

A Case of Sub-Acute Combined Degeneration

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Sir

I am presenting the memoirs of an interesting case which I had the opportunity to treat during my clinical practice in a primary care set up, 40 km from the city, at an N.G.O in Coimbatore. This 36 years old patient of Canadian origin came with the complaints of extreme exhaustion, loss of appetite, instability while walking, diarrhoea on and off, pin prick sensations in his palm and soles, occasional urinary incontinence and memory disturbances, all for a duration of the past 3 months. All these complaints were progressively becoming worse. The patient, on examination, was found to be thinly built. The general examination was otherwise unremarkable. His gait was ataxic. There was loss of the joint position sense and the diminished vibration sense in both the lower limbs and the Romberg's sign was positive. On using the clinimetric tool for the assessment of vitamin B12 deficiency [1], the score was found to be 32 and any score above 20 is a clear indication for starting treatment for B12 deficiency. A further enquiry revealed that the patient had taken to a pure vegan dietary pattern for the past 6 years. This meant that he was not having any non-vegetarian food including milk and milk products for the past 6 years. He was so rigorous that he had been eating only fruits and drinking only fruit juices for the past one and a half years. I referred the patient to a tertiary care centre for further investigations including blood test and spine radiology, with a suspicion of vitamin B12 deficiency.

The consultant neurologist, on admission, was skeptical and expressed to me that with this particular patient of non-Indian origin having an extensive travel history and frequent change of occupations mostly as bartender or other similar temporary jobs, he would be more in agreement with an HIV associated de-myelinating disease than with the vitamin B12 deficiency. On MRI, demyelination was seen as a hyperintensity on the T2-weighted images and it involved the dorsal columns. On the sagittal images, a vertically oriented segment of variable length at the posterior aspect of the spinal cord was seen. The blood vit B12 levels were also low (90pg/ml), based on which the patient was diagnosed as a case of sub acute combined degeneration due to B12 deficiency and he

was sent back to my care. The patient was started on intravenous 500 micro grams B12 on alternate days for 2 weeks, along with oral supplements also. There was a tremendous improvement in all his symptoms, except his neurological signs. When the patient left after a month, he was given advice to continue the B12 shots once every 6 months and to add oral B 12 supplements if he was planning to continue his vegan dietary pattern.

Vitamin B12 cobalamin is a required coenzyme for 2 important enzymatic reactions. In the first reaction, cobalamin facilitates the methylation of homocysteine by methyltetrahydrofolate into methionine and tetrahydrofolate. Tetrahydrofolate is necessary for normal DNA synthesis in all the cells, including the myelin-producing oligodendrocytes. Methionine is subsequently converted to S-adenosyl-methionine, which is necessary for the methylation of the myelin sheath phospholipids. In the second reaction, cobalamin is a coenzyme that converts methylmalonyl coenzyme A into succinyl coenzyme A. The failure of the occurrence of this second reaction results in elevated levels of methylmalonic acid. The excessive methylmalonic acid will prevent normal fatty acid synthesis, or it will be incorporated into fatty acid itself, rather than into normal malonic acid. If this abnormal fatty acid subsequently is incorporated into myelin or if the methylation of the myelin sheath phospholipids fails to occur, the resulting myelin will be too fragile, and demyelination will occur [2].

This case was reported to illustrate the high degree of suspicion for the vit B12 deficiency that the clinicians should have while they deal with patients who are on a vegan dietary pattern, as well as the need to enquire about the dietary pattern of every case that presents to the clinic.

REFERENCES

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