

## **Myasthenia Gravis**

1. Myasthenia Gravis (MG) is an autoimmune disease. In particular, it is an autoimmune disease in which the T cells produced by the thymus attack the neuromuscular junction. The neurotransmitter that conveys the nerve impulse to the muscle (acetylcholine) is destroyed.
2. Some cases of MG are relatively mild and affect only the eye muscles. Some are more severe and affect muscle throughout the body. The really dangerous cases are few, but they are the ones that paralyze the respiratory muscles.
3. The first thing that needs to be ruled out in any case of MG is a tumor of the thymus gland. If there is a tumor, the thymus needs to be surgically removed.
4. There are elevations of the pro-inflammatory cytokines Interleukin 2 and Interleukin 6 and elevated zinc levels in MG patients, along with the acetylcholine receptors antibody production. It is suggested that IL-2 and IL-6, via zinc, rather than via thymulin, may be involved in different pathogenic mechanisms in early onset MG. Thymectomy restores zinc, IL-2, IL-6, and acetylcholine receptor antibodies in younger MG patients, but not older.
5. The symptoms of MG are muscle weakness and fatigue that tends to be exacerbated by exertion and relieved by rest.
6. The prognosis on MG is tremendously variable depending on the severity of the disease. Unless there is a tumor of the thymus or unless the muscles of respiration are affected, most MG patients live a normal life expectancy. Quality of life obviously varies depending on the severity.
7. One of the most important considerations in MG is that it is an autoimmune disease that almost always occurs with other autoimmune diseases. In particular, those with MG have a very high incidence of autoimmune thyroid disease. Anyone diagnosed with MG should immediately have a thorough workup done on the thyroid, and have the thyroid treated as indicated. In fact, many of the symptoms of MG overlap with thyroid insufficiency --- fatigue, weakness, and so forth --- and the symptoms that are triggered in MG often improve dramatically once a person gets on adequate thyroid medication.

Another autoimmune disease that occurs with high incidence in conjunction with MG is autoimmune alopecia. Like MG, autoimmune alopecia often involves an elevation of the inflammatory cytokine IL-2.

8. There are 2 types of medical treatment for MG. The most common is to use prednisone and other immunosuppressive drugs. These are not a good long-term proposition. The side effects are many and actually devastating over the long-term. Immunosuppressants like prednisone should be used initially, but the dosage decreased over a period of a couple months and eventually eliminated. There is always the option of temporarily resuming immunosuppressants during flare-ups of the disease. The idea is to minimize the long-term side effects of the corticosteroid drugs.

The second medical treatment for MG is cholinesterase enzyme blockers that decrease the rate at which the immune system destroys acetylcholine. Those drugs directly confront the effect of the autoimmunity rather than just trying to suppress it as the steroids do. The only problem with the cholinesterase blockers is that the benefits fade over time, particularly if the patient is taking too much. The proper approach here is to start at a very small dosage and gradually increase until the symptoms are controlled, and then work at gradually backing off.

MG can go for long periods of time with only mild symptoms, so during those periods medication should be limited or even avoided entirely. That prevents the side effects of the steroids and the fading efficacy of the cholinesterase enzyme blockers.

9. Since MG is a Th1-mediated autoimmune disease, the most important supplements are:
  - IS Immune X-Flam: 2, 2X, B
  - Vitamin D: 4,000 daily for a month, then 2,000 daily thereafter
  - Diphasic AM: 3 after breakfast
  - Diphasic PM: 3 after the evening meal
  - Taurine: 2, 2X, after meals

The anti-inflammatory effects of these supplements will make, over the long-term, a huge difference in quality of life. --- All the better if the patient gets on any necessary Thyroid support. All these supplements are specifically anti-inflammatory for Th1-mediated autoimmune diseases.

If triglycerides tend to be quite low and/or platelets tend to be quite low, then you will want to add Oxygenic A, at least 3 daily.