Metronidazole Induced Cerebellar Ataxia: A Rare Case Report

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ABSTRACT

Introduction: Metronidazole is an antibiotic and an antiprotozoal drug very commonly used in our day to day practice. It is either used alone or in combination with other drugs to treat Pelvic inflammatory disease, Endocarditis and Bacterial Vaginosis. It is generally well tolerated and common side effects include nausea, vomiting, abdominal cramps, metallic taste.

Case report: We are presenting a rare case of Metronidazole induced cerebellar ataxia in a patient who received the drug for a relatively shorter duration.

Conclusion: The neurological features usually occur when the drug dose exceeds 2g/day for a prolonged period. Peripheral neuropathy, dizziness, encephalopathy, seizures, optic neuropathy can be seen. Cerebellar ataxia is a rare and serious side effect of this drug.

Keywords: Metronidazole, Cerebellum, Ataxia, Dentate Nucleus.

INTRODUCTION

Metronidazole is a 5-nitro imidazole active in vitro against a wide variety of anaerobic protozoal parasite and anaerobic bacteria. It is clinically affective against Trichomoniasis, Amebiasis and Giardiasis. It manifests antibacterial activity against all anaerobic cocci, anaerobic gram-negative bacilli including Bacteroides species; anaerobic spore forming gram positive bacilli such as Clostridium; and microaerophilic bacteria such as Helicobacter and Campylobacter species.[1] Common side effect are headache, nausea, dry mouth, and metallic taste. Vomiting, diarrhoea and abdominal distress are experienced occasionally. Dysuria, cystitis and a sense of pelvic pressure is also reported. Dizziness, vertigo, and very rarely encephalopathy, convulsions, incoordination and ataxia are neurotoxic effects that warrant drug discontinuation.[1]

Neurological features usually manifest when the drug is used in a dose exceeding 2 g/day for prolonged periods.[2] In case of Cerebellar ataxia due to Metronidazole, the dosage usually ranges from 25g to 1080g and therapeutic duration ranging from 5 to 730 days.[3] Here we present an interesting case of cerebellar ataxia with a far lower dose of Metronidazole that is 6 gms.

CASE REPORT

50-year-old male with no prior comorbidities presented with sudden onset speech abnormality and difficulty in walking for 2 days. There was history of diarrhoea and vomiting for 5 days for which he has been taking treatment in the form of Metronidazole 400mg three times a day as per physicians advise.

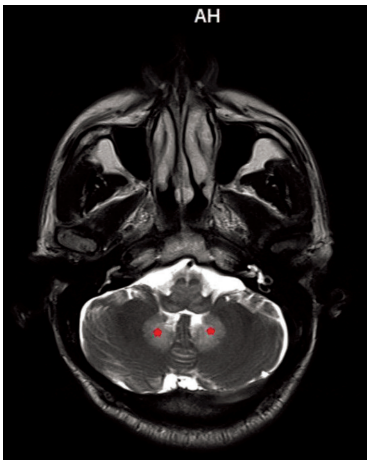

Figure-1: T2 FLAIR hyperintensities in bilateral Dentate nucleus

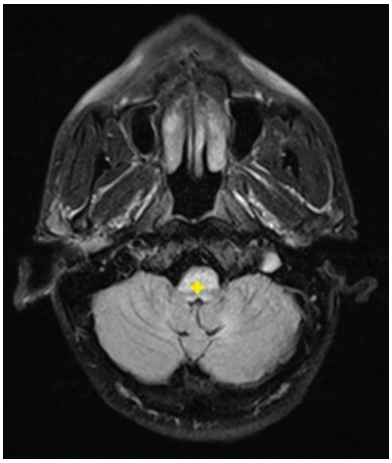

Figure-2: Dorsal Pons and Medull

No history of similar complaints in the past.

No history of drug or alcohol abuse.

On examination patient was conscious well oriented. Speech was scanning in nature. Gait ataxia was present. Deep tendon reflexes were normal.

He developed abnormal finger nose finger test the following day. Extra ocular movements were restricted on all sides. Gaze evoked nystagmus was present both on looking to left and right.

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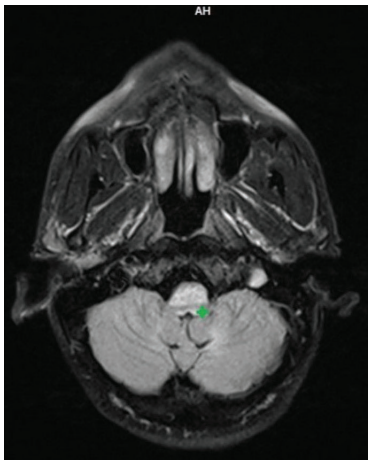

Figure-3: Periaqueductal grey matter

MRI brain showed T2 FLAIR hyperintensities in bilateral Dentate nucleus (fig 1), Dorsal Pons and Medulla (fig 2), Periaqueductal grey matter (fig 3).

In view of characteristic findings in Cerebellum and Brain stem we suspected Metronidazole toxicity and the drug was immediately stopped.

To rule out other aetiologies, lumbar puncture and CSF analysis, vitamin B12 levels were done and were normal. Nerve conduction study was also done and was normal. Patient was managed conservatively, and he improved over the next 7 days. On discharge he only had minimal scanning speech. Patient was followed up after 1 month and all his neurological deficits were found to be reversed.

DISCUSSION

Our Patient had taken around 6g of Metronidazole in total over 5 days and presented with neurotoxic manifestations which included cerebellar ataxia. MRI brain showed characteristic lesions of Metronidazole toxicity. The literature suggests that the dose and duration of Metronidazole to induce neurotoxicity in the previously reported cases were far higher than the present case. Ahmed et al reported a case that developed nausea, vomiting, vertigo, confusion, ataxia and peripheral neuropathy with approximately 35gm of Metronidazole intake. MRI revealed symmetric signal abnormalities in the Cerebellum.[4] Shruthi Chandak et al reported a case of 45 yr. old man who received around 62gm of Metronidazole for 26 days for liver abscess presented with cerebellar signs.[5]

The exact mechanism is not known, but it is said that in susceptible individuals the Metronidazole and its toxic metabolites bind to neuronal RNA and causes reversible axonal swelling.[6] Other theories like interstitial oedema and ischemia and Purkinje cell damage has also been put forward. There are no specific tests for confirmation of Metronidazole toxicity. Diagnosis is made with a positive history of Metronidazole toxicity and ruling out other causes of cerebellar ataxia. MRI brain is the investigation of choice which showed T2 FLAIR hyperintensities in Periaqueductal grey matter, Subtantia Nigra, bilateral Dentate Nucleus, Dorsal Pons and Medulla. Clinical diagnosis, MRI findings and reversibility after stopping the drug confirms diagnosis. Most common mimickers include Demyelinating diseases, infections, Wernicke's encephalopathy. Differentials for T2 hyperintensities in bilateral Dentate nucleus include Methyl Bromide intoxication, Maple syrup urine disease and Enteroviral encephalomyelitis.

CONCLUSION

Any patient on metronidazole presenting with cerebellar ataxia, seizures, altered sensorium, distal pure sensory involvement, neurotoxicity to be considered. In Such patients, the offending drug should be stopped. Complete reversal is usually seen.

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