

Metronidazole Induced Meningitis: A Case Report

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Abstract: Meningitis is a rare but well-recognized complication of drug therapy. The clinical presentation of drug-induced meningitis (DIAM) is distinct. Symptoms typically include fever, neck stiffness, headache, confusion, nausea and vomiting. The major categories of causative agents are non-steroidal anti-inflammatory drugs, antimicrobials and also intravenous immunoglobulins, monoclonal antibodies and vaccines. These drugs most commonly implicated as causes of meningitis act more likely through an immunological mechanisms. However, the pathogenetic mechanism of DIAM is still unknown. The diagnosis of drug-induced meningitis is difficult and infectious etiologies must be excluded. In some cases the diagnosis has been confirmed by rechallenging the patient with the suspected agent. In this case, informed written consent is necessary and rechallenge must be medically supervised both to document the response and to offer medical care and advice, if required. The outcome of DIAM is generally good, usually without long term sequelae.

Keywords: Antibiotics, anti-inflammatory drugs, meningitis, monoclonal antibodies, intravenous immunoglobulins, vaccines.

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I. Introduction

Metronidazole induces meningitis by two proposed mechanisms. The first mechanism is a direct chemical irritation of the meninges by intrathecal agents. The second, which applies to non intrathecal medications.

A Large variety of drugs are known to cause meningitis among them metronidazole are rarely reported. Here in we report a case of 49 years old male patient with metronidazole induced meningitis.

Meningitis is the inflammation of the meninges, a membrane covering the brain and spinal cord in patients whose cerebral spinal fluid test result in negative with routine bacterial cultures. Meningitis is caused by viruses, mycobacteria, spirochetes, fungi, medications, and cancer malignancies.

II. Case Report

A 49 Years old male patient was admitted to General Medicine Department, Government General Hospital Kurnool with the chief complaints of headache, fever, vomiting, neck stiffness. He has no similar complaints in the past. He had been receiving regular pantoprazole of 40mg from last 7 months. And tab. Metronidazole 400mg to treat diarrhea from last one week. He had been diagnosed as meningitis. He had a history of malaria from past 3 years back, and had no history of recurrent infection with unusual organism. He smoked 3 cigarettes per day and had no clinically significant, family history a part from Gastric Problem to his mother.

Laboratory investigations show that swelling of the meninges layer in the brain and shows that increased lymphocyte count, and they also perform a spinal tap(lumbar puncture) to collect CSF, it shows a low

sugar level along with an increase WBC and increase proteins, and revealed normal renal failure, Liver function test, glucose level, clotting screening and thyroid function.

The patient had been taking Tab. Metronidazole -400mg twice a day from past one week to treat diarrhea.

Based on physical examination and on the relationship between the drug and onset of meningitis a diagnosis of drug induced meningitis was made.

Withdrawal of the culprit drug short term tablet cefotaxime 500mg twice a day, was given led to complete and permanent remission of the disease. Re challenge was done to avoid unnecessary risk to the patient.

Table 1: List of Drugs which are involved in drug Induced Meningitis

S.No	Category	Drugs
1	Antibiotics	Cephalosporin's, Cotrimoxazole, Penicillin's, Amoxicillin, Ciprofloxacin, Metronidazole, Gentamycin, Isoniazid.
2	NSAIDS	Ibuprofen, Sulindac, Naproxen, Diclofenac, Ketoprofenac, Tolmentin, Piroxicam
3	Immuno regulating agents	Intravenous Ig Infliximab, Levamisol.
4	Other Drugs	Sulfasalazine, Carbamazepine, Azathioprine, Indinavir, Valacyclovir, Ranitidine, Famotidine, Methyl prednisolone acetate, Allopurinol, Arabinoside Cytarabine, Radiomarked Albumin

III. Discussion

Meningitis is the inflammation of the meninges, a membrane covering the brain and spinal cord in patients whose cerebral spinal fluid test result in negative with routine bacterial cultures.

The cause for meningitis can be caused either by viruses, bacteria, fungi, parasites, drugs, systemic diseases, and miscellaneous other conditions.

Drugs associated with meningitis are penicillins, amoxicillin, Metronidazole, Cotrimaxazole, Ciprofloxacin, Gentamycin, Isoniazid, Ibuprofen, sulindac, naproxen, diclofenac, tolmentin, ASA, piroxicam, infliximab, levamid, sulfasalazine, carbamazepine, azathioprine, indinavir, valacyclovir, rantidine, famotidine, methyl prednisalone, acetate, allopurinol, arabinoside, cytarabin, radiomarked albumin.

The patients Metronidazole can upgrade vascular cell adhesion molecule-1 expression in vitro in the presence of toxigenic, strains of bacteria.

Which we speculate may be relevant because people with systemic Lupus Erythematosus are more susceptible to drug induced meningitis and have increased levels of soluble adhesion molecules.

IV. Conclusion

- Metronidazole causing meningitis is well established. Eliciting proper history and performing examination can result in correct diagnosis.
- Stopping the offending drug resolves the problem there by can save the patients from symptoms.
- Patients should be informed about the side effects while prescribing this drug, and alternatively cefotaxime was used.
- Physician should discuss about serious adverse drug reactions while prescribing a medication. If he get any adverse drug reaction he will discontinue the drug and consult the physician.

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