

Report on the Proceedings from the Pernicious Anaemia (B12) Conference 2013 Saturday 19th October

Session 1 Treating B12 Deficiency

The first interactive session was with Dr Willemina Rietsema, a general practitioner in the UK. She ascertained by a show of hands that the majority present had B12 deficiency but none were without symptoms. People described how their quality of life (QOL) dropped during the interval between injections. One member felt progressively worse, with symptoms returning from the end of the first two weeks, while she awaited her monthly injections. Another had neuropathy, despite daily injections with methylcobalamin. A member who attributed her immobility to inadequately treated B12 deficiency was in a wheelchair. There were several accounts of individuals being aggrieved by the fact that their doctors persisted that they needed medication for depression rather than prescribe or maintain adequate B12 injections.

The importance of listening to the patient was obvious. Individuals with diverse requirements need their treatment tailored to give the best possible chance of alleviating symptoms. In many instances the individual with this deficiency will know more, about many aspects of their condition than the doctor. However this must not pose a barrier to developing the vital therapeutic relationship. Dr Rietsema stated that oral treatment (with high doses of B12 relative to the RDA) was equally as effective as injections. However based on contribution from audience members there was reason to believe that several people were of the opinion that injections were more effective and also necessary.

Session 2 Preventing Brain Atrophy

Prof David Smith of Oxford University described - from his research with Dr Helga Refsum - the key role of B12 in preventing the brain atrophy that may lead to Alzheimer's disease. He started by sharing that there are 500 new cases of Alzheimer's in the UK every day. He found that B vitamins lowered homocysteine by 32% and halved the rate of shrinkage of the brain. This resulted in a slowing down of cognitive decline. Baseline homocysteine in older persons seems to be related to brain shrinkage. It was found that a group treated with the B vitamins had nine fold lower atrophy relative to the placebo group in specific regions. The regions that were protected were the same regions that are typically affected by Alzheimer's disease. He said that no link with folic acid was found, but that a direct association with B12 and the prevention of homocysteine mediated brain atrophy was evident. Professor Smith also expressed that there was a continuum involved from the onset of mild cognitive impairment to end stage Alzheimer's disease. **The work highlights the importance, for the population as a whole and not just the elderly of maintaining not merely an adequate but a very good level of B12**

Session 3 Genetics and B12 Absorption and Metabolism

Dr Siddharta Banka spoke about recent advances in the genetics of B12 absorption and metabolism and how B12 deficiency can be caused by genetically mediated errors of metabolism. Though these genetic diseases are rare in the population, in reality the 1:17 distribution can be considered in size, in terms of all of Wales relative to the rest of the UK. Dr Banka expressed that by looking at the rare we can learn more about the biological processes in common diseases, such as thyroid disease and diabetes, thereby developing diagnostic and treatment targets. We are all a resource for understanding ourselves - for improving diagnosis - to personalise medicine - to do it better and differently. Delay in diagnosis on the other hand results in a delay in treatment -worsening of symptoms and unnecessary suffering and isolation for the patient and their families.

Session 3 B12 Deficiency and Autoimmune Poly Endocrine Syndrome

Dr Joseph Chandy presented for the 4th successive year at the conference. Previously he had spoken about B12 deficiency and the protocol for treating **the presenting symptoms of tiredness, depression, hair loss, pins and needles, numbness in hands and feet, tremors, palsies, palpitations, recurrent headaches or dizziness.**

This year his focus was on treating hypoadrenalism, also known as Addison's disease. The late president John F Kennedy was the best-known sufferer of this disease. Though rare, it can be often missed because, similar to B12 deficiency, signs and symptoms can be subtle. He also pointed out that untreated B12 deficiency over a long period of time is among the causes of hypoadrenalism.

Intrinsic Factor B12 and Nanotechnology

Dr Anna Guilford described how nanotechnology could be used to personalize treatment to individual patients. Nanotechnology will facilitate the replacement of specific enzymes, such as intrinsic factor, in supplements. Her proposal is to develop oral supplements incorporating the necessary proteins to address the barriers to absorption causing the deficiency. Her vision is that oral supplements will be available over the counter targeting individual deficiency mechanisms without the pain of an injection. The estimated timeframe for this development could be in the region of 5-10 years with the proof of concept taking approximately 12 months.

Session 5 B12 Deficiency – Common Misperceptions

Ms Petra Visser from the Dutch B12 deficiency foundation (StichtingB12tekort.nl) spoke about the most common misconceptions in relation to B12 deficiency. The findings are supported by data from a large survey conducted earlier this year involving over 1600 respondents. They are as follows;

1. The Serum B12 is a conclusive test.
2. Anemia must be present for a B12 deficiency to exist or for it to be serious.
3. B12 deficiency is rare and only occurs in older people.
4. The only recognised cause is the presence of antibodies against intrinsic factor and if they are not found there is either no PA or no deficiency at all.
5. Treatment can be based solely on serum B12 values.
6. High dose B12 can be toxic.

In reality not a single case of toxicity from B12 overdose has been found in the literature.

Session 6 Methylcobalamin Versus Hydroxocobalamin

Allison Wild researcher at Oxford University presented on methylcobalamin versus hydroxocobalamin for treatment. She is making methylcobalamin available to patients. It is in powder form and can be reconstituted with saline for injection. Every 10 ml bottle is enough for 20 1mg/0.5 ml injections. She outlined **the importance of testing homocysteine when checking B12 levels**. The patient for whom she was advocating; an older gentleman, was inappropriately treated with statins when he actually had a B12 deficiency. With Alison's support he has been thought to inject himself subcutaneously with methylcobalamin. Alison Wild's website is www.oxfordbiosciences.com

Points of importance that were also discussed in the course of the 2 days include;

- ❖ The link between B12 deficiency and infertility in men and women.
- ❖ Testing serum B12 in the perinatal blood panel.
- ❖ Supplementing B12 alongside folic acid in the perinatal period and during breastfeeding. (*In the Netherlands a vitamin B12 concentration of $<185\text{pmol/L}$ was associated with a 3.5-fold (95%CI 1.31-8.9) spina bifida risk.*)

A Thank You Note

Congratulations and gratitude to Martyn Hooper and Carrie Ann for organising such a successful conference. They provided a forum where doctors, scientists, researchers and individuals affected by B12 deficiency can share information and experience in a friendly and caring yet business like manner. It was clear that everybody enjoyed it and came away better informed having developed friendships and connections as well.

These notes recorded by Margaret Harty PHN 19th October 2013