The Canadian Journal of Neurological Sciences (2025), **52**, 312–313
doi:10.1017/cjn.2024.289

Canadian Journal of Neurological Sciences
Journal Canadien des Sciences Neurologiques

Neuroimaging Highlight

Anti-Ma-Associated Paraneoplastic Syndrome: Imaging Findings Adding to Its Spectrum

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Keywords: anti-Ma-associated paraneoplastic syndromes; cerebellar ataxia; leukoencephalopathy

(Received 10 April 2024; final revisions submitted 15 June 2024; date of acceptance 27 June 2024; First Published online 20 September 2024)

A 60-year-old male presented with complaints of imbalance while walking for the past 2 years and seizure with encephalopathy for the past 2 weeks. He developed imbalance while walking with swaying to either side, tremulousness in both hands and behavioural abnormalities including irritability, apathy and memory impairment for 2 years. For the past 2 weeks, he developed generalised weakness, multiple episodes of generalised seizure and encephalopathy. He had a chronic history of smoking cannabis and tobacco for the past 5 years. On examination, he was emaciated and had grade 2 spasticity in all four limbs with bilateral cerebellar signs. Routine investigations were normal except anaemia (Hb 9.6 g/dl). Cerebrospinal fluid (CSF) examination showed nil

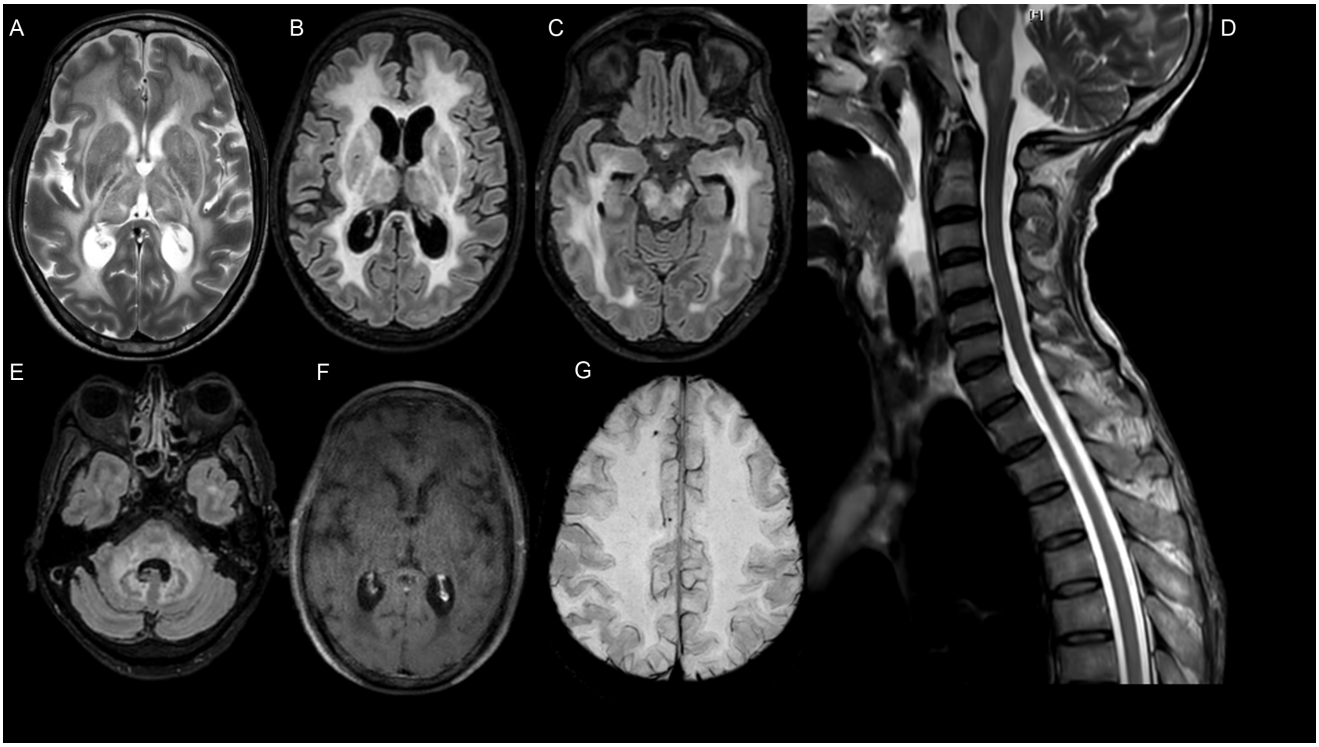

Figure 1. Magnetic resonance imaging of brain in 1A (T2 axial), 1B, 1C and 1 E (T2 FLAIR axial) showing bilateral symmetrical white matter hyperintensities including subcortical U fibres, the brainstem, the dentate nucleus and the middle cerebellar peduncle with sparing of the basal ganglia, MRI cervicothoractic spinal cord in 1 D (sagittal T2) showing normal spinal cord, MRI brain 1F (T1 axial with contrast) showing no enhancing lesions and 1G (susceptibility weighted imaging) showing no blooming.

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Cite this article: Mustafa F, Mirg S, Singh RK, Vibha D, and Tripathi M. (2025) Anti-Ma-Associated Paraneoplastic Syndrome: Imaging Findings Adding to Its Spectrum. *The Canadian Journal of Neurological Sciences* **52**: 312–313, https://doi.org/10.1017/cjn.2024.289

cells, protein of 44 mg/dl and glucose of 81 mg/dl. The electroencephalogram was suggestive of generalised slowing. A nerve conduction study was normal. Magnetic resonance imaging (MRI) brain showed bilateral symmetrical T2 FLAIR hyperintensities in the entire white matter including the brainstem, dentate nucleus and middle cerebellar peduncle with sparing of the basal ganglia (Figure 1). The differential diagnoses considered were toxic leukoencephalopathy, metabolic causes, leukodystrophy and paraneoplastic cerebellar degeneration. The CSF autoimmune encephalitis panel was negative, but the serum paraneoplastic panel was strongly positive for the anti-Ma 2 receptor antibody. Positron emission tomography-computed tomography did not reveal any evidence of malignancy. He was given a pulse of intravenous 1 g methylprednisolone for 5 days, after which there was improvement in his sensorium on GCS (Glasgow coma scale) to 15. The patient's attendants refused plasmapheresis and further immunomodulatory treatment because of financial constraints. He was discharged on oral steroids and azathioprine. Unfortunately, he was also lost to follow-up.

Leukoencephalopathy can manifest with behavioural disturbances, dementia, ataxia, spastic quadriparesis and coma. Cannabis, commonly termed as marijuana, weed, pot and ganja, is one of the most abused recreational drugs. The use of marijuana has been implicated in leukoencephalopathy, and MRI findings include T2/FLAIR hyperintensities in cerebral and cerebellar white matter, which may show diffusion restriction in the acute stage due to cytotoxic oedema.[1,2] Since our patient has been smoking ganja for the past 5 years, the possibility of toxic leukoencephalopathy was also considered.

Paraneoplastic neurological syndromes are due to indirect remote effects of cancer on the nervous system. In a study of 38 patients with anti-Ma-associated paraneoplastic syndromes, 89% presented with limbic, brainstem and diencephalic dysfunctions, either in isolation or in combination. Other presentations include cerebellar syndrome, neuronopathy, radiculopathy and parkinsonism.[3] Brain MRI abnormalities were present in 74% of all patients, and neurological symptoms preceded the tumour diagnosis in 62% of patients.[3] Testicular and lung cancer are commonly associated with this syndrome.[4] Our patient also presented with cognitive impairment, cerebellar ataxia, seizure and encephalopathy, and no tumour could be found despite extensive screening. Our case was unique for MRI findings showing extensive symmetrical white matter hyperintensity, including in the brainstem but sparing the basal ganglia. To the best of our knowledge, such MRI findings have not been previously described in anti-Ma-associated paraneoplastic syndromes and may expand the clinic-radiological spectrum of this condition. Clinicians should be aware of the expanding spectrum of anti-Ma-associated paraneoplastic syndromes, and it is important to diagnose it early as neurological syndromes associated with anti-Ma2 antibodies tend to respond better to treatment.[5]

Acknowledgements. The authors acknowledge Dr Arunmozhimaran Elavarasi, Dr Jasmine Parihar, Dr Animesh Das and Dr Ajay Garg for their valuable contributions to the diagnosis and management of the patient.

Author contributions. Farsana Mustafa and Shivam Mirg contributed equally to this work.

FM.: Data collection, writing the initial draft, review of the draft.

S.M.: Data collection, writing the initial draft, review of the draft.

RKS: Review of the draft, conceptualisation of the paper, approval of the final manuscript.

DV: Review of the draft, approval of the final manuscript.

MT: Review of the draft, approval of the final manuscript.

Funding statement. None.

Competing interests. None.

Consent. The authors certify that appropriate patient consent was obtained.

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https://doi.org/10.1017/cjn.2024.289