USANA Technical Bulletin

Multiple Sclerosis

Description

- Multiple sclerosis (MS) is a nervous system disease of unknown etiology that occurs primarily in adults 20 to 50 years of age. MS is a progressive disease that can have periods of exacerbations and remissions, during which the myelin sheaths in the nervous system degenerate and are replaced by scar tissue.[1]

Causes

- Although the cause is not definitively known, it now appears that MS is an autoimmune disease. It appears that genetic and environmental factors may play a role, but scientists have not been able to define these factors.[2]

At Risk

- People with a family history of this disease are at higher risk than others.

Prevention and Management

- Low-fat diets with high polyunsaturated fats compared to saturated fats can have a positive effect on patients with MS. Fish oils, a rich source of polyunsaturated fatty acids, help limit inflammation.[3]
- Since myelin is mostly made of lipids and thus subject to lipid peroxidation, it is theorized that antioxidants can help decrease the damage from free radicals. Nutritional factors capable of influencing lipid peroxidation include the trace element-dependent enzymes glutathione peroxidase (selenium),[4] ceruloplasmin (copper),[5] and superoxide dismutase (zinc, copper and manganese)[6] and nutrients with antioxidant activity such as vitamin C, vitamin E, beta carotene and bioflavonoids.[7]
- Calcium, magnesium and vitamin D may be beneficial.[8]

Sources of Additional Information

- National Mutliple Sclerosis Society- 1-800-344-4867

Abstracts

Mai J et al. High dose antioxidant supplementation to MS patients: effects of glutathione peroxidase, clinical safety, and absorption of selenium. Biolog. Trace Element Res. 1990;24:109-117. High dose antioxidant supplementation has recently been

recommended for multiple sclerosis (MS) patients. This study tested the clinical safety, the glutathione peroxidase (GSH-px) activity, and the absorption of selenium during supplementation. Eighteen MS patients were given 6 tablets especially made for this study, equivalent to 6 mg sodium selenite, 2 g vitamin C, and 480 mg Vitamin E a day for five weeks. GSH-px, which was lower than in non-MS controls before the start of treatment, increased fivefold during the 5 weeks of treatment. Side effects were scarce. Ten MS patients were subjected to 24-hour selenium absorption study after ingestion of 2 active tablets, equivalent to 2-mg sodium selenite. Selenium, which was low initially, increased 24% during the first 3 hours and then stabilized. It is concluded that the tested antioxidant treatment seems to be safe and that MS patients have low GSH-px, which may be increased by the tested antioxidant treatment.

Swank RL, Grimsgaard A. Multiple sclerosis: the lipid relationship. Am J Clin Nutr. 1988;48:1387-93. The patients in this 36 year study all reduced their saturated fat intake markedly from an average of 125 g per day prior to the start of the study. Only oils which were fluid at room temperature were allowed as a source of fat. All experienced a marked decrease in exacerbations. The best clinical results were in patients who reduced daily fat intake to <20 g. For his group, deterioration was slight, and only 31% died. Above 20 g fat per day, the level of disability was serious and the death rate increased to 80%. Females tended to do better than males, the response to the diet was more marked if made early in the course of the disease. While oil consumption was found to be indirectly beneficial, the authors believe that this was the result of the replacement of saturated fats by unsaturated oils, rather than by a direct benefit from the essential fatty acids in the oils.

References

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[4] Westermarck T. Selenium level in milk during long-term supplementation with sodium sulfate to a patient with multiple sclerosis. Nutr Res Suppl 1985;1:S232-34.
[5] Becus T. Study of serum and cereobospinal fluid ceruloplasmin in multiple sclerosis and other neurologic diseases. Rev Roum Neurol 1971;8:3-12.
[6] Korpela H. Serum selenium concentration, glutathione peroxidase activity and lipid peroxides in a co-twin control study on multiple sclerosis. J Neurl Sci.1989; 91:79-84.
[7] Evans PH. Free radicals in brain metabolism and pathology. Br Med Bull 1993;49(3) 577-87.
[8] Goldberg P. Multiple sclerosis: decrease relapse rate through dietary supplementation with calcium, magnesium and vitamin D. Med Hypotheses 1983;21(2) 193-200.