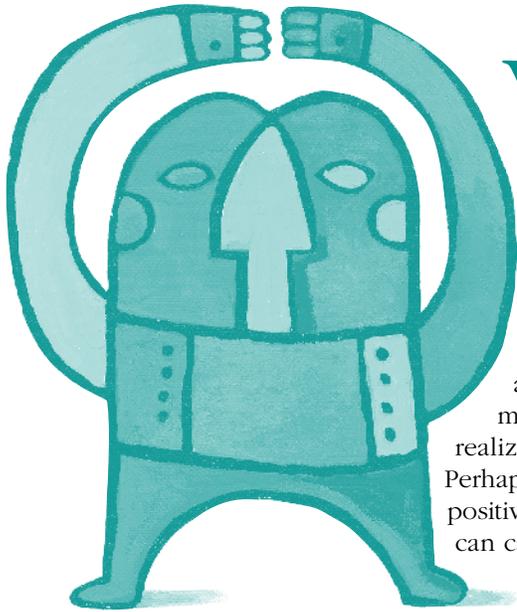


MAGNESIUM

& its Relationship to Painful Conditions

by Thomas J. Romano, MD, PhD, FACP, FACR



When asked to write about magnesium (Mg) and its relationship to pain I was happy to oblige, but found myself facing a bit of a dilemma since I cannot recall a time when a consideration of the Mg status of patients was not an intimate part of my evaluation and treatment plan.

How to begin? To put things into perspective, it should be remembered that for many years Mg salts had been used empirically to treat such diverse conditions as toxemia of pregnancy, acute heart attacks, and leg cramps. Astute clinicians may not have known exactly how Mg helped patients with these conditions but realized that aggressive treatment with Mg often yielded remarkably good results. Perhaps it is because Mg is ubiquitous. It is the second most abundant intracellular positively charged ion (next to potassium) and a deficiency of this important mineral can cause problems with many seemingly unrelated organ systems.

It is known that an average 150 pound adult contains about 24 grams of Mg. However, it is distributed unevenly, with the greatest concentration in tissues such as the brain, heart, liver and kidney. It also can be found in the bone along with calcium. However, there is a dynamic equilibrium between Mg salts and soluble ions. The bones make Mg available to the general circulation in times of Mg deficiency.

Recent studies have revealed that Mg levels may be very low in patients who have painful conditions. Thus, Mg supplementation can help lower pain levels. Furthermore, conditions such as ischemic heart disease, chronic arrhythmia, asthma and diabetes as well as other medical conditions may pose less of a threat if the patient is aggressively treated with Mg.

I treat patients for their chronic painful conditions and leave the treatment of their general medical problems to internists, family doctors or other sub-specialists. I am more interested in the role Mg (or lack of it) might play in the generation or perpetuation of these chronic painful conditions and their sequellae. Many of my patients have fibromyalgia (FMS) and/or myofascial pain syndromes (MPS). Others have various types of arthritis or chronic soft tissue rheumatic conditions. As part of the initial screening process, I obtain Mg levels. The information so obtained has been invaluable for their care and treatment.

Deficiencies of intracellular Mg have been found in FMS and MPS patients. Moreover, some very interesting experiments have revealed that pain threshold is directly proportional to the total body Mg stores. That is, the lower one's level of Mg, the lower the pain threshold. This means that it takes less of a noxious stimulus to cause pain and discomfort in patients low in Mg. In addition to Mg deficiency being found in patients with MPS and FMS, low Mg levels have also been found in patients with systemic lupus erythematosus, eosinophilia-myalgia syndrome and inflammatory arthritis.

What do these four conditions have in common? The obvious answer is chronic pain. Whether the Mg deficiency occurs as a consequence of the chronic pain in that one over utilizes Mg in an attempt to heal, or whether patients with low Mg are prone to the above conditions is certainly not known for sure, but in my clinical experience many patients who had been found to have normal Mg levels prior to the onset of chronic painful conditions were found to have low levels after those chronic conditions surfaced. Some very interesting studies have revealed that patients with migraine headaches were found to have low levels of Mg in their brains compared to normal controls. The effectiveness of oral Mg as a preventative agent in menstrual migraine has also been documented.

“In addition to Mg deficiency being found in patients with MPS and FMS, low Mg levels have also been found in patients with systemic lupus erythematosus, eosinophilia-myalgia syndrome and inflammatory arthritis.”

Continued

Magnesium...

continued

Thus there is no doubt that patients with chronic, painful conditions should have their Mg levels checked and if the levels are below average they should receive Mg supplementation. I have observed that normalization of intracellular Mg levels with Mg therapy often results in dramatic reduction of pain and even an improvement in stamina with the patients reporting less fatigue and more energy.

At first, this may seem a bit surprising but isn't Mg a necessary co-factor in the production of ATP (adenosine triphosphate), a molecule necessary for muscular activity? Perhaps some patients have a relative deficiency of ATP (due in large part to inadequate amounts of intracellular Mg) which manifests itself as fatigue, decreased stamina, muscle weakness and ultimately deconditioning. If this is so, Mg supplementation (or, more correctly, Mg replacement) may be a crucial part of the treatment plan.

What is the general doctor “in the trenches” to do to optimize evaluation and treatment of such patients?

I would recommend obtaining a red blood cell Mg level as well as a plasma Mg level. These are good screening tests for Mg deficiency although, of course, not 100% sensitive. There does not appear to be a good correlation between serum and tissue Mg levels. Perhaps this is why there is not much interest in obtaining serum Mg levels despite the potential importance of the determination of the Mg status of patients. *Obtaining a red blood cell Mg level gives the clinician a better idea of total body stores compared to a serum level.* The average red blood cell Mg level tends to run somewhere between 5.2 and 5.5 mg/dl.

In several studies that I have done the average red blood cell Mg level was approximately 4.6 mg/dl for patients in chronic pain, typically those with MPS and/or FMS. This was highly statistically significantly different from controls. Once a Mg deficiency or below average Mg level is documented, it would certainly be worthwhile for the patient to receive Mg supplementation. However what is the best choice?

Oral Mg preparations tend to be irritating to the gastrointestinal tract.* Remember, Milk of Magnesia (a liquid Mg solution) is a laxative! However, there are over the counter sustained release preparations of Mg which may be quite effective assuming they are tolerated by the patient.

If there is frank Mg deficiency and the patient cannot tolerate oral supplements (not an unusual scenario with a FMS patient with irritable bowel syndrome), there are other ways that a patient may get Mg supplementation but the gastrointestinal tract would have to be bypassed. One method is to give a series of six intramuscular injections of Mg sulfate 1 gram (2 cc.) weekly for six weeks, wait a week or two and then

recheck the red blood cell Mg level. I would repeat the series until such time as the red blood cell Mg level is at least 5.5 mg/dl. These intramuscular injections can be irritating and somewhat painful so I typically mix the Mg preparation with about a 1/2 cc. to 1 cc. of 1% Xylocaine so that the shot is better tolerated.

However, some patients have such low levels of Mg that intravenous Mg supplementation may be required. This can easily be done either alone or in conjunction with intravenous vitamin therapy, assuming of course that the patient needs such treatment.

All in all, knowing the importance of Mg in maintaining a patient's pain threshold and realizing that many painful conditions are accompanied by rather low levels of Mg, it is certainly reasonable for every patient suffering from chronic pain to at least have an initial screening for their intracellular Mg status.

One great benefit that I have noted is that oftentimes pain medications and other medications which may not have worked particularly well prior to Mg supplementation tended to work a lot better if the patient's Mg levels had become normalized.

“I have observed that normalization of the intracellular Mg levels with Mg therapy often results in dramatic reduction of pain and even an improvement in stamina with the patients reporting less fatigue and more energy.”

Considering that Mg salts are easily obtained, relatively inexpensive, and are not pharmaceuticals (thus avoiding any drug side effects), there appears to be a tremendous advantage in considering this approach to pain management.

©Thomas Romano & TyH Publications (M. Squires)

With over 40 years in private practice, Dr. Romano has seen thousands of patients using the latest information and includes vitamin therapy. Dr. Romano firmly believes that no two patients are alike, no one formula fits all and treats every patient individually. Academically, he has numerous published medical articles and authored chapters in several medical textbooks. Dr. Romano is well known among his peers for his pioneering work in FMS. He served on the faculty of the American Academy of Pain Management, completed 15 years as chairman of the examination committee and served as president. He has been a columnist for the Journal of Musculoskeletal Pain for over 15 years and served as contributing editor.

*Editor Note: TyH's Fibro-Care™ is GI friendly with Albion's organic magnesium bisglycinate form.

For informational purposes only and not intended to diagnose, cure, treat or prevent any medical condition.

Originally published in *Health Points*. All rights reserved. For a free newsletter, email customerservice@e-tyh.com. For more information on TyH products, visit TyH Online at www.e-tyh.com or call 800-801-1406.