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COBALAMIN DEFICIENCY : SUBACUTE COMBINED DEGENERATION OF SPINAL CORD

General Medicine

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ABSTRACT

Vitamin B12 (Cobalamin) deficiency can lead to neurological complications, including Subacute Combined Degeneration (SCD) of the spinal cord, primarily affecting the dorsal and lateral columns. This case report describes a 74-year-old postmenopausal female with progressive lower limb weakness, imbalance, and urinary incontinence. Neurological examination revealed spastic ataxic gait, impaired vibration and proprioception, and atrophy of hand muscles. Blood tests showed macrocytic anemia and low vitamin B12 levels (<50 pg/mL). MRI spine imaging revealed an "Inverted V" sign, indicative of bilateral dorsal column changes. The patient was treated with intravenous Methylprednisolone and folic acid, leading to gradual improvement. Vitamin B12 deficiency can arise from dietary insufficiency, pernicious anemia, or gastrointestinal disorders. Early diagnosis and treatment with B12 supplementation are crucial to prevent irreversible neurological damage. Regular monitoring of vitamin B12 levels is recommended in high-risk populations, including vegetarians, those with gastrointestinal surgeries, or nitrous oxide use.

KEYWORDS

Vegeterian, Vitamin B12, Subacute Combined Degeneration, Inverted V Sign

INTRODUCTION

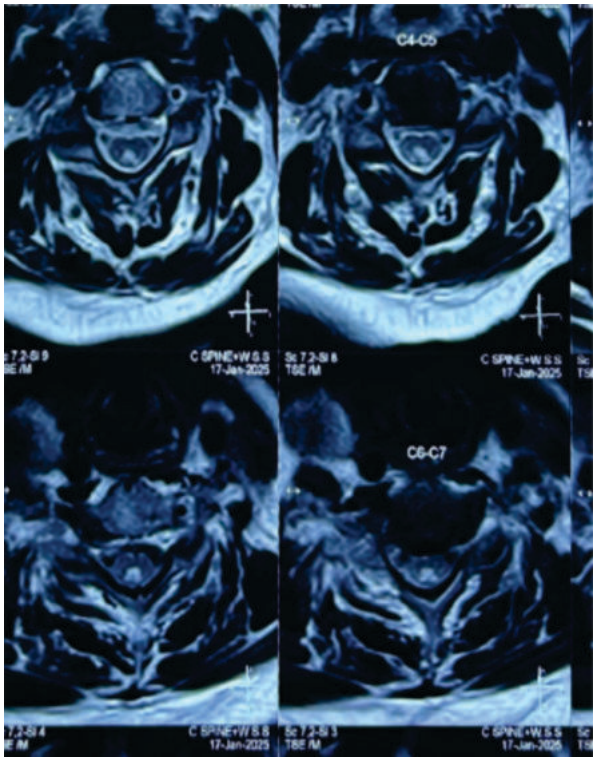
Vitamin B12 or Cobalamin is produced by bacteria in large bowel of human. The major source of cobalamin are animal proteins, mainly meats and eggs. An average non – vegetarian diet contain 5 – 8 mcg of cobalamin per day. The recommended daily allowance is 2.4mcg for men and non – pregnant women, 2.6 mcg for pregnant women, 2.8 mcg for lactating women and 1.5 – 2 mcg for children up to 18 years. Vegetarian diet contains not more than 0.5 mcg/day of cobalamin. So most vegetarians are at risk of cobalamin deficiency.(1) Subacute combined degeneration of Spinal cord is most commonly caused by a deficiency in Vitamin B 12 causing demyelination of Lateral and Posterior column of spinal cord.(2.) in early stage of Vitamin B12 deficiency atypical manifestation like fatigue, anemia, glossitis, diarrhea can present. Neurological manifestation including clumsy movement of lower limbs, feeling of stepping on cotton, unsteady walking, abnormal feeling of peripheral limbs, symmetrical tingling, numbness and burning sensation are also common. (3)

Case Report

A 74 years old, postmenopausal female presented with chief complains of progressive weakness of both lower limb more than upper limb with imbalance while walking increase during night and urinary incontinence from last 2 months. Patient was known case of Hypertension from last 4 years for which she was taking antihypertensive medication irregularly. On examination patient was vitally stable. Neurological examination patient was conscious and oriented to time, place and person. Upper limb power was 4/5 and lower limb power was 4 -/5, thenar and hypothenar muscles was atrophied. Patient has spastic ataxic gait. Vibration, fine touch and joint position was impaired with Romberg test positive. All routine blood investigations were sent which shows Hb – 9.6 g/dl, MCV – 119.7 fL and PBF suggestive of macrocytic normochromic with few anisopoiliocytosis and few eliptocytes. ANA was low positive. Serum vitamin B12 < 50 pg/mL. MRI spine suggestive of there is symmetrical bilateral high T2 signal within the dorsal column. This appearance has been described as the " Inverted V" sign. The signal changes typically begin in the upper thoracic region with ascending or descending progression. CSF was done to rule out other secondary causes but it was normal. NOM antibodies was negative. Patient was managed with intravenous Methylprednisolone and Folic acid. Patient gradually improved in bilateral lower limb numbness and weakness.

DISCUSSION

Vitamin B12 is water soluble vitamin which is derived from animal product and serve as a cofactor in two important enzymatic process – metabolism of Methylmalonic acid and Homocysteine. Deficiency of Cobalamin causes neurological manifestations by demyelination, specially Dorsal column, lateral corticospinal tract and Spinocerebellar tract. Which is known as Subacute Degeneration of Spinal cord resulting impaired distal proprioception, vibration sense, paresthesia, ataxia.(4) The laboratory finding include macrocytic anemia and hypersegmented neutrophils. Common causes of vitamin B 12 deficiency is dietary deficiency in strict vegetarian diet, Pernicious anemia, Prolonged use of Nitrous oxide, Gastric surgery, Autoimmune gastritis, Small bowel disease, Drug induced like Metformin; gastric acid suppressant, Fish tapeworm infestation.(5,6) Along with cobalamin, folate level should also be monitor due to their close metabolic relationship.



CONCLUSION

Subacute combined degeneration due to vitamin B12 deficiency is treatable condition and require regular supplementation of vitamin B12 in high risk patient such as vegans , nitrous oxide abuse , intestinal parasites and patient with history of bariatric surgery. Untreated SCD can result in permanent neurological deficits. So it is message to all medical fraternity that we should keep high level of suspicious for neurological manifestation of vitamin B12 deficiency.

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