

Issue 51 In a nutshell

Mild vitamin B₁₂ deficiency which is commonly found in the elderly is often due to a combination of lack of B₁₂ in the diet and malabsorption.

Consequences may be subtle, and change in the blood test may after B₁₂ supplementation be the only way to diagnose the condition in some patients.

Vitamin B₁₂ in the elderly

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NUTRITION RESEARCH REVIEW

Study one: causes of mild B₁₂ deficiency

The type of borderline vitamin B₁₂ deficiency which is commonly found in the elderly has several causes, and is often due to a combination of both diet and absorption factors, according to results of a recently published study from Holland.

Researchers studied 105 free-living elderly subjects aged in their seventies. Examination included: vitamin B₁₂ (cobalamin) intake and blood levels, evidence of atrophic gastritis, and the presence of Helicobacter pylori infection (IgG antibody titres). The methylmalonic acid (MMA) concentration was also assayed,

Mild vitamin B₁₂ deficiency (plasma B₁₂ <260 pmol/L together with elevated MMA) was seen in 24% of the subjects. The B₁₂ deficient group had lower B₁₂ intake (but mainly because of taking less supplements) and had a higher prevalence of severe atrophic gastritis, compared to the non-deficient subjects (see table).

Ref: AJCN 1998;68:222-3

Study two: diagnose by treatment

Table: Clinical parameters in relation to plasma B₁₂ status

	Plasma B ₁₂ : Deficient	Normal	Signif.
B ₁₂ intake	4.9µg/d	6.3µg/d	p=0.03
Use of B ₁₂ supplements	8%	30%	p<0.05
Severe atrophic gastritis	25%	4%	p=0.03
H. pylori infection	54%	44%	NS

The only reliable way to assess the effects of subtle B₁₂ deficiency on the blood in an older patient may be to observe changes after treatment, according to the results of a British study.

Geriatricians followed 472 consecutive referrals to a geriatric medical unit, of whom 13% had low serum vitamin B₁₂ (< 175 pmol/l). Only a quarter of these deficient patients were found to have any blood film abnormalities (e.g. elevated MCV or anaemia).

However, treatment of those with low B₁₂ levels (with hydroxycobalamin injections) produced a significant fall in MCV and rise in haemoglobin, whether these parameters had previously been normal or abnormal.

Ref: Br J Nutr, 1997;78:57-63

Comments

Just how common is marginal B₁₂ deficiency in the elderly population? The answer depends both on whether you are looking at healthy or hospitalised patients, and on what criteria you set for the diagnosis. These two studies, for example, used different criteria and came to different conclusions.

However, taking an overview of the many published studies that have looked at this question, it should be clear that marginal B₁₂ deficiency is common enough in elderly people to be worth looking for carefully.

Even in free living 'healthy' elderly populations, physicians who use more sensitive assays of B₁₂ metabolism (such as MMA assay) might expect to discover it in 10-20% of their patients.

The most common explanation given for this deficiency is malabsorption, a part of the gastric atrophy associated with the aging process. The first study here confirms this, but it also finds that oral B₁₂ intake is important - or more accurately that taking B₁₂ supplements was helpful in protecting against deficiency.

What are the clinical consequences of being subtly vitamin B₁₂ deficient? The second study shows that, even though these subjects often have a 'normal' blood count, this 'normality' may correct to a different value once treatment is started. Physicians see a very similar picture in mild iron deficiency, which should remind us that a 'normal' result is not always normal for an individual patient.

There has been a lot of work done in recent years to find out whether mild B₁₂ deficiency is associated with neurological deficits. Recent evidence has suggested that, whilst there may be some subtle effects on CNS function, it is hard to find any obvious and major clinical correlation, e.g. in helping the average patient suffering from dementia (e.g. *J Neurol*, 1996;243:522-9).

But other studies suggest different reasons why we should be taking this condition seriously. For one thing, it elevates homocysteine levels and could thereby increase the risk of cardiovascular disease (*J Am Geriatr Soc*, 1996;44:1355-61). There is also the possibility that mild vitamin B₁₂ deficiency in an elderly patient could impair some aspects of their immune function (*Ann Intern Med*, 1996;124:299-304).

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