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Original Research Paper

Radiology

IMAGES IN RADIOLOGY: METRONIDAZOLE INDUCED ENCEPHALOPATHY

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ABSTRACT Metronidazole is a commonly used drug for treating anaerobic infections and inflammatory bowel disease such as crohn`s and ulcerative colitis. When used for longer periods in high doses, metronidazole can cause cerebellar featuring symptoms, seizures and encephalopathy. Neurological features are apparent when the dosage exceeds 2 gm/day for prolonged periods. We present a case report of a young male diagnosed with ameobic liver abscess, treated with high dose of oral metronidazole (2.4gm/ day for one month). He presented with cerebellar symptoms suggestive of metronidazole toxicity. MRI Brain revealed symmetrical hyperintense lesions in the dentate nuclei consistent with metronidazole induced encephalopathy. Metronidazole was stopped and patient subsequently improved and was asymptomatic within a week.

KEYWORDS : Metronidazole toxicity, MRI, Dentate nuclei,

INTRODUCTION:

Metronidazole is a commonly used drug for treating anaerobic infections and inflammatory bowel disease such as crohn`s and ulcerative colitis. When used for longer periods in high doses, metronidazole can cause cerebellar featuring symptoms, seizures and encephalopathy. Neurological features are apparent when the dosage exceeds 2 gm/day for prolonged periods.

Case Report:

A 30 year old male, diagnosed case of amoebic liver abscess was treated with ultrasound guided pigtail drainage. Later, after his condition improved he was discharged on tablet metronidazole 800mg TDS (2.4gm/day). Patient continued with the same dose of medication for a month and presented to the OPD with cerebellar signs – dysarthria and intentional tremors. Loss of proprioception was noted in both lower limbs. Patient was admitted and MRI Brain imaging was done.

MRI shows symmetric hyperintense areas on T2 and T2 FLAIR images in the dentate nuclei and dorsal pons which was suggestive of metronidazole induced encephalopathy (MIE). Metronidazole was stopped and patient improved symptomatically and was discharged within a week in a satisfactory condition.

Follow up MRI six weeks later shows resolution of altered signal intensities in the dentate nuclei. Patient was clinically asymptomatic.

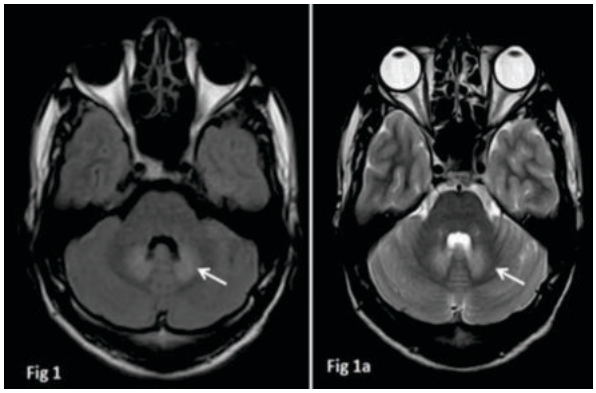

Fig 1: MRI axial T2 FLAIR and T2 (1a) weighted images show symmetric hyperintense signal intensity in the dentate nuclei (arrows)

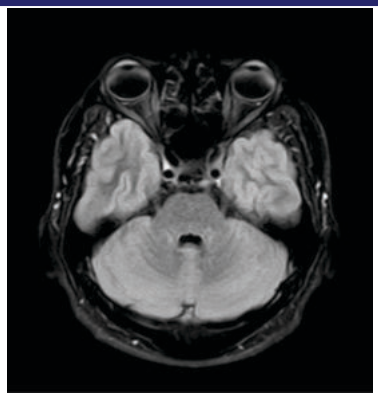

Fig 2: Follow up MRI 6 weeks later – axial T2 FLAIR image shows resolution of altered signal intensities in the dentate nuclei.

DISCUSSION:

The exact incidence of metronidazole induced encephalopathy is not well documented in literature. However, since metronidazole is a commonly used drug and one should be aware of this entity.

Since MR images here shows characteristic features with lesions being described in the cerebellar dentate nucleus, midbrain, dorsal pons, medulla and splenium of corpus callosum.[3]

MR is also useful in follow up as these lesions are reversible. Lesions are always symmetrical and bilateral, pattern typically of metabolic encephalopathy.

Differential diagnosis includes demyelination diseases, metabolic, infections and inflammatory processes.[1] D/D`s for lesions involving dentate nuclei include methyl bromide intoxication, maple syrup urine disease and enteroviral encephalitis.[2]

Drug toxicity should be included in DD when MRI reveals multifocal disease with little or no mass effect.

Learning Points:

- Radiologists / clinicians should be aware of the characteristic MRI features in metronidazole induced encephalopathy.

- Physicians should be aware of this entity to enable early recognition of this reversible condition and avoid prolonged usage of metronidazole in high doses.

Abbreviations: Magnetic resonance imaging (MRI), Fluid attenuated inversion recovery (FLAIR), Metronidazole induced encephalopathy (MIE)

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