

When Thyroid-like Symptoms Might be a Vitamin Deficiency

By Dr Alyssa Burns-Hill

Do you recognise these symptoms:

- Foggy thinking¹;
- Tiredness²;
- Depression³;
- Disturbed sleep⁴;
- Hearing loss⁵;

If you do you may be thinking that they are related to an under-active thyroid, or, even a functional thyroid problem (where thyroid hormone is not converting effectively, or cannot work with tissue properly)? Well, you might be right but, alternatively, you might be suffering with a vitamin B12 deficiency.

B12 deficiency is usually linked with anaemia and pernicious anaemia, but there are other silent and not-so-subtle signs and symptoms of deficiency, other than the problems mentioned above, that are easily and safely reversible through supplementation:

- Memory lapses¹;
- Manic, psychotic and schizophrenic states^{1,6};
- Mood swings²;
- Muscle weakness⁷;
- Tingling sensations in extremities⁷;
- Alzheimer's and dementia^{8,9};
- Multiple Sclerosis¹⁰;
- Chronic tinnitus¹¹.

Some, if not all, of the problems mentioned above warrant investigation by a doctor, but vitamin B12 deficiency is quite widespread, especially in the older population¹² and, its associated signs and symptoms are frequently misdiagnosed¹³. In a study of 3000 subjects, 39% were found to have a 'low level'¹⁴, so it's worth giving this problem some serious consideration.

What is B12?

B12 is the most chemically complex of all the vitamins and works closely with folate (the natural form of folic acid) to make the building blocks of DNA and RNA, our genetic materials. It is essential for the maintenance and proper functioning of the nervous system, and the production of energy as it stimulates the use of proteins, fats and carbohydrates, and helps iron function more effectively. The highest concentrations of B12 in the body are found in the heart, liver, brain, pancreas, kidneys, blood, testes, and bone marrow, which are all metabolically active tissues.

Who's at risk?

Animal-based foods are the main sources of B12, which is why vegetarians and vegans are at particular risk of deficiency. However, if you take certain medications you can also be at enhanced risk: metformin, proton pump inhibitors, H2-receptor antagonists, anti-convulsants, the contraceptive pill/HRT, statins or even antibiotics¹⁵. The use of excessive alcohol or nicotine can also deplete your levels of B12¹⁵. But it also has to be said that as you get older your ability to absorb B12 from your diet becomes increasingly more difficult¹⁶

What can you do?

The simple answer is to supplement. Vitamin B12 can be given by injection to avoid the poor absorption problem but a good, preferably, sublingual (under the tongue) supplement is now accepted as being just as effective.

Cyanocobalamin is the most commonly used form of B12 supplementation, but nutritional deficiencies, enzyme defects, and tissue abnormalities can reduce the body's ability to synthesise it. Methylcobalamin is a body-ready form and is especially useful for people with impaired methylation capacity, such as those with elevated homocysteine or neurological impairments, such as some of those mentioned above. I also recommend the pairing of folate with B12 as these two B vitamins are required for the methylation of homocysteine to methionine. (Methylation is a process catalysed by enzymes, and is a form of alkylation.)

B12 deficiency can be something that is easily missed by your doctor because it can simply be given a different label. If a diagnosis is missed it can make a serious difference to the quality of your life and your well-being - you may want to try supplementing to see if it makes a difference for you. What do you have to lose?

NB

*If you supplement it is important to note that you should not take vitamin B12 at the same time as large dose (e.g greater than 500mg) vitamin C because absorption of B12 can be impaired. Leave a couple hours gap between taking each vitamin.*¹⁷

*An important note to mention is that vitamin B12 should not be taken by someone with Leber's Disease, as it can rapidly accelerate optic nerve atrophy*¹³.

Glossary

- methylcobalamin - is a form of the vitamin B12 (not a branded product, no!) there are different chemical forms of the vitamin this one is more easily assimilated through the gut.
- methylation capacity - an example of methylation is a detoxification pathway in the liver and if a person's capacity is limited it can cause additional toxic load to the body. This pathway requires specific nutritional support.

- homocysteine - homocysteine is an amino acid (a building block of protein in the body). B vitamin deficiency can mean that your body cannot use this amino acid properly and so it builds up. High homocysteine levels have been linked with making blood clot more easily and a higher risk of heart disease.
- neurological - pertaining to the body's nervous system
- folate - folate is a natural form of B vitamin that occurs in food, unlike folic acid, which is a synthetic form found in most supplements.
- methionine - methionine is an amino acid (a building block of protein in the body) that helps the body to process and eliminate fat.
- enzymes - are a substance made of protein in the body, which speeds up biochemical reactions
- alkylation - methylation (discussed above) is a type of alkylation - a biochemical process in the body.

References

- 1 Hector, M. & Burton, J. (1988). What are the psychiatric manifestations of vitamin B12 deficiency? *J. Am Geriatr Soc*, 36, 1105-12.
- 2 Dommissie, J. (1991). Subtle vitamin B12 deficiency and psychiatry: a largely unnoticed but devastating relationship? *Med Hypotheses*, 34, 131-140.
- 3 Coppen, C. (2005). Treatment of depression: time to consider folic acid and vitamin B12. *J Psychopharmacol.*, 1, 59-65.
- 4 Yamadera, W, Sasaki, M & Itoh, H., et al. (1998). Clinical features of circadian rhythm sleep disorders in outpatients. *Psychiatry Clin Neurosci*, 3, 311-16.
- 5 Houston, D., Johnson, M., & Nozza, R., et al. (1999). Age-related hearing loss, vitamin B12, & folate in elderly women. *Am J Clin Nutri*, 69, 564-571.
- 6 Evans, D., Edelson, G. & Golden, R. (1983). Organic psychosis without anemia or spinal cord symptoms in patients with vitamin B12 deficiency. *Am J Psychiatry*, 140, 218-21.
- 7 Merck Manuals Online Medical Library:
<http://www.merck.com/mmhe/sec12/ch154/ch154h.html>
- 8 Cole & Prehal (1983) in Goebels, N. & Soyka, M. (2000). Dementia associated with B12 deficiency. *J Neuropsychiatry Clin Neurosc.* 12, 389-394.
- 9 Nagga & Marcusson. (1990) in Goebels, N., & Soyka, M. (2000). Dementia associated with B12 deficiency. *J Neuropsychiatry Clin Neurosc.* 12, 389-394.
- 10 Reynolds, E., Linnel, R., & Faluldy, J. (1991) Multiple sclerosis associated with vitamin B12 deficiency. *Arch Neurol.* 8, 808-811.

- 11 Shemesh, Z., Atlas, J., & Ornan, M. et al. (1993). Vitamin B12 deficiency in patients with chronic tinnitus and noise-induced hearing loss. *Am J Otolaryngology*, 14, 94-99.
- 12 Loikas, S., Koskinen, P., & Irjala, K., et al. (2007). Vitamin B12 deficiency in the aged: a population-based study. *Age and Ageing*, 36, 177-183.
- 13 Pacholok, S., & Stuart, J. (2005). *Could it be B12? An epidemic of misdiagnosis*. Sanger: CA: Quill Driver Books/Word Dancer Press, Inc.
- 14 US Department of Agriculture, Agricultural Research Service:
<http://www.ars.usda.gov/is/pr/2000/000802.htm>
- 15 Medline Plus: <http://www.nlm.nih.gov/medlineplus/druginfo/natural/patient-vitaminb12.html>
- 16 <http://pi.oregonstate.edu/infocenter/vitamins/vitaminB12/>
- 17 <http://www.nlm.nih.gov/medlineplus/druginfo/natural/926.html>