

“Inverted V sign” in Sub-Acute Combined Degeneration of Cord

RAMAKRISHNA NARRA¹, ADINARAYANA MANDAPALLI², NAGANARASIMHARAJU JUKURI³, PRADEEP GUDDANTI⁴

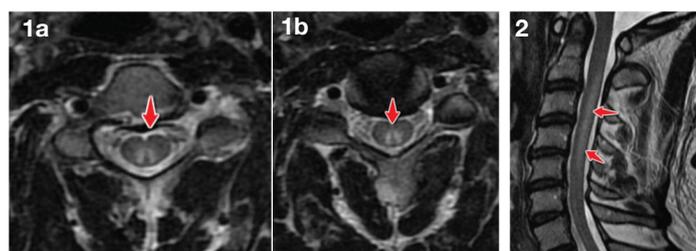
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A 54-year-old male patient presented to the outpatient department of neurology with complaints of tingling and numbness of hands since two months. Neurological examination revealed reduced power and decreased proprioception and vibration sense of hands. Laboratory investigations done showed normal Hb-13.7g/dl (normal range, 13.5-17.5 g/dl). Other routine blood, urine parameters were within normal limits. MRI of cervical spine was advised and performed which showed symmetric T2W hyperintense signals in dorsal columns of cervical spinal cord from C2 to C5 [Table/Fig-1a&b,2] levels (Characteristic Inverted V sign). A provisional diagnosis of Sub-Acute Combined Degeneration of Cord (SACD) was considered. Retrospective investigations of blood showed reduced serum VITAMIN B12 levels of 78.6pg/mL (Normal-200 to 900pg/mL), mild increased mean corpuscular volume 120fl (normal range, 80-100 fl), elevated serum homocysteine levels. Patient was started on vitamin B12 therapy and showed progressive resolution of clinical symptoms.

Causes of vitamin B12 deficiency include malabsorption syndromes such as pernicious anaemia, crohns disease, celiac disease, bacterial overgrowth in intestinal blind loops, postgastrectomy and ileal resection. Deficiency of vitamin B12 results in failure of conversion of methyl malonyl coenzyme A to succinyl co A resulting

in accumulation of methylmalonic acid which causes myelin toxicity of preferential dorsal/posterior columns of the cord [1]. Pathologically multifocal vacuolated and demyelinating lesions involving the dorsal columns, predominately in the lower cervical and upper thoracic region [1] are seen. Demyelination of posterior columns of thoracic spinal cord appears to be the earliest manifestation of vitamin B12 deficiency. It is also considered as the most reversible pathological stage in a case of SACD. MRI findings in SACD of cord are minimal spinal cord enlargement with dorsal spinal cord hypointensity on T1WI, hyperintensity on T2W images. On sagittal images longitudinal signal changes are noted along the dorsal columns of spinal cord. T2WI – axial images show typically characteristic pattern of symmetric bilateral hyperintense signals in the dorsal columns. This specific MRI appearance has been described as the “Inverted V sign” or “Inverted Rabbit Ears appearance”. Some cases may show T2 hyperintense signal in lateral columns of cord and cerebral white matter.

Differential diagnosis for bilateral posterior column involvement [2] include infectious myelitis, infarction of spinal cord, inflammatory demyelination including multiple sclerosis, acute disseminated encephalomyelitis, acute transverse myelitis, and copper deficiency myelopathy. Once the diagnosis of SACD is suspected, treatment with vitamin B12 injection should be started as early as possible to avoid irreversible neurologic damage [3]. Recognition of the specific MRI pattern of cord involvement together with clinical and laboratory analysis helps in early detection and treatment of the Subacute combined degeneration of the spinal cord.



[Table/Fig-1a&b]: Axial T2W MRI at C3 (A) and C4 (B) vertebral level of the spinal cord showing characteristic “inverted v pattern” hyperintense signal (arrow) in the posterior compartment of the spinal cord

[Table/Fig-2]: Sagittal T2W MRI showing linear hyperintense signal (arrows) predominantly in the posterior compartment of the cervical spinal cord extending from C2-C5 vertebral levels of the cord

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PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of Neuroradiology, Katuri Medical College, Guntur, India.
2. Chief Radiologist, Department of Radiology, Maa Advanced Diagnostic Center, Guntur, India.
3. Assistant Professor, Department of Radiology, Katuri Medical College, Guntur, India.
4. Resident, Department of Radiology, Katuri Medical College, Guntur, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Ramakrishna Narra,
Uflat no-30, Venkatesh Estate Apartment, 1/2 Chandramoulinagar, Guntur, Andhra Pradesh - 522019, India.
E-mail : narra.ramki29@gmail.com

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