

# Methotrexate Toxicity - A Case Report

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## ABSTRACT

This case study studies the adverse effect of methotrexate toxicity and the importance of early recognition of the sign and symptoms of methotrexate toxicity. This study involves a 61-year-old male patient who took excessive intake of tablet methotrexate (10mg/day) for 1 week. The patient was diagnosed with known case of Psoriasis, was then seen by his primary care physician and surgeon opinion for hemorrhagic back ulcers. At this time patient was complaining of Hemorrhagic plaque all over the body and oral ulcers, throat pain, painful lesions and a repeat of complete blood picture (CBP), and platelet count demonstrated Thrombocytopenia. The patient was admitted to the hospital for further management or treatment of methotrexate toxicity. MTX which is used for Rheumatoid Arthritis treatment/management, causes thrombocytopenia. Methotrexate is one of the most widely used systematic immunosuppressive agents in dermatology.

**Key words:** Methotrexate, Thrombocytopenia, Hemorrhagic ulcers.

**Key message:** Importance of early diagnosis of methotrexate toxicity.

## INTRODUCTION

Methotrexate (MTX) it is a medication which works by inhibiting dihydrofolate reductase

enzyme.<sup>[1,2]</sup> Methotrexate Toxicity may produce the mucocutaneous ulcers and oral mucositis at low and high doses, mucocutaneous ulcers are a promptly signs of MTX Toxicity and also be a began to imminent systemic toxicity.<sup>[3]</sup> Low dose MTX therapy is generally administered by oral route and is often 7.5mg to 25mg weekly or less than 50mg/m<sup>2</sup>, used for the treatment of Psoriasis, Rheumatoid Arthritis, mixed connective tissue disease, Juvenile Psoriatic arthritis, and inflammatory disease conditions.<sup>[4]</sup> At high doses, it is generally given intravenously, used for treating cancers. After giving a patient high dose of MTX, for a patient usually given a leucovorin rescue to relieve the side effects of high dose MTX. Leucovorin / Folinic acid will reduce the folate, it can "Rescue" the normal cells by providing reduced folate for DNA synthesis and cellular production.<sup>[5,6]</sup>

## CASE REPORT

A 61years old male with no comorbidities presented with chief complaints of hemorrhagic plaque all over the body, oral ulcers, back ulcers pain, painful oral lip lesion. This is a known case of Psoriasis; these symptoms were includes based on excessive intake of tablet methotrexate (10mg/day) for 1 week. On examination the patient's pulse rate was 78beats per mint, bp-150/80mmHg, cvs-s1s2 positive, bilateral air entry -positive. Based on dermatology opinion patient diagnosed with methotrexate toxicity.

**Laboratory findings:**

| Test      | values |
|-----------|--------|
| CBP       |        |
| Hb        | 15.6   |
| WBC       | 4880   |
| Platelets | 62000  |

Impression for platelet - Thrombocytopenia  
 Based on these findings from the complete blood picture they confirmed the patient is having thrombocytopenia. He was treated with medications that were inj. leucovorin 15mg in 100ml NS BD for 2 days used for the treatment of MTX toxicity , Tess mouth/oral paste BD for reducing the mouth ulcer/oral ulcers , Tab. Vitamin-c OD , inj. NaHCO<sub>3</sub> ( sodium bicarbonate)-500mg in 1 pint NS with slow iv infusion, Tab-Azithral 250mg BD, Tab-Dolo BD , Liquid paraffin + T. bact cream for lesions for external use ,Tab-levocet 5mg OD, and also for skin lesion used liquid paraffon + momate-f cream, Zytor gel for oral oral application Tab-Cifran. After 2 days stops the medication inj. Leucovorin and inj. NaHCO<sub>3</sub>. It starts the healing of lesions and ulcers. The oral ulcers and lesion were treated with by using Tess lotion and zytor gel. On discharge the liquid paraffin + momate-f and the lotions or gels are given and he returned to his baseline after 2 weeks of discharge.

**DISCUSSION**

Methotrexate could be dangerous if it administered improperly. The majority of possible adverse effect is considered the severe myelosuppression, which causes the most of the relative to infrequent fatalities caused by methotrexate.<sup>[7]</sup> MTX is used to cure psoriasis and it is an anti-inflammatory medication.<sup>[8]</sup> Methotrexate could also be induced the dermatological toxicity. The dermatological side effects of MTX management or therapy range from minor to severe.<sup>[9]</sup> Methotrexate toxicity may appear as a bone marrow suppression and also gastrointestinal ulcers, other atypical but often identified or observed characteristics involve cutaneous ulceration with in skin lesions in individuals

with primary psoriasis vulgaris.<sup>[10,11]</sup> Leucovorin has been observe the basis for HD-MTX therapy for more than 30 years. Leucovorin is extremely advantageous in preventing myelosuppression, neurotoxic effects, gastric toxicity after HD-MTX therapy. HD-MTX contain a chemotherapy procedure and also involves a guideline for the dose and timings of leucovorin treatment to prevent damage of cells.<sup>[12]</sup> Patient who tolerates from severe forms of psoriasis usually receive treatment with methotrexate administered in low doses. It is a preferred option due to its therapeutics values, known adverse effects profile, and low-priced cost and it is usually recommended as a weekly dose on the other hand, it has the probable to be extremely poisonous and also lethal<sup>[13]</sup>. Despite the fact that patients ingesting high dosages are most likely to involvement in toxicity, every dosing plan has the potential to cause toxicity.<sup>[13]</sup> Over the globe, there have been a numerous recorded deaths linked to the use of methotrexate. Patient have regularly taken MTX on a daily basis preferable once every seven days as a result of errors that were execute by the patient, the clinicians, or the pharmacist. The majority of recent deadly incident in New Zealand were recorded in 2006 and 2012, respectively.<sup>[14]</sup>

**CONCLUSION**

The clinician should be cautioned whenever methotrexate is administered to patient who are allergic to drugs .Despite the fact that methotrexate is productive in treating more disease , such as psoriasis and many more types of malignant tumors , Rheumatoid Arthritis , It misemploy , whether intended or by knowing , especially in the adults/elderly or in children’s , may causes more serious adverse effects , such as nephrotoxicity , hepatotoxicity, pulmonary toxicity , hematological , and an increased risk of infections. Treatment of severe MTX toxicity has main three goals: folinic acid therapy, organ treatment, and clearance of MTX from the blood stream. Leucovorin it is a drug which is extremely advantageous in preventing gastric toxicity, myelosuppression and neurotoxic

effects after HD-MTX therapy. Glucarpidase has been licensed for the management of extreme levels of plasma MTX levels of >1umol/L in patients with negotiate renal function who have delayed methotrexate elimination. Patient must be conscious of when using methotrexate, and physician must give an emphasize to methotrexate while writing prescription to aware patients and must written instructions on prescription regarding its use to keep away from medication misconception develop in methotrexate toxicity.

**Declaration by Authors**

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