-7
2. Morgan S, Baggott J, Vaughn W, Young P, Austin J, Krumdieck C, et al. The effect of folic acid supplementation on the toxicity of low-dose methotrexate in patients with rheumatoid arthritis. Arthritis Rheum 1990;33(1):9-18. https://doi.org/10.1002/art.1780330102
3. Gutierrez-Ureña S, Molina J, García C, Cuéllar M, Espinoza L. Pancytopenia secondary to methotrexate therapy in rheumatoid arthritis. Arthritis Rheum 1996;39(2):272-6. https://doi.org/10.1002/art.1780390214
4. Krathen M, Gottlieb A, Mease P. Pharmacologic immunomodulation and cutaneous malignancy in rheumatoid arthritis, psoriasis, and psoriatic arthritis. J Rheumatol 2010 Nov;37(11):2205-15. https://doi.org/10.3899/jrheum.100041
5. Cerminara Z, Duffy A, Nishioka J, Trovato J, Gilmore S. A single center retrospective analysis of a protocol for high-dose methotrexate and leucovorin rescue administration. J Oncol Pharm Pract 2019 Jan;25(1):76-84. https://doi.org/10.1177/1078155217729744

CONFLICT OF INTEREST
Authors declare no conflict of interest.
GRANT SUPPORT AND FINANCIAL DISCLOSURE
None declared.

AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	MP, AM
Acquisition, Analysis or Interpretation of Data:	MP, AM
Manuscript Writing & Approval:	MP, AM

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.