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Metronidazole-Induced Encephalopathy Presenting with Acute Cerebellar Dysfunction: A Case Report

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INTRODUCTION

- Metronidazole is a widely used antibiotics effective against anaerobic and protozoal infections. While generally considered safe, neurotoxicity may occur with prolonged therapy or excessive cumulative exposure.

- Metronidazole-induced encephalopathy (MIE) is a rare but potentially reversible condition. We describe a 73-year-old man who developed cerebellar symptoms after extended metronidazole treatment for septic shock secondary to acute colitis.

Case presentation

- A 73-year-old man with diabetes mellitus and a history of pancreatic and colon cancer presented with septic shock due to severe acute colitis. Intravenous metronidazole and ceftriaxone were initiated with vasopressor support.

- Following medical stabilization, he developed sudden-onset slurred speech and gait instability on day 18 of metronidazole therapy (cumulative dose approximately 27 g).

- Neurological examination revealed prominent cerebellar dysfunction, including horizontal and vertical nystagmus without extraocular movement limitation, severe dysarthria, upper limb dysmetria, and truncal ataxia.

- Brain magnetic resonance imaging(MRI) demonstrated bilateral symmetric T2-weighted hyperintensities in the cerebellar dentate nuclei.

- The patient was referred for speech rehabilitation due to newly developed dysarthria. Neurological evaluation revealed prominent cerebellar dysfunction, including nystagmus and dysmetria.

- Based on the clinical–radiologic correlation, metronidazole-induced encephalopathy was suspected. Metronidazole was immediately discontinued, and comprehensive rehabilitation therapy was initiated, including speech therapy, balance and coordination training, and strengthening exercises.

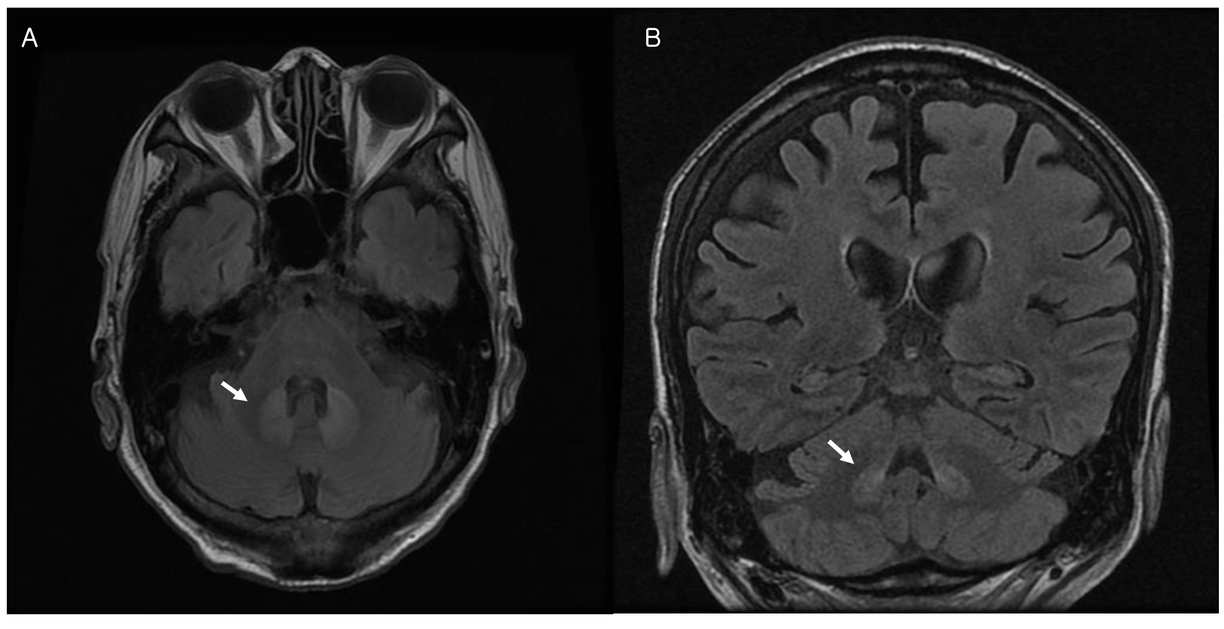

Figure 1. Fluid-attenuated inversion recovery (FLAIR) images, axial (A) and coronal (B), show bilateral symmetric hyperintense lesions in the cerebellar dentate nuclei (arrows).

CONCLUSION

- MIE is a rare but distinct central nervous system toxicity most commonly presenting with cerebellar symptoms such as ataxia, dysarthria, and gait instability, as well as altered mental status and occasionally, peripheral neuropathy.

- Previous reports have described a mean cumulative dose of approximately 58.1 g (range 21–135 g) administered over an average of 38.7 days (range 14–90 days), although individual susceptibility varies.

- Clinical risk factors including hepatic dysfunction, malnutrition, and critical illness.

- MRI plays a key role in diagnosis, typically shows bilateral symmetric T2-weighted hyperintensities in the cerebellar dentate nuclei, with possible involvement of the corpus callosum or brainstem.

- Prognosis is generally favorable after drug withdrawal; however, irreversible deficits have been reported when discontinuation is delayed.

- Early recognition, prompt discontinuation of the offending agent, and comprehensive rehabilitation resulted in significant neurological and functional recovery.

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