Mutation on mitochondrial alanine amino acyl tRNA synthetase gene misdiagnosed as multiple sclerosis

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Introduction

Novel (Ovario) leukodystrophy related to a mutation on mitochondrial alanine amino acyl tRNA synthetase gene (AARS2) is a rare condition that could be misdiagnosed as multiple sclerosis. Mutations in the AARS2 gene have been found in a severe form of infantile cardiomyopathy and recently it was described in a small group of patients with progressive leukoencephalopathy and in females with ovarian failure

Case

A 16 year old male evaluated at the Multiple Sclerosis Center presented with progressive gait impairment and abnormal brain MRI. Parents were born in China with no reported perinatal complications. He was “clumsy” as a child, but met developmental milestones. He presented with a one year history of hand tremors, left leg weakness, recurrent falls, irritability and insomnia.

MRI of the brain showed patchy T2/FLAIR hyperintense lesions in the periventricular area extending throughout the corpus callosum with posterior predominance. Several lesions demonstrated restricted diffusion (See Figure 1). Spinal cord MRI was normal.

Examination showed downbeat nystagmus, cogwheel rigidity, lower extremity hyperreflexia, left sided Babinski and dysmetria with ipsilateral weakness. No signs of cardiomyopathy were present.

Laboratory findings were negative for long chain fatty acid, lysosomal enzymes, GFAP, organic amino acids, proteolipid protein 1, ANA, Sjogren's antibodies, and NMO IgG. CSF was negative for infection and no oligoclonal bands were detected.

Nerve conduction velocity study was normal. AARS2 sequence was detected with a heterozygous mutation C.706dupC and a novel variant c.452T>C.

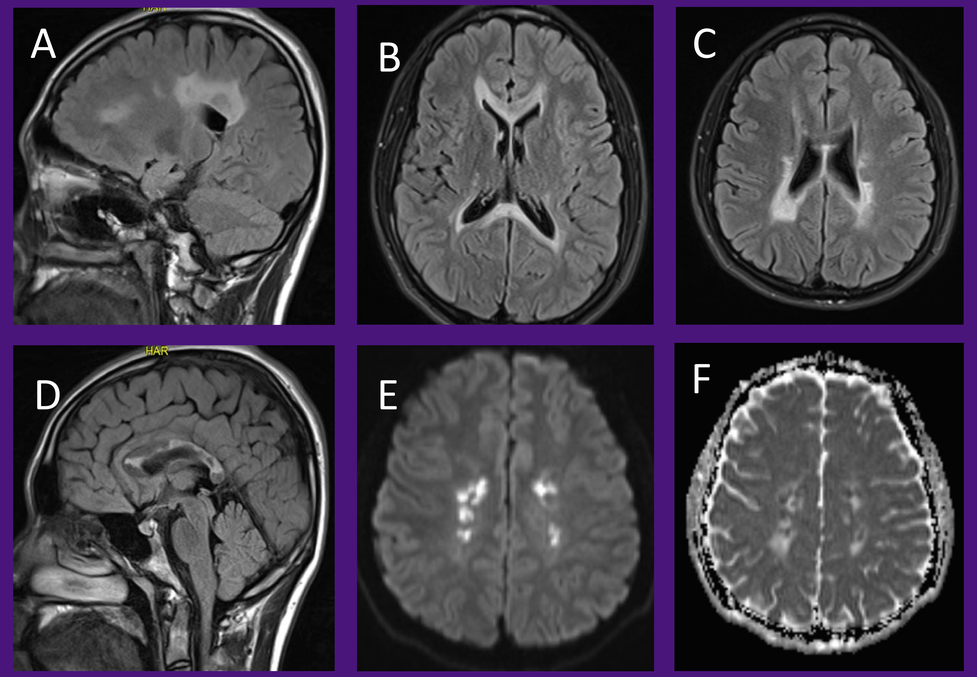

Figure 1. A) Sagittal FLAIR sequence show periventricular lesions with posterior predominance. B, C) Axial FLAIR sequence shows periventricular and corpus callosum lesions. D) Corpus Callosum lesions. E, F) Periventricular lesions showing diffusion restriction

Conclusion

Novel (Ovario) leukodystrophy associated with the AARS2 gene mutation has some MRI features that can mimic multiple sclerosis. Of note, diagnoses other than MS need consideration when assessing progressive neurologic decline and CNS white matter disease in adolescents.

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