



ACCIDENTAL METHOTREXATE OVERDOSE: A CASE REPORT.

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ABSTRACT

Methotrexate (MTX) is widely used in autoimmune and neoplastic disorders due to its anti-inflammatory and anti-metabolic effects. Although generally safe at low doses, errors may cause life-threatening hematologic toxicity, especially in elderly patients. This is most often seen as inadvertent daily rather than weekly ingestion.^{1,3}

KEYWORDS : Methotrexate, accidental overdose, disastrous effects on bone marrow. Pancytopenia; Leucovorin rescue; Medication error.

INTRODUCTION:

Methotrexate (MTX), a folate antagonist, is frequently prescribed at low doses for chronic inflammatory diseases, including rheumatoid arthritis and psoriasis. Although effective and generally well-tolerated at weekly doses, the drug possesses a narrow therapeutic index, and incorrect administration—particularly inadvertent daily intake—can result in profound toxicity. Among its various adverse effects, myelosuppression remains one of the most serious, often manifesting as pancytopenia² and requiring emergent intervention.

Case Presentation:

An elderly female, aged in her mid-sixties, presented with generalized fatigue, weakness, and reduced appetite for three days. She had no prior history of autoimmune disease or methotrexate use. On inquiry, it was revealed that she had mistakenly consumed 10 mg of methotrexate orally once daily for 8 consecutive days. The medication was prescribed for another household member for dermatologic indications, and confusion led to self-administration.

On admission, she was afebrile and hemodynamically stable. Physical examination was unremarkable, with no signs of bleeding or overt infection. Her systemic examination was within normal limits.

Laboratory Investigations

Serial complete blood counts (CBC) showed the following trend:

Day 1: WBC $6.09 \times 10^3/\mu\text{L}$, Hb 10.5 g/dL, Platelets $166 \times 10^3/\mu\text{L}$

Day 2: WBC $4.07 \times 10^3/\mu\text{L}$, Hb 9.9 g/dL, Platelets $132 \times 10^3/\mu\text{L}$

Day 3: WBC $4.10 \times 10^3/\mu\text{L}$, Hb 9.6 g/dL, Platelets $109 \times 10^3/\mu\text{L}$

Day 4: WBC $3.90 \times 10^3/\mu\text{L}$, Hb 9.7 g/dL, Platelets $95 \times 10^3/\mu\text{L}$

Day 7: WBC $3.2 \times 10^3/\mu\text{L}$, Hb 10.6 g/dL, Platelets $60 \times 10^3/\mu\text{L}$

Day 8: WBC $6.14 \times 10^3/\mu\text{L}$, Hb 10.6 g/dL, Platelets $80 \times 10^3/\mu\text{L}$

Renal and liver function tests remained within acceptable limits. Creatinine ranged from 0.67 to 0.85 mg/dL; SGOT and SGPT ranged from 27–32 and 32–42 U/L respectively.

Management:

As per standard protocols, the patient was immediately started on intravenous leucovorin (15 mg every 8 hours), intravenous fluids with sodium bicarbonate for urinary alkalinisation and oral folic acid-5 mgs OD¹. Supportive care included strict haematological monitoring.

Fortunately Blood products transfusion was not needed though we did add Romiplastim as platelets were declining.

Outcome and Follow-up:

The patient remained hemodynamically stable throughout hospitalization. Although pancytopenia persisted at discharge, there was no clinical deterioration. She was discharged with instructions for alternate-day CBC

monitoring and continuation of folic acid.

We report a case of an elderly female who accidentally ingested 10 mg of methotrexate daily for 8 days. She presented with fatigue and anorexia. Laboratory investigations revealed progressive pancytopenia with declining white blood cell and platelet counts. Liver and renal function tests were within normal limits. Methotrexate toxicity was suspected, and the patient was treated with intravenous leucovorin, hydration, urinary alkalinisation, romiplastim and oral folic acid supplementation.

DISCUSSION:

This case highlights the serious hematologic consequences of dosing errors in methotrexate therapy⁵. The absence of renal dysfunction and the rapid onset of pancytopenia emphasized the direct impact of methotrexate on bone marrow. Timely leucovorin rescue and close monitoring prevented further clinical deterioration.

CONCLUSION:

Inadvertent daily ingestion of methotrexate instead of weekly dosing is a common error that can lead to severe pancytopenia. Elderly patients are particularly vulnerable. In this case, preserved renal function suggested that overdose alone triggered toxicity. Prompt leucovorin rescue prevented further deterioration. Proper patient education and system-level checks are essential in preventing such events.

Methotrexate-induced pancytopenia is a potentially fatal complication, often triggered by common dosing errors or accidental ingestion. Manufacturers Clinicians must ensure fool proof packaging/labelling and clinicians should enforce ensure robust education/awareness

Learning Points:

- Methotrexate dosing errors can lead to rapid-onset pancytopenia.
- Elderly patients are especially at risk.
- Leucovorin rescue therapy is essential.
- Clear labelling and education can prevent dosing errors.

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