

Over the last 22 years of treating over 3,000 patients with chronic fatigue syndrome, I have developed a programme of treatment which I believe all patients must do as the foundation before proceeding to other treatments. Vitamin B₁₂ by injection I see as an integral part of this programme and it is effective for many, regardless of the cause of their chronic fatigue syndrome.

Those patients who respond to B₁₂ are not obviously deficient in B₁₂, indeed blood tests usually show normal levels. The “normal” levels of B₁₂ have been set at those levels necessary to prevent pernicious anaemia – this may not be the same as those levels for optimal biochemical function. B₁₂ has a great many other functions as well as the prevention of pernicious anaemia. However what is interesting is how B₁₂ is beneficial in so many patients with fatigue, regardless of the cause of their CFS, and suggests that there is a common mechanism of chronic fatigue which B₁₂ is effective at alleviating.

General mechanism by which B₁₂ relieves the symptoms of CFS

Professor Martin Pall has looked at the biochemical abnormalities in CFS and shown that sufferers have high levels of nitric oxide and its oxidant product peroxynitrite. These substances may be directly responsible for many of the symptoms of CFS and are released in response to stress, whether that is infectious stress, chemical stress or whatever. B₁₂ is important because it is the most powerful scavenger of nitric oxide and will therefore reduce the symptoms of CFS regardless of the cause.^{1, 2, 3, 4, 5, 6}

Nitric oxide is known to have a detrimental effect on brain function and pain sensitivity. Levels are greatly increased by exposure to chemicals such as organophosphates and organic solvents⁷. When sensitive tests of B₁₂ were applied (serum methylmalonic acid and homocysteine) before and after B₁₂ therapy, the following symptoms were noted to be caused by subclinical B₁₂ deficiency: paresthesia, ataxia, muscle weakness, hallucinations, personality and mood changes, fatigue, sore tongue and diarrhoea.⁸

B₁₂ in fatigue syndromes

The “foggy brain” with difficulty thinking clearly, poor short term memory and multitasking are often much improved by B₁₂.^{9, 10, 11}. Mood and personality changes, so often a feature of patients with chemical poisoning, can be improved by B₁₂.¹². The physical fatigue and well being are often both improved.

A study

Twenty eight subjects suffering from non-specific fatigue were evaluated in a double-blind crossover trial of 5 mg of hydroxocobalamin twice weekly for 2 weeks, followed by a 2-week rest period, and then a similar treatment with a matching placebo. The placebo group in the first 2 weeks had a favourable response to the hydroxocobalamin during the second 2 week period with respect to enhanced general well being. Subjects who received hydroxocobalamin in the first 2-week period showed no difference between responses to the active and placebo treatments, which suggests that the effect of vitamin B₁₂ lasted for over 4 weeks. It is noted there was no direct correlation between serum vitamin B₁₂ concentrations and improvement. Whatever the mechanism, the improvement after hydroxocobalamin may be sustained for 4 weeks after stopping the medication. "A Pilot Study of Vitamin B₁₂ in the Treatment of Tiredness," Ellis, F.R., and Nasser, S., British Journal of Nutrition, 1973;30:277-283.

Practical Details

Vitamin B₁₂ has no known toxicity and B₁₂ surplus to requirement is simply passed out in the urine (which may discolour pink). It is theoretically possible to be allergic to B₁₂ but in the thousands of injections that I have sanctioned this has only ever occurred after several injections and causes local itching, redness and swelling (although the commonest cause of redness and swelling is poor injection technique). It does not seem to matter whether hydroxocobalamin or cyanocobalamin is used. I usually start with 2mgs weekly by i.m. injection, then adjust the frequency according to response – some patients will respond straight away, some need several doses before they see improvement. I would do at least 10 injections before giving up. Many of my patients learn to inject themselves – this means they can be independent of their doctors. The cost is £1.60 per injection (2ml B₁₂ plus syringe and needle).

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(9) MacDonald Holmes J. Cerebral manifestations of vitamin B12 deficiency. *Br Med J* 1956; 2: 1394-1398.

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(11) Langdon FW. Nervous and mental manifestations of pre-pernicious anaemia. *J Amer Med Assoc* 1905; 45: 1635-1638

(12) Strachan RW, Henderson JG. Psychiatric syndromes due to avitaminosis B12 with normal blood and marrow. *Quart J Med New Series* XXXIV 1965: 303-317