"Inverted V" Sign in Vitamin B12 Deficiency Myelopathy

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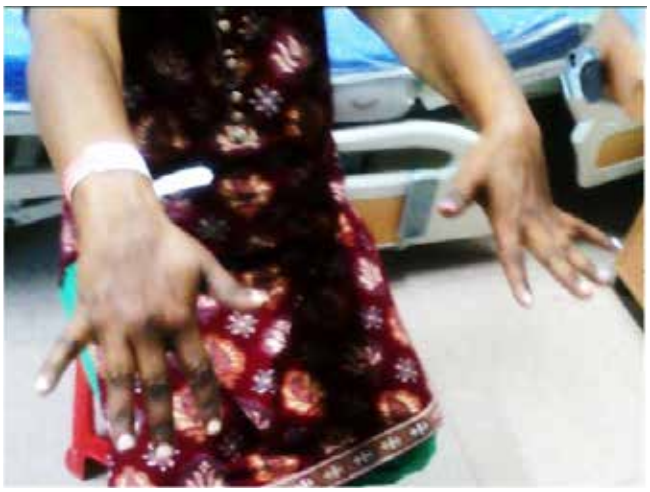

Fig. 1: Acral hyperpigmentation and pseudoathetoid posturing

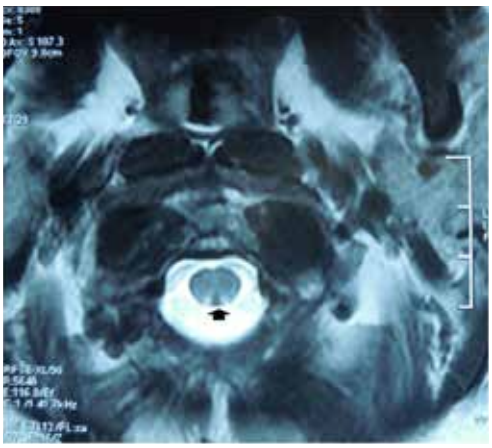

Fig. 3: MRI axial image at C3 level revealing symmetric hyperintensities in the dorsal column region resembling "inverted V"(filled arrow)

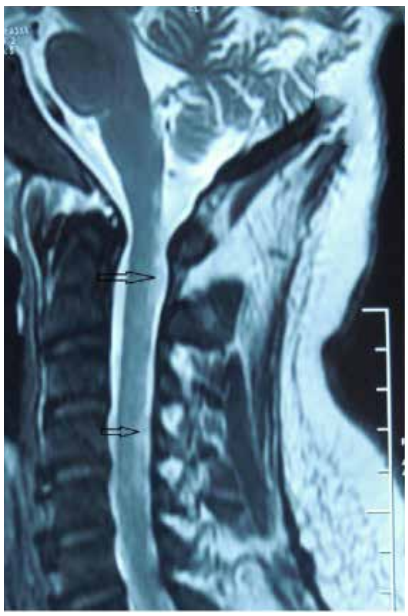

Fig. 2: MRI saggital T2-weighted image shows hyperintensity involving posterior aspect of spinal cord (arrows)

A 40-year-old vegan female presented with progressive gait unsteadiness, incoordination and tingling paresthesia over extremities for last 3 months. Clinical examination revealed pallor, acral hyperpigmentation (Figure 1), generalised hyperreflexia and impaired posterior column sensations. Pseudoathetosis was present and had positive Romberg's test. Investigations revealed hemoglobin 5 gm%, megaloblastic anemia on peripheral blood smear, mean corpuscular volume (MCV) 118 fL and serum vitamin B12 68 pg/ml. Serological tests for human immune deficiency virus (HIV) and syphilis were negative. Antiparietal cell antibody test was negative. Saggital view spine MRI revealed T2-weighted hyperintensity involving posterior column area extending from C2-C5 level (Figure 2). Axial T2-weighted images at cervical spine level showed symmetric hyperintensity within the posterior spinal cord mimicking "inverted V" (Figure 3). Diagnosis of vitamin B12 deficiency related subacute combined degeneration of spinal cord was made. Patient significantly improved after parenteral cobalamin therapy supplemented with oral folic acid.

Vitamin B12 deficiency is an important and treatable cause of impaired hematopoiesis and demyelinating nervous system disease. It is widely prevalent in vegetarians, alcoholics and malabsorption syndrome. It may lead to demyelination of the cervico-thoracic posterior and lateral columns of the spinal cord, cranial as well as peripheral nerves and cerebral white matter. Typically, the clinical manifestations are distal paresthesia, sensory/cerebellar ataxia, sensory loss and distal muscle weakness. Visual impairment, neuro-psychiatric symptoms and cognitive decline may also occur. The manifestations are caused by dorsal column, lateral corticospinal tract and sometimes lateral spinothalamic tract dysfunction as well as large fibre neuropathy. Important differential diagnosis include other nutritional deficiency disorders (copper, folate, vitamin E), nitrous-oxide abuse, HIV related vacuolar myelopathy and neurosyphilis. Early diagnosis and treatment is crucial as the degree of neurological recovery is principally based on the duration of symptoms as well as the severity of disability before treatment initiation.

References

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