



Vitamin B12: The Missing Vitamin of Vegetarians and Delayed Infants!

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Editorial

Vegetarianism and veganism is a way of life adopted by millions of people all across the world. It would not be an overstatement to say that India is the capital of vegetarianism, although Nepal shares similar religious reasons for it. Thus, deficiency diseases associated with plant based diet are commonly seen in these countries though other countries have fair share of them. Vitamin B12 deficiency is important in this context because of various neurological, haematological and cardiovascular reasons [1-3]. It is of special interest to pediatric neurologists because of its well known effects on brain. In various studies, high incidence of B12 deficiency has been seen ranging from 14% to 44% [4-7]. The development and function of brain in early life can be affected by nutritional deficiencies due to restriction of myelination and synapse formation occurring in initial years [3]. Vitamin B12 deficiency produces a cluster of neurological symptoms in infants, including irritability, failure to thrive, apathy, anorexia, and developmental regression, which responds remarkably rapidly to supplementation [8]. It has been noted that developmental delay resulting from severe vitamin B12 deficiency might not recover fully [9]. In Indian subcontinent, infantile tremor syndrome (a syndrome presenting as neuro regression, hyper pigmentation of skin and tremors) is frequently seen and vitamin B12 deficiency has been consistently seen associated with it [10]. Infants born to vitamin B12-replete mothers have adequate stores of vitamin B12 to sustain them for the first several months of life. Like all other nutrients, B12 levels in the cord blood may be normal in babies born to B12 deficient mothers, however as age progresses breastfed infants of vegan/vegetarian mothers become B12 deficient [3,11]. It is possible that their stores get depleted due to persistently low vitamin B12 content in breast milk. In two Indian studies, high percentage of B12 deficiency was seen in infants of mothers with low B12 levels during pregnancy [4,12]. Up to 65% pregnant women were found to have B12 deficiency in India [5]. Thus there are very high chances of B12 deficiency in exclusive breast fed infants in India. In older infants and children higher prevalence of B12 deficiency is seen, which might be because of increase in metabolic demands with increasing age. Furthermore, due to commonality of vegetarian complementary diet and poor B12 content of breast milk of deficient mothers, B12 becomes scarce from dietary sources and body stores become depleted rapidly [13]. Subclinical deficiency can be seen even as early as 6 weeks of age [4]. There is significant association of cobalamin and folate status with cognitive performance, studies have shown each 2-fold increment in plasma cobalamin concentration to be associated with a significant increase in the mental development index score [6]. A recent RCT in children aged 6 to 30 months old, supplementation of B12 and folate has shown improvement in gross motor and problem solving functions as compared to placebo [14]. In another study, maternal B12 levels in pregnancy were correlated with cognition of their children at 9 years of age and it showed that higher maternal vitamin B12 concentration in pregnancy was an independent predictor of the child's cognitive performance after controlling for a number of possible confounders, including the child's own vitamin B12 status at 6 years of age [15]. Thus, maternal B12 levels (hence B12 levels of infancy) can affect the long term development of a child. A trial is going on in Nepal to look for effect of B12 supplementation of pregnant woman on growth and cognition of infants [16]. Apart from delayed milestones, researchers have found development of west syndrome (a catastrophic type of epileptic encephalopathy) in patients with B12 deficiency [17]. Thus, there is ample evidence for association of poor neurodevelopment with B12 deficiency, making B12 deficiency a significant public health problem in countries with high prevalence of plant based dietary preferences. As veganism is becoming a fad in western countries, clinicians managing such pregnancies should be aware of the risks. Initiative from public and private sector is needed in the form of supplementation of food items and maternal supplementation with B12 during pregnancy and lactation. Awareness among

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paediatricians is needed to recognize early symptoms of deficiency and appropriate timely management.

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