

From Relief to Risk: Methotrexate Overdose and Toxicity in Rheumatoid Arthritis

¹Dr Sanjana J P, Junior Resident, Sree Balaji Medical College and Hospital, Chennai, Tamilnadu.

²Dr Anuradha, Professor, Sree Balaji Medical College And Hospital, Chennai, Tamilnadu.

Corresponding Author: Dr Sanjana J P, Junior Resident, Sree Balaji Medical College and Hospital, Chennai, Tamilnadu

Citation this Article: Dr Sanjana J P, Dr Anuradha, “Sweating the Side Effects: SSRI-Induced Hyperhidrosis Unveiled”, IJMSIR - July - 2024, Vol – 9, Issue - 4, P. No. 01 – 02.

Type of Publication: Case Report

Conflicts of Interest: Nil

Introduction

Methotrexate (MTX) is a cornerstone in the management of rheumatoid arthritis (RA) due to its anti-inflammatory and immunosuppressive properties. However, its narrow therapeutic index necessitates careful monitoring to prevent toxicity. This case report presents a 53-year-old female with RA who developed severe methotrexate toxicity due to an overdose, highlighting the importance of meticulous medication management and inter professional communication.

Case Report

Patient Presentation

A 53-year-old female with a known history of rheumatoid arthritis presented to the emergency room with complaints of recurrent vomiting and shortness of breath for 3-4 days and painful oral ulcers for 2 days. Her medical history revealed she was on methotrexate 15 mg weekly.

On examination, she was conscious, alert, and oriented. Her vital signs were: BP 110/70 mmHg, pulse rate 100 bpm, and temperature 100.8°F. She exhibited pallor but no icterus, clubbing, cyanosis, lymphadenopathy, or edema. Significant findings included pronounced oral ulcers and a maculopapular rash over her neck and arms.

Patient is a known case of RA, CAD with S/P PTCA to RCA. Given her presentation - initial treatment included dual antiplatelets, statins, and proton pump inhibitors.

Initial investigations revealed:

- CBC: Hemoglobin 11.5 g/dL, TLC $7.57 \times 10^9/L$, Platelets $307 \times 10^9/L$
- Cardiac biomarkers: CPK MB 58 IU/L, Troponin T 0.208 ng/mL
- RFT: Normal, Albumin 3.26 g/dL

Clinical Course and Further Workup

Despite initial management, the patient's condition deteriorated, with a declining TLC and persistent fever, indicating febrile neutropenia. She was started on intravenous meropenem. Further workup included:

- Malaria parasite by card test: Negative
- Dengue serology: IgM positive, IgG and NS1 antigen negative
- Typhidot: Negative
- Peripheral smear: Marked leukopenia and normocytic normochromic anemia

Diagnosis and Treatment

A rheumatology consultation raised suspicion of methotrexate toxicity. Detailed history from attendants revealed an overdose due to incorrect labeling on her medication strip, leading to a twice-daily intake of

methotrexate. Confirmatory diagnosis was made, and treatment with intravenous folinic acid 15 mg every 6 hours and subcutaneous filgrastim 300 mcg daily was initiated.

Her condition showed no improvement with persistent low TLC (480 cells/ μ L), necessitating an increase in GCSF to twice daily. Due to the non-availability of granulocyte transfusion initially, buffy coat was administered, followed by two units of granulocytes after leukapheresis, which led to a gradual improvement in her TLC.

Complications and Management

The patient's chest X-ray indicated worsening, raising suspicion of ventilator-associated pneumonia (VAP) or transfusion-related acute lung injury (TRALI) potentially induced by GCSF. She was managed with higher antibiotics and a short course of steroids. Her condition gradually improved, and she was eventually discharged.

Conclusion

Methotrexate can be an effective drug when used appropriately, but given its propensity for drug-drug interactions and adverse effects, the collaborative efforts of the entire interprofessional healthcare team are necessary to bring about optimal therapeutic results. This team includes clinicians, specialists, nursing staff, and pharmacists, each providing input based on their particular discipline to enhance patient benefit while preventing adverse outcomes from using the drug

References

1. Temporary remissions in acute leukemia in children produced by folic acid antagonist, 4-aminopteroyl-glutamic acid. Farber S, Diamond LK, Mercer RD, Sylvester RF, Wolff JA. *N Engl J Med.* 1948;238:787–793.
2. Methotrexate: a perspective of its use in the treatment of rheumatic diseases. Willkens RF, Watson

MA. <http://pubmed.ncbi.nlm.nih.gov/7108346/> *J Lab Clin Med.* 1982; 100:314–321.

3. Efficacy of low-dose methotrexate in rheumatoid arthritis. Weinblatt ME, Coblyn JS, Fox DA, Fraser PA, Holdsworth DE, Glass DN, Trentham DE. *N Engl J Med.* 1985;312:818–822.