

Vitamin B12 Deficiency and MS Incidence; Which One Sooner?

Multiple sclerosis (MS) is a chronic neurological disease characterized by inflammation and development of demyelinating central nerve system which occurs mostly in young adults and is more prevalent in females. The definite etiology of MS is unknown but interacting genetic and environmental factors are considered to be involved in its pathogenesis. Among environmental factors affecting the prognosis of the disease, recent investigations have shed the light on the role of vitamin B12, folate, and homocysteine (Hcy) as possible determinants of the progressive neurodegenerative process. Cobalamin deficiency is mainly caused by insufficient dietary intake particularly in vegans and malabsorption which mostly occurs in case of pernicious anemia and gastrointestinal disorders.^[1] Vitamin B12 and folate play important roles in DNA and RNA synthesis and metabolism and myelination. The neurologic manifestations of cobalamin deficiency are mainly the results of impairment in the methylation processes through which homocysteine is converted to methionine. Thus, elevated homocysteine as well as cobalamin and folate deficiencies lead to formation of defective myelin and consequently neurodegenerative deterioration in MS. Besides, it may make the MS patients more vulnerable to viral and immunological mechanisms of MS (2z). A recent meta-analysis has shown significant differences between MS patients and controls for Hcy and vitamin B12 but not folate.^[2] Another study showed significantly reduced levels of vitamin B12 in the cerebrospinal fluid of MS patients.^[2] As the major role of vitamin B12 in MS inflammatory and neurodegenerative symptoms as well as enhanced demand for B-vitamins for remyelination and repair is becoming increasingly clear, the concept of cobalamin supplementation has aroused great interests among investigators perusing to seek an etiology of MS.^[1,3] Since vitamin B12 is required to synthesis and maintain the myelin and is vitally important for proper immune function, its deficiency would be an important pathogenic factor in MS. It is important to note whether B12 deficiency can lead to myelin degeneration and MS incidence, or the onset of MS can lead to a B12 deficiency. Anyway, it's the fate of B12 and MS in relation to each

other. Considering the burden of the disease, necessary to conduct further research to determine which one sooner? B12 deficiency or MS?

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