Adult-onset Leukoencephalopathy with Axonal Spheroids and Pigmented Glia Presenting with Acute Stroke-like Symptoms.

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Introduction

Adult-onset leukoencephalopathy with axonal spheroids and pigmented glia (ALSP) is a rare autosomal dominant progressive degenerative white matter disease characterized by axonal loss, axonal spheroids and pigmented microglia, caused by heterozygous mutations in the colony stimulating factor-1 receptor (CSF1R) gene.[1]

Common presentation:[2-4]
- Progressive cognitive decline
- Psychiatric symptom e.g. depression, personality change
- Motor symptom e.g. gait ataxia, spasticity

The authors report a unique case of ALSP that presented initially as a young stroke. Subsequent new onset of cognitive decline and behavioral change lead to a consideration of an alternative diagnosis.

Case Report

32-year old Male of Chinese origin with no prior medical condition or family history of genetic illness.

Presented with acute onset left-sided weakness. The contralateral limbs were spared and bilateral limb sensation was intact. Initial impression was that of ischaemic stroke. Young stroke workup, which included screening for venereal, immunological and hematological disorders, was unremarkable.

Subsequently over 5 months, behavioural and cognitive changes developed. Patient was less motivated, more distractible, requiring more assistance and prompting for activities of daily living. There was reduced fluency of speech associated with slower processing speed and word finding difficulties. Noted a decline in Montreal Cognitive Assessment (MOCA) score from an initial 26 (out of 30) to 23 with deficits in visuospatial, delay recall and fluency components.

The patient continued to have progressive left-sided spastic hemiparesis and worsening gait unsteadiness.
He presented with a rapid rate of progression in executive and cognitive dysfunction. In addition, he displayed dissociation between understanding of tasks requirements and actual execution of tasks, with increased disinhibition. Emotional lability and urinary incontinences ensued 7 months after onset of limb weakness.

Radiological investigations were repeated. The radiological and clinical features were suggestive of ALSP.

References:
1. Rademakers R. et al. Mutations in the colony stimulating factor 1 receptor (CSF1R) gene cause hereditary diffuse leukoencephalopathy with spheroids. Nat Genet. 2011 Dec 25;44(2): 200-5.
2. Codjia P, et al. Adult-Onset Leukoencephalopathy with Axonal Spheroids and Pigmented Glia: An MRI Study of 16 French Cases. AJNR Am J Neuroradiol. 2018 Sep;39(9):1657-1661.
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Investigation

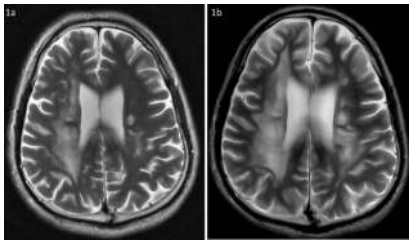

Figure 1a: Axial T2W MR image at the first presentation. Asymmetric periventricular, deep white matter and subcortical T2 hyperintensities seen, appearing more confluent on the right. Background cerebral involutional changes and ventricular prominence appear advanced for age.
Figure 1b: Axial T2W MR image of follow-up MR study after 7 months showed significant progression of white matter signal changes with increased confluence.

Characteristic imaging features[2,5] of ALSP seen in our patient:

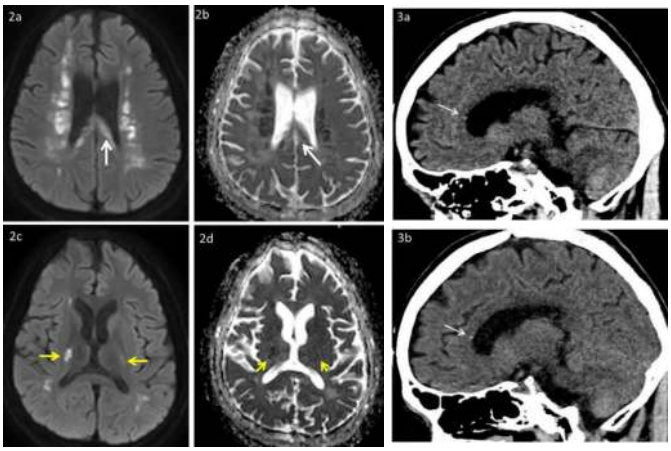

Figure 2a and 2b: MR images showing striking restricted diffusion in the white matter lesions bilaterally involving splenium of the corpus callosum (white arrows).
Figure 2c and 2d: MR images showing involvement of bilateral corticospinal tracts (yellow arrows).
Figure 3a and 3b; CT images showing punctate calcifications (white arrows) in the white matter adjacent to the frontal horns of the right and left lateral ventricles.

Discussion

The authors believe that the initial sites of the associated neurodegeneration in our patient could have primarily involved the bilateral corona radiata, resulting in motor deficit as the first symptom, which led to the patient initially being diagnosed as having a stroke.

This is a novel presentation of acute stroke-like symptoms in a patient with ALSP. There has been no previous report of a similar presentation in the current literature. The authors hope that clinicians could learn from our experience to keep an open mind in considering various differentials when encountering a case of possible “stroke”.