

THE AFIB REPORT
Your Premier Information Resource for Lone Atrial Fibrillation
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VIRTUAL LAF CONFERENCE

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SUBJECT: Calcium Magnesium Imbalances: Are There Consequences?

Some afibbers are now supplementing with 600-900 mg/day of elemental magnesium and have found that it significantly reduces the number of afib episodes. This is clearly good, but could there be a downside?

Most nutritionists recommend a calcium:magnesium ratio in the diet of about 2:1 or 3:1; most supplements contain calcium and magnesium in a 2:1 ratio. Does this mean that those supplementing with 600-900 mg/day of elemental magnesium should simultaneously supplement with 1200-1800 mg/day of elemental calcium? What are the consequences of not doing so?

The ratio of Ca to MG in the blood is about 2:1. What happens if this balance is disturbed by a massive influx of Mg? Does the body maintain homeostasis by pulling calcium out of the teeth and bones or does it just excrete the excess magnesium? There is evidence that an excess of magnesium can cause a calcium deficiency (hypocalcemia) as a result of the suppression of parathyroid hormone secretion by magnesium.

I believe the subject of calcium:magnesium balance (or imbalance) needs to be thoroughly discussed before we all charge down the "magnesium track".

The session is open for your input.

Hans

Hans, any idea what the average ratio of Ca:Mg is in the average diet?

It's my uneducated opinion that most diets contain higher ratios of Ca to Mg so such a large supplement of Ca may not be necessary to reach 2:1 or 3:1.

--

James D

James,

The latest "official" numbers I have for the Ca and Mg content of the average diet is 761 mg/day for calcium and 271 mg/day for magnesium providing a 2.8:1 ratio. Thus if you supplemented with 700 mg/day of Mg and wanted to maintain that ratio you would have to add 1960 mg/day of elemental calcium - or, if you went for an overall (diet +

supplement) 2:1 ratio you would need an extra 1200 mg/day of supplemental calcium (elemental).

Hans

For the record -

The magnesium glycinate supplement that I take includes calcium. The ratio is 2:1. I have never taken straight magnesium, nor could I find it at the health food store. Therefore, I don't think that I am in danger of hypokalemia. Of course, also eating foods rich in magnesium may tip the balance a bit.

Not to get off the subject, but is there an advised ratio of potassium to magnesium /calcium?

I will look up what Dr. Seelig says in "The Magnesium Factor" about the ratio of mg. to cal. and the consequences. Maybe you have already consulted this book?

Incidentally, she does not mention the glycinate form in her list of magnesium supplements. I have sent an email about this and waiting an answer.

Carol

According to Seelig, magnesium in the tissues can really only be determined with any accuracy by using NMR. There could be a huge deficit resulting from years of inadequate intake. It would take some time using just Mg supplements to diminish the deficit in the tissues.

She also states that as the deficit is reduced, bowel tolerance diminishes and that is how you know that it is time to cut back on the Mg.

John S.

"Of course, also eating foods rich in magnesium may tip the balance a bit. "

All foods that are rich in magnesium also have a calcium content too - so by eating natural foods the balance is already taken care of.

I for one find it hard to accept that the best balance for calcium and Mg is 3 to 1. This seems to be a number that has been taken from a high dairy eating population. I am of the opinion that a good balance is 1 to 1.5 to 1 and backed up by research from paleo research.

However, considering that many people are deficient in Mg - it may be the case that high Mg supplementation in the beginning works wonders until the balance has been passed and other problems arise.

Anyway here is some of the research I spoke of

<http://www.beyondveg.com/cordain-l/prot-calc/prot-calcium-loss-1a.shtml>

Imbalance in the calcium/magnesium ratio. Further, the calcium/magnesium ratio was about 1:1 in pre-agricultural diets, whereas in modern Western diets it can be as high as 4:1 [Varo 1974]. High dietary calcium can cause magnesium deficiencies, even when normal levels of magnesium are ingested [Evans and Weaver 1990]. Because supplemental magnesium appears to prevent bone fractures and can result in increased bone density [Sojka and Weaver 1995], it is possible that the high consumption of dairy products (which are high in calcium), at the expense of magnesium-rich fruits and vegetables, may unexpectedly result in reduced bone-mineral density.

A few details regarding the specific effects of magnesium on calcium retention are of particular interest here in light of

the aforementioned differences between Paleolithic diets compared to the typical modern Western diet. In pre-agricultural diets consisting of meats, fruits, vegetables, nuts, etc., the calcium (Ca) to magnesium (Mg) ratio is approximately 1:1. Because the Ca:Mg ratio of milk and dairy products is 12:1, the inclusion of milk and milk products into post-agricultural diets can raise the overall dietary Ca:Mg ratio to 3 to 4:1 [Varo 1974]. In animal models, it has been shown that rats develop clinical signs of magnesium deficiency after three weeks on high-calcium, normal-magnesium diets [Evans and Weaver 1990; Luft et al. 1988; Sellig et al. 1974].

Ironically, high-calcium diets may have a deleterious effect upon bone mineralization because of their hypomagnesian (magnesium-depleting) effect. Conversely, magnesium deficiency is a known cause of hypocalcemia (low calcium) [Rude et al. 1976]. (In other words, for either calcium or magnesium utilization to be optimum, both must be in balance with each other.) The resultant hypocalcemia stems from parathyroid hormone (PTH) unresponsiveness [Rude et al. 1978], since the effects of PTH are magnesium-dependent [Estep et al. 1969]. Gross, clinical hypocalcemia and hypomagnesemia tend not to occur in otherwise healthy post-menopausal, osteoporotic women; however, serum measures (blood levels) of magnesium concentrations are not good indicators of magnesium status, and subjects with magnesium deficiencies (as measured intracellularly) frequently maintain normal serum magnesium levels [Ryzen et al. 1990].

Consequently, over a lifetime, a marginal or reduced intracellular magnesium level may adversely influence PTH responsivity which in turn likely compromises bone-mineral content. A recent review article [Sojka and Weaver 1995] showed that post-menopausal women given magnesium supplements over a two-year period had a significant increase in their bone-mineral density, whereas meta-analyses of calcium supplementation and bone-mineral density have been equivocal.

Fran

Fran's contribution seems particularly useful to me. I would only add that to talk about "average" calcium or magnesium intake is meaningless (or foolish).

If one has a problem with or a question about one's calcium and magnesium intake, it is not too difficult to estimate one's intake by using a diet journal and a book on food composition. I have an old USDA publication called Composition of Foods which lists food components based on weights per pound of food and on percentages (calculated by using grams of components per 100 grams of a particular food).

Calcium and magnesium intake must vary very widely among individuals, depending on diet. Some diets in the U.S. are very good and some are remarkably poor. An average cannot be predictive of one individual's nutritional status.

Michael

Fran,

Excellent information as always and interesting reference. Assuming that most people are not going to accurately calculate their Ca and Mg intake over a representative 3-day period would it not be prudent and preferable to say that if they supplement with Mg (glycinate or chelated) then they should also supplement with an equal amount of Ca (elemental) in order not to upset the natural balance. This of course becomes much less important if the diet includes a lot of dairy products. Chelated magnesium is available without calcium (at least in Canada) so I believe a precaution would be in order when recommending large scale (600-900 mg/day elemental) supplementation with magnesium for extended periods of time. What do you think?

As you pointed out the Paleo diet probably had a Ca: Mg ratio of around 1:1 and if you leave dairy products out of the diet that is probably fairly close to what an average (sorry Michael :-)) diet would produce today. Here are some ratios of common foods:

Milk - 9:1

Yogurt - 10:1

Butter - 12:1
Cheese - 24:1

Sardines - 9:1
Soy protein - 5:1
Steak (Beef) - 0.2:1
Chicken - 0.5:1
Turkey - 1:1
Salmon - 0.4:1
Haddock - 0.8:1
Apple - 1.4:1
Almonds - 0.9:1
Tomatoes - 0.5:1
Potatoes - 0.4:1
Oatmeal - 0.4:1
Bananas - 0.2:1

Michael,

I partially agree with you that talking about an average daily Ca and Mg intake is not very helpful, but it does give some idea and in dealing with large amounts of data it is about the only way to get a handle on things. Interestingly enough, the average daily intake of Mg and Ca among a sample of 60 afibbers whose diet I roughly analyzed in 2001 is very similar to the officially quoted numbers, ie. deficient in both. Fran's diet is highly unusual in that it is more than fully replete in both Ca and Mg at a ratio of about 1.6:1 (without any supplementation).

There is an excellent food composition data table published by the US Department of Agriculture at:

www.nal.usda.gov/fnic/foodcomp/Data/

But be warned, to keep track of your food intake for three days and then calculate the composition is a massive job - a spreadsheet may help. Then again, perhaps there is already software out there already that will greatly facilitate the task.

Hans

I agree with you Hans. Unless the person has a high dairy diet (which will balance the Mg supplement to some degree) I think long term supplementation with only Mg will ultimately bring on other health concerns. As will a diet high in dairy. However, initially Mg might be of some help, but at some point, and I don't know how the person would know, it would be best to balance it out with calcium.

Another factor should be taken into consideration with calcium and Mg balance. That is phytates found commonly in all grains.

"The major function of phytic acid is as an "anti-nutrient". Phytates impair protein digestion by interaction with our digestive enzymes to form insoluble complexes that are less likely to be broken down by the very essential proteolytic (protein splitting) enzymes than would be ordinary protein in either an acid or (usually) alkaline medium. Phytic acid chelates (grabs onto) and binds with zinc, calcium, iron, magnesium, manganese and copper - all essential elements to the function of the human body."

With this as evidence, it makes me think that anyone taking a calcium and or magnesium supplement will be at risk for excreting and peeing a very expensive cocktail.

Another thing with grain consumption is the acid base which will lead to leaching of C and Mg from the bones.

"So if you are eating grains regularly your net acid load will push your body toward acidity, and your body will have to

compensate for this acidity to maintain balance. One of the most common complications of this compensation is osteoporosis; your body will pluck out the calcium and magnesium ions stored in your bone to neutralize the excess acidity in your diet."

<http://www.health-care.au.com/Baldiet.htm>

I wish there was an easier way to balance the body without having to research how many minerals you actually get from certain food items or how much of each to take - whilst taking into consideration that some of the food choices actually inhibit its absorption.

That is why I follow this diet. I know what I am getting is the best with the knowledge I have available. It is my easy way out.

If anyone wants an easier way of finding out the vitamin and mineral content of food there is a web page at

<http://www.fitday.com>

where you can put in your daily choice of food and by hitting another button it will give a breakdown on the nutritional content also drawing attention to what you are lacking. It takes about half an hour to do as you wade through the food choices. But it seems easier than working it all out on a database.

Fran

It just occurred to me that those who have managed to stop AF through eliminating dairy, may have done it by normalising the ratio of Ca and Mg. Although the opioid peptides won't do any favours for some either.

Is Mary or Angus reading (both have stopped AF through dairy elimination) and what is your take?

Also I wonder what the AF rate is in Japan. Japan is not a dairy consuming society and would therefore have a better balance of Ca and Mg. But they do eat a lot of MSG. But maybe the Mg levels maintain the glutamate toxicity along with the high taurine in their diets. Remember you can consume the RDA and more of Mg, but if Ca intake does not balance and (who knows how much higher) you will always be low on Mg. Is 3.1 too high in our osteoporosis-laden societies?

Fran

Fellow fibbers,

I don't have anything technical to contribute on the topic. However, I can contribute some lab values on K, Mg and Ca after three solid months of 800 mg/d aqueous Mg, which was preceded by about nine months of similar Mg intake p.o., preceded by three months of similar aqueous Mg intake.

During this period my serum Mg on three measurements ranged from 1.9 to 2.2 mg/dL. Ironically the lowest reading was today at 1.9 (reference range is 1.8-2.4).

During this same period serum Ca remained the same at 9.2 mg/dL (ref range 8.6-10.6).

And finally serum K went from 4.8/4.9 mmoles/L (12/02, 1/03) to 4.1 today (ref range 3.5-5.1). I'd just terminated another AF episode an hour earlier, so this latter value had benefit of a number of hours of ANP to help improve it to this level. The episode came in the night (caused in part by increased vagal tone no doubt) so I don't know how many hours. But the low K must have had a some role in triggering the episode.

So, on an empirical basis I'd say that, at least for me, daily Mg intake in the 800+mg/d range doesn't seem to negatively impact serum Ca. Heck, it hasn't even helped my serum Mg. Admittedly the only meaningful value is the

intracellular level, but it is a bit distressing nonetheless.

Sheepishly I must admit that I don't usually add salt to my waller water (aqueous Mg), only the squeeze of a quarter lemon to neutralize it. The rationale of the latter is to neutralize the ww (pH around 8.3) and prevent any possible hypokalemic alkalosis. I'd been noticing some recent orthostatic hypotension and began to think that I'd been pissing away my Na with all that hydration. Na is the main intravascular cation (K is the main intracellular cation) and is spilled in the urine with excess water intake.

In my effort to minimize secretion of aldosterone due to dehydration I blundered into stimulating this via hyponatremia (low Na), as suggested by today's level of 137 mmoles/L (reference range 136-145).

Bowed but not broken. Thank God for Norpace.

PC

In the recently published book *The Magnesium Factor* (Mildred Seelig, MD, MPH, and Andrea Rosanoff, PhD) there is a graph titled *Ischemic Heart Disease Rates Correlated with Dietary Calcium/Magnesium Ratios*, adapted from *Advanced Cardiology*, 25 [1978]: 9-24. For the seven countries plotted, Finland had the highest rate of IHD, with a dietary Ca/Mg ratio almost 4:1. USA is next highest with a ratio 3+:1. Japan had the very lowest rate, about 1/10th that of Finland, with a Ca/Mg ratio just above 1:1.

Erling

From *Preventing and Reversing Osteoporosis* (1994, Alan Gaby, MD, MS biochemistry): "Perhaps the most significant concern about taking too much calcium is that it might lead to magnesium deficiency..... magnesium deficiency appears to be one of the most widespread and clinically significant nutritional problems in the U.S.There are many different opinions among nutrition-oriented practitioners concerning the proper ratio of calcium to magnesium. The traditional ratio is 2 mg of calcium for every 1 mg of magnesium. Some doctors, however, are of the opinion that these minerals should be provided in equal amounts. Other practitioners actually recommend a reversal of the ratio: 2 mg of magnesium for every 1 mg of calcium." Dr. Gaby goes on to say, "I have seen an occasional patient ... who clearly responded better to 800 mg of magnesium and 400 mg of calcium than to the reverse ratio."

Erling

I just had a look at a packet of bisodol (still always have 'em around although I don't 'do' many these days) and each tablet contains 522mg of calcium carbonate (by far the largest ingredient). Now I guzzled 10-30 of those little fellas per day for years..... that's a LOT of calcium! AND I drank LOADS of milk thinking it would sooth my angry stomach (it didn't actually - it made it worse - as I realised one I stopped drinking it and felt much better) so that's a load MORE calcium. When I had mag tests done almost a year ago, my red blood cell mag tested out at the very bottom of reference range, and my mag urine retention test indicated a mag deficiency. (Strangely enough, my red blood cell calcium was also bottom of reference range. Wierd.....) However, as Erling quotes in his above post, Ca depletes Mag, and I wonder if lots of people here with GERD are contributing significantly to developing AF as a result of consuming lots of Ca-rich indigestion/heartburn remedies. OK, so the tests might not always back this up (eg my RBC Ca being low as stated above), but truly complex and intricate biochemical systems are involved here, and a few crude/simple tests are almost certainly NOT going to tell the whole story or even a significant part of it.

Mike F.

This is very interesting. For years prior to AF (first known occurrence - summer 1999 and when it became noticeably more frequent - summer of 2002) I consumed several Tums a day (600 mg ca each). In about 1997 I started drinking lattes -- 1 a week. By the summer of 1999 I was drinking 1 grande latte each morning and by 2001/2002 I was drinking

two grande lattes each day -- with whole milk. My AF became more frequent last summer when I started jogging.

I have to think the balance had shifted significantly.

Kent S

Good morning to all,

Well, I'm back from AZ and trying to catch up on all that was missed. I'll do some studying, but it would be interesting to know what the chimpanzee in the wild eats, in regards to balances of Ca/Mg. I think we could gain our answers from that. I also believe that sea water analysis can give us answers, as well. The cow or horse, has extremely large bones and eats various grasses. What is the content of what they eat in the wild?

I found the following link that I had saved to favorites of interest: Here's a bit:

Can You Hang on to Magnesium?

For magnesium to get into cells it requires thiamine (vitamin B1). Try thiamine 100mgs daily – if you are already taking some in a multivitamin preparation, then take the B1 at 100mg a day.

For magnesium to be retained inside cells you need good antioxidant status. Selenium is the main mineral antioxidant. Food tables are unreliable because food content is dependent on soil levels of selenium. Assuming good soil levels, (which is a big assumption), foods rich in selenium include wholegrains, organ meats, butter, garlic and onion. Seafoods are rich in selenium and obviously not dependent on soil levels.

Boron is necessary for normal calcium and magnesium metabolism. I also find boron very useful for arthritis, perhaps because of its effect on calcium and magnesium. For arthritis you need 9mgs a day for 3 months, then reduce to a maintenance dose of 3-6mgs daily.

At present the only way I know how to ascertain whether or not magnesium levels are replete is to measure a red cell magnesium.

<http://www.immunesupport.com/library/showarticle.cfm/id/2892>

Richard

Boron may not be advantageous for Mg. as stated above, or the site above could be altogether wrong.

Boron and its involvement with attention deficit disorder is a concept that appears not to have been considered before. Boron, phenols and/or histamine may possibly cause thinning of the middle part of the brain where nerve fibres cross over. This part of the brain is called the corpus callosum. Damage to this area (prior to birth) causes learning disabilities. Boron increases copper in the body. High copper levels cause reductions in thiamine (vitamin B1). Lack of thiamine causes many problems associated with ADD. A lack of this vitamin reduces oxygen supply to the brain. Low cholinesterase levels are associated with a thiamine deficiency. Lack of thiamine may indirectly lower the neurotransmitter dopamine. There are below normal dopamine levels in hyperactive children. Low cholinesterase levels are sometimes associated with asthma.

Boron interferes with the metabolism of phenols. Phenylalanine (a phenol) is able to reduce serotonin levels. Serotonin levels are reduced in children with ADD. The medication Ritalin used in the treatment of ADD inhibits the metabolism of coumarins (phenols). Low and high histamine levels are also discussed.

Boron reduces pyridoxine (vitamin B6) levels in the body. The importance of this occurrence to the reduction of the symptoms of ADD is covered throughout the book. A brief description of how boron interacts with body nutrients is discussed. Boron has the ability to cause an excess or depletion of vital substances. This causes a spin off in alteration of other nutrients. For example, boron has an indirect effect of reducing zinc levels in the body. Boron increases

calcium retention in the body. Calcium reduces zinc. As outlined in this book, boron plays a role in excreting pyridoxine (vitamin B6) from the body. Vitamin B6 is necessary for zinc absorption. Vitamin B6 and zinc play major roles in neurotransmitter function.

Neurotransmitters are chemicals that relay messages between nerves in the body. Some neurotransmitters have a relaxing effect whilst others have a stimulatory effect. An imbalance of neurotransmitters (as discussed throughout this book) may cause symptoms of ADHD/ADD. Nausea during pregnancy is associated with a deficiency of vitamin B6 (pyridoxine) and zinc. Acute toxicity of boron presents with nausea, vomiting, lethargy, dermatitis and diarrhoea.

ADD is possibly linked to the food the mother consumed during pregnancy. A diet (during pregnancy) giving a high intake of boron containing foods together with a high intake of calcium containing foods may be a contributing factor to the ADD symptoms of the child. Water supplies containing high levels of calcium and/or copper reduce zinc absorption in the body. Boron is found in apples, pears, grapes, nuts, leafy green vegetables and legumes.

My levels of copper were high, and zinc was low. My hair analysis of Boron was fairly normal, but just a tad to the low side. Hmmmmmm????? So is my problem more that I need B1 to absorb the Mg. Questions to ask Dr. Gersten.

Richard

There is obviously much more to the subject of ones intake of calcium/magnesium than just the number of milligrams of each. Ron Rosedale, MD, made the following statements in his extremely important seminar presentation, *Insulin and Its Metabolic Effects*. In my humble (?)opinion, this lengthy and loaded article should be read, re-read, and then read again with highlighter in hand for frequent reference. It may be found at several places on the Internet -- here are two: <http://www.dfhi.com/interviews/rosedale.htm> and <http://www.mercola.com/2001/jul/14/insulin.htm>

"A less known fact is that insulin also stores magnesium. But if your cells become resistant to insulin, you can't store magnesium so you lose it through urination. Intracellular magnesium relaxes muscles. What happens when you can't store magnesium because the cell is resistant? You lose magnesium and your blood vessels constrict. This causes an increase in blood pressure and a reduction in energy since intracellular magnesium is required for all energy producing reactions that take place in the cell. But most importantly, magnesium is also necessary for the action of insulin and the manufacture of insulin. When you raise your insulin, you lose magnesium, and the cells become even more insulin resistant. Blood vessels constrict and glucose and insulin can't get to the tissues, which makes them more insulin resistant, so the insulin levels go up and you lose more magnesium. This is the vicious cycle that begins even before you were born."

"You take a bunch of calcium. The medical profession just assumes that it has a homing device and it knows to go into your bone. What happens if you have high levels of insulin and you take a bunch of calcium? Number one, most of it is just going to go out in your urine. You would be lucky if that were the case because that part that doesn't does not have the instructions to go to your bone because the anabolic hormones aren't working. This is first of all because of insulin, then because of the IGFs from growth hormone, also testosterone and progesterone. They are all controlled by insulin and when they are insulin resistant they can't listen to any of the anabolic hormones. Your body doesn't know how to build tissue anymore so while some of the calcium may end up in your bone, a good deal of it will end up everywhere else--leading to metastatic calcifications, including in your arteries."

Could it be that calcification of cardiac and PV tissues play a significant role in AF? Coupled with lower than optimal intracellular magnesium/high IC calcium? Could high insulin and insulin resistance therefore be a root cause of AF? After all, a majority of people in the U.S. eat a very high carbohydrate diet, the base of the infamous FDA sanctioned "food pyramid", and a high carbohydrate diet results in high insulin, which in turn leads to insulin resistance.

Perhaps Dr. Rosedale was not just being witty, or cynical, when he said this:

"Why are we all eating carbohydrates? To keep the rate of aging up, we don't want to pay social security to everyone."

Erling

Erling,

Your speculated insulin connection to AF is most provocative. However, Hans' survey showed that diabetics were very much absent from the lone afibbing ranks and hypoglycemia was over represented. The latter, according to the literature, is a function of hypersensitivity (v. resistance) to insulin and not an excess of it. This probably only means that the connection between the two is more covert.

Also, I think Dr. Rosedale's statement "When you raise your insulin, you lose magnesium" after stating that "insulin also stores magnesium" is a little ambiguous. What he means is that insulin resistance, which leads to increased insulin levels, causes urinary Mg wasting.

Insulin resistance at the cellular level appears to be due to defective tyrosine-kinase activity (requires Mg) at the insulin receptors and increased intracellular calcium.

The below article reiterates much of what Dr. Rosedale has so articulately stated, especially wrt Mg.

Hypertension, diabetes mellitus and insulin resistance: the role of intracellular magnesium
Paolisso G, et al. Am J Hypertens 1997 Mar 10(3):368-370
<http://www.spectracell.com/diabetesmellius.html>

Thank you for an excellent albeit quite long bookmark.

PC

PC,

Thanks for clarifying Dr. Rosedale's somewhat ambiguous statement. Thanks also for the URL - I'll be reading it.

Some other provocative statements in his quite long presentation -- please comment:

"Insulin resistance is associated with the hyperinsulinemia that produces all of the so-called chronic diseases of aging, or at least contributes to them. As far as we know in many venues of science, this is the main cause of aging in all life. Insulin is that important. So controlling insulin sensitivity is extremely important." (Doesn't most AF come with age? -- not "advanced" age, but isn't it true that most people with AF used to not have AF? I had no arrhythmia until age 65, by which time I had 65 years of high carb eating behind me. Might AF at times be considered a "chronic disease of aging"?)

"The way we age is we turn rancid and carmelize" (Oxidized fats and glycated proteins - A.G.E.s, advanced glycated end-products. Could AGEs in cardiac or PV tissues contribute to AF?)

"One of the strongest stimulants of the sympathetic nervous system is a high level of insulin."

"The objective is to try to get the insulin level just as low as you possibly can. There is no limit. They classify diabetes now as a fasting blood sugar of 126 or higher. A few months ago it might have been 140. It is just an arbitrary number. Does that mean that someone with a blood sugar of 125 is non-diabetic and fine? If you have a blood sugar of 125 you are worse than if you have a blood sugar of 124 -- same with insulin: if you have a fasting insulin of 10, you are worse off than if you had an insulin of 9 -- you want to get it just as low as you can."

"The problem is that medicine really isn't a science; it is a business (but I don't want to get into that -- we could talk for hours)."

Erling

Erling,

Hope you're doing well. Next year I plan to retire and relocate to HI (do the hula fulltime). I'm not a skier so Oregon is not my cup of tea.

The low caloric approach to longevity has been around awhile. Dr. Roy Wolford at UCLA has been a real pioneer in this area. He even spent some time in the biosphere. I think he now has ALS (Lou Gehrig Disease). Even the Okinawans can run but can't hide.

I see the more recent emphasis on insulin as the main player in aging as just a variation on this theme. It certainly makes a great deal of sense.

Regarding AF and whether or not it is an age related phenomenon, I believe the answer is a very emphatic yes and no. Clearly there are two types, given the distinct age and gender related proclivities between VMAF and AMAF. Perhaps AMAF is a gradual buildup in cardiac fibrosis in part genetically determined. Perhaps VMAF is partly due to a functional shortage of Mg (due to more than just an age related drop in GI absorption).

But then again perhaps insulin does play a role in the development of AF. Its increasing prevalence somewhat parallels the obesity epidemic. It's my sense that LAF is less common in the Third World where people are still skinny. But why aren't more LAFers diabetic?

PC

Have any epidemiological studies of AF been done? Is AF on the increase and where is it most and least prevalent?

Carol

The insulin AF theory is one that I feel has to have a connection. But not insulin resistance. I am not very knowledgeable in this area. But because there is a connection between reactive hypoglycemia (? too much insulin clearing blood sugar levels too quickly) - it seems to me that AF may be the other end of the diabetic spectrum. I have always thought of reactive hypoglycemia as being the total opposite of diabetes. And of course by keeping blood sugars low through diet then insulin will not be stimulated so much.

Just my thoughts and experience

Fran

I'm not sure that making comparisons with cows or horses is valid. They are herbivores and we are omnivores.

Did you say that you had read the recently published The Magnesium Factor by Ruth Seelig, MD. ? It should answer lots of questions being brought up in this conference room.

Carol

Carol,

Why I'm making a connection to various animal species, it is to find out what they eat, what its contents are, and the balances of Ca. to Mg. There seems to be various opinions on what ratios of Ca. to Mg. should be, so I tend to believe that when I look to the animal kingdom, I find more honest answers. Alfalfa has about a 1.5:1 ratio in favor of Ca. and

red clover is much higher, but I lost my saved site showing this fact. I'm trying to compile a list of various sources of foods eaten in the wild to see how Ca and Mg weigh out with each other. Even though horses or cows are omnivores, they still have bones and need a lot of the same nutrients that we do. I would prefer to know more about the chimp's diet, but I don't think I'm going to find nutritional listings for termites, however they do dig the marrow out of bones, and it would be interesting to know the exact contents of that.

I was also reading that if one takes larger doses of Mg., one will know when they have reached their saturation over several months because they will begin to get diarrhea, as they possibly did in the beginning, and then should cut back to approx. 400mg. per day.

Richard

Hi Fran I'm here in sprit as always, and to be difficult I'm sticking to milk proteins as the problem. There is some world milk consumption data at www.a2corporation.com

Angus

This might interest you Mike and Kent

Antacid pills 'trigger allergies'

<http://news.bbc.co.uk/2/hi/health/3148702.stm>

Fran

OK Hans, I will grant you that calculations of average intakes of minerals may be useful to identify intakes of individuals.

Where an averaging approach significantly must fail is in the determination of the mineral nutrient requirements of individuals, particularly those with mineral-insufficiency symptoms such as afib.

Further, my guess is that the determinants of mineral nutrient requirements are probably behavioural rather than purely (that is without environmental effects) physiological.

From nine months of reading postings on this website, I would guess that the overwhelming majority of people who contribute here very likely have one or more of these characteristics: they are worriers; they obsess about things; they suffer from an excess of stress; they have emotional "issues" (I prefer not to say "problems"); they are what are often referred to as "type A" personalities--they work hard, play hard, keep themselves as busy as possible. And so on (there are other categories which pertain).

The bottom line is that high levels of stress, worry, activity, emotional-physiological arousal or whatever you want to call such states, are all very demanding of our bodies' resources of minerals.

In my opinion, and it is not just mine, afib is largely a stress-related disorder. There may be multiple causes in some cases. Along with taking mineral supplements, drinking water and eating well, afibbers probably should take a careful look at how much of the time they are "all wound up" or worried or very busily checking items off their "to do" lists. Some people are simply not aware of their states of arousal and a few sessions with a psychologist might be very helpful for them.

Michael

Michael,

Stress is indeed an important factor but I wouldn't be too quick to embrace the "all would up" type of stress as being key. In F. Batmanghelidj's book "Your Bodies Many Cries for Water", he considers dehydration as the number one stressor by far. That's pretty astounding.

Kent S

Kent--

I think your comment is right on the ball. Many of us do not drink enough water; much of the water we do drink does not contain minerals we need.

My point, however, was not that we have too many physical stressors (dehydration being a case of inadequate supply of a physical resource, thus a stress). My point is that the way we behave, even our states of mind, has physical consequences. When we are "wound up" all the time, constantly busy, we put demands on our mineral nutrients which may be difficult for some of us to meet. Thus we experience symptoms of mineral deficiencies such as afib.

I do not mean to imply that there may not be multiple causes of afib, simply that the mineral deficiency explanation may apply in ways that we have not fully explored thus far.

Michael

Carol,

I don't think anyone would question that. The trick is to demonstrate how much nutritional shortfall impacts LAF. We all know that this same diet has accelerated cardiac disease, fibrosis, etc., and this then is no longer LAF but just AF, even though it is often difficult to document cardiac disease by lab tests, treadmills, X-rays, etc. How much is due to aging and how much is due to bad diet, little exercise, etc. Furthermore, is it a specific something that is low or missing or just a bad lifestyle in general. This, of course, is further complicated by the genetic predisposition in some.

Way too complex for me to sort out.

PC

Carol--

I don't think people's diets are necessarily any poorer than they have been for 50 years. What I do suspect is that people's lives are considerably more stressful than lives have ever been before in history.

These days, families typically have two working parents, both with commutes. Middle-class children's lives are scheduled to the minute by their soccer-moms. Poorer kids are even worse off, if for different reasons. Half the people racing along the freeway are busily talking on their cell-phones, as are half the people walking down the sidewalks, talking and bumping into the other half of the people.

With the increase in stress, there is an increased demand for nutrients that our diets cannot provide.

Of course there is also the fact in our society, emotional health is not considered to be an important issue. The mind-body connection has not yet made it to the front page of the New York Times or the daily edition of "All Things Considered" on NPR. So we ignore it all and suffer the consequences.

I wonder if afib rates are increasing in European countries such as Germany or Italy where people generally take a lot more time off than we do in these vacation-deprived United States of Anxiety.

Michael

Good to hear from you again. By milk proteins do you mean the casein? And is it the casein that creates the opioid peptides? I know now that I am casein intolerant, and that it did contribute towards PACs etc. But it was the elimination of MSG that stopped my AF. I was left with runs of ectopics and it was through dairy and grain elimination that I stopped the ectopics.

Do you eat any processed foods? Sorry for prying but I am interested in how dis/similar we all are. And trying to find a common denominator. I know that Mg K and Na are a common denominator for us all as Mg K and Na are used up badly during stress. But stress comes for a multitude of reasons. Is my casein intolerance milder than others as it was missed for so long, that was expounded by MSG use and other environmental and physical stresses.

Don't know, but thinking out loud.

Fran

Fran,

My diet didn't change much when I quit dairy, being rural – meat, veg, bread, beer, coffee is about it. I think being dairy free has improved my tolerance to everything else I was never intolerant of it as such. The A2 website explains how the opioid peptide comes about, there's pictures and everything.

Angus

Yes, I agree. Anxiety & stress probably feeds/sets the state for afib.

In her recent book, *The Magnesium Factor*, Ruth Seelig, M.D. stresses (!) that stress depletes the body of magnesium.

I agree that we afibbers tend to be Type A's. But, then again, running around in circles trying to be our own doctors undoubtedly adds to our stress considerably and contributes to the obsessive side of ourselves shown on the BB.

I also wonder if stress causes spasms of the pulmonary vein, which irritates the fibrosis and triggers off afib. (this happens with blood vessels during migraine headaches and it happens in migraines during periods of rest after stress, which is similar to afib) I have also wondered if stress causes the release of chemicals into the blood stream, that irritate either the PV or the extra tissue/nerve in the pulmonary vein. (This chemical release expands and contracts blood vessels during migraines) My cardio once remarked to me in passing that afib was like a "migraine of the heart." I wasn't quite sure what he meant by that at the time, but now I am pondering that statement again.

Fran recently posted an abstract of the results of autopsies of pulmonary veins in twenty individuals. If I interpreted the results correctly, it showed that 89% of the twenty people had the extra tissue and fibrous tissue protruding into the pulmonary vein. Only six of the twenty, who were afibbers, had significantly greater findings. Therefore, there must be many people with this PV condition walking around, who do not have afib.

Then, one has to ask the question what is it that affects the PV fibrous tissue/extra tissue in some individuals and not others? Stress and magnesium deficiency, poor diet, food intolerances, blood sugar problems, etc. or a combination of these factors?

In my mind, stress would certainly be a major factor. Of course, poor diet is a stressor in itself.

Carol

Italians laid back and stress free!! What with all the Latin temperament. Dream on, maybe in the rural areas a bit, but not much.

Some of the best ablation research and Dr's come from Italy. Without patients to treat there would not be the class research going on. Here are a few abstracts about AF from Italian sources. Lone AF is included in the first abstract, and the incidence of heart disease doesn't say much for the heart healthy Mediterranean diet.

<http://heart.bmjournals.com/cgi/content/abstract/82/4/494>

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11602545&dopt=Abstract

http://www.prdomain.com/companies/n/novartis/news_releases/200309sep/pr_novartis_20030902.htm

Fran

Carol,

I read so many things that I don't post or save, otherwise I would be posting all the time, and my favorite list would be pushing a thousand. However, today in reading, and I think it was at mgwater.com, it was said that lack of magnesium causes an extra release of serotonin that makes the blood vessels constrict, which can cause migraines. After looking at the food values of several items, that was posted above, I am beginning to believe, more than ever, that potassium and magnesium should be much more prevalent in our diets than we think. Eggs, and their contents, are a simulation of what is needed before birth, and milk and its contents, are what is needed when we are young and growing. When we are weaned and start to eat solid foods, then these foods, and their contents, are more representative of what our bodies need. Therefore the push for calcium is a fallacy, based on food's contents, because Mg. is almost always higher. Was advertising for milk products, with its calcium content, just another business ploy? Got Milk? I certainly don't see any adult animals suckling from other adult milking animals, only the babies. Now what's most confusing to me is sodium vs. potassium. Because potassium is more intracellular and much more abundant in foods than sodium, do the so-called experts really know just how much potassium we should have? Because we have been using salt since the beginning of having these testings available, maybe the tests are based on false readings. The egg, and baby, within the amniotic fluid, would maybe need more sodium, based on what the nutritive contents in the egg is, but it sure would seem to me, that we need more potassium than sodium, when eating solid foods, because the contents tell the true story.

Richard

I have to disagree Michael about diet not being any poorer than it was 50 years ago. It was only in the 1970's that big time chemicals were added to foods. IF the records are correct they have been doubled every year since the 1940's until the introduction of the fast food chains and TV dinners etc.

Take bread for example. One might think all they are eating is flour, salt, water yeast, and a bit of sugar. But you look at the ingredients on a loaf of bread today. I'll quote you what's on a loaf my husband bought - And this is a tame one.

Wheat flour, water, yeast, salt, soya flour, vegetable fat, preservatives (calcium propionate, potassium sorbate) vinegar, emulsifiers (mono- and diglycerides of fatty acids, mono- and diacetyl tataric acid esters of mono- and diglycerides of fatty Acids), Flour treatment agent (ascorbic acid).

Now not only does the body have to struggle with a simple carb snack, it also has to struggle with all the additives and trans-fatty acids. These additives cause just as much stress and oxidation on the body, and in my opinion more than a tight work schedule with pressure from the boss and kids that have to be fitted in. In fact all the additives stress the

body before the work day begins. And by the time you go to bed you are toxic if you eat what is known as Standard American Diet (SAD).

Add MSG, artificial sweetener, nitrites, phosphates etc into the equation of the typical SAD diet and you not only have the ingredients that are neurotoxic and excitory, but you also have flavour that means you don't need so many high quality ingredients. Where 100 chickens along with 50lb of vegetables would once upon a time have been used to make a vat of soup, MSG means you only need 1 chicken (maybe irradiated) and a couple of pounds of veggies that could not be sold fresh). Fry this up in vegetable oil and the trans-fatty acids appear. Added corn starch will thicken it, Guar gum will make the soup an even consistency, preservatives will ensure it can stay on the shelves for a few years, leaching from these chemicals coated on the tin or container - and the company will make loads of money. But you will get sicker and malnourished.

The reason. Your body has had a pile of chemicals and no nutrients with which to neutralize the chemicals or thrive on. You end up wired and cannot face any demands that might be made on you without getting more symptoms.

50 years ago the meat you bought was not pumped full of routine antibiotics, routine treatments of organo phosphates for blow fly and growth hormones were just being thought of. They were grown for quality meat, not fast grown like the 6 week old chickens you buy in a supermarket today. Things were not perfect then either. But forcing nature with chemicals is going from bad to worse. The animals we eat have no natural antibodies, are sick, and would never survive to adulthood. How can people thrive or try to get well eating sick food.

I won't start on forcegrown fruit and veggies. But I hope you get my drift. You need a lot of Mg and other things to cope with this onslaught.

Fran

Very well said, Fran, and I must agree. No disrespect, Michael, but we have become a chemically induced society, and due to the body's reactions of these chemicals and lack of nutrients, we become stressed. When we eat the chemically induced meat and drink our chemical additive water, why wouldn't we be stressed. The neurotransmitters that make up our thoughts, feelings, and emotions, aren't receiving the ionic magnesium from a good, clean glass of water. Their not getting the vitamins needed as cofactors from the vegetables, due to insufficient soils and sitting in a cooler, pesticide laden, awaiting transport. And then maybe we're not even getting the correct balances of aminos in the first place, because the cow or chicken was using up its sulfur amino, methionine, to rid its own self of disease. The fish uses its cysteine, which comes from methionine, to attach to mercury. That helps us, in a sense, because the cysteine that is attached to mercury carries through our bodies, but what isn't good, is that we aren't getting the methionine to fight off our own ailments, coupled with the mercury that isn't attached to cysteine. Then, because our food is so destroyed by man, we must take supplements that are synthetically made.

I completely believe, that under normal circumstances, we can bring balance back into our lives, with much less stress, if we are willing to commit, as Fran does, but it takes much work and commitment on our own part. When we demand organic, and only buy organic, then companies will start listening, because we will be hitting them where it hurts: their pocketbook. There was so much demand in my community, one of our groceries is changing to an organic grocery store, as I write. I go to buy the organic meat, and it is sold out. People are fed up, and want changes. I have started supporting my farmers, when produce is in season, because my life depends on it. The ultimate stress to me is to be lying in a hospital bed dying, because I chose not to do something about my health that didn't involve chemicals. The ads on TV are brainwashing our children into thinking, that if they have a problem, then they can just go to their local doctor and get a prescription. Drugs for depression, heart, indigestion, PMS, anxiety, cholesterol, weight loss, and blah, blah, blah. What is the matter with these people??!! Don't they have families??!! Don't they have a conscience??!! Or maybe their brains are being chemically induced!!!

Richard

Well and humorously said, Michael

I have been saying loud and clear on this BB for a long time that immediate stress and early emotional stress are probably major players in afib.

But, I have to repeat that I believe there has been a steady decline in eating habits over the last fifty years that coincides with the introduction and increase of supermarket manufactured food, most restaurant food, fast food and less time being spent preparing food from scratch in the kitchen (like my mother and grandmother did and I did for my children). This is, of course, inseparable from the social condition of an increasingly fast pace of living. The two go hand - in - hand. We are going to be a nation of burn outs. (I wonder how much afib there is in countries like Italy and Greece, which seem to have a well balanced approach to life.

Carol

I took a quick sampling of various foods, and am a bit confused about sodium and potassium. There always seems to be more K than Na, but our bodies supposedly have much higher levels of sodium. So, back in Paleo times, how would one get sodium, in the body ratios we supposedly have, if we lived inland, without access to salt. It seems that Mg. is more prevalent than Ca., as well. Here's the sampling:

Per 100 grams

Cod - Ca. 14 Mg. 42 K 244 Na 78
Halibut - Ca. 60 Mg. 107 K 576 Na 69
Coho Salmon - Ca. 46 Mg. 35 K 455 Na 53
Shark raw - Ca. 34 Mg. 49 K 160 Na 79
Kiwi - Ca. 46 Mg. 53 K 588 Na 9
Almonds - Ca. 378 Mg. 420 K 1039 Na 16
Asparagus - Ca. 28 Mg. 24 K 366 Na 3
Beets - Ca. 22 Mg. 31 K 442 Na 106
Carrots - Ca. 35 Mg. 19 K 413 Na 45
Artichokes - Ca. 56 Mg. 77 K 474 Na 120
Brussel Sprouts - Ca. 37 Mg. 20 K 342 Na 22
Chuck Roast raw - Ca. 10 Mg. 17 K 268 Na 67
Chuck Roast braised - Ca. 13 Mg. 19 K 231 Na 64
Pork Shoulder raw - Ca. 25 Mg. 18 K 313 Na 63
Pork Shoulder braised - Ca. 32 Mg. 18 K 389 Na 70
Buffalo raw - Ca. 12 Mg. 32 K 297 Na 53
Buffalo cooked - Ca. 14 Mg. 33 K 313 Na 56
Pheasant raw - Ca. 3 Mg. 21 K 242 Na 43
Pheasant cooked - Ca. 16 Mg. 22 K 271 Na 43
Chicken raw - Ca. 11 Mg. 20 K 189 Na 70
Chicken roasted - Ca. 15 Mg. 23 K 223 Na 82
Egg raw - Ca. 53 Mg. 12 K 134 Na 140
Egg fried - Ca. 59 Mg. 13 K 147 Na 204

I would venture to guess that the egg represents our balances when young and the rest of the foods represent the balances when older. But why and how would we have and get higher sodium than potassium without the use of salt, as our blood levels would seem to indicate? It would appear that our needs for Mg. are greater than Ca., as well. Any thoughts???

Richard

Richard,

Seelig, in her book on Magnesium, states that the gold standard for determining intracellular Mg is NMR. It is expensive, but it is the best way to get whole-body Mg.

John

John,

Forgive my ignorance, but what does NMR stand for?

Mike F.

John and Mike,

I don't know what NMR stands for either. My point, about my question was, that due to the nutritional contents in food, it seems that the balance of Mg. to Ca. and K to Na. may weigh more in favor of Mg. and definitely weighs more to K, rather than Ca. and Na. We're told we need 2:1 ratios of Ca./Mg. and from what little I could find, we need about 5:1 of Na/K. In other words, by today's standards, of drinking milk, and eating salt (Na) and eggs, my body's contents would have shifted unnaturally. So who set the standard for these electrolytes and do they really know what the contents of the body should be? If we lived in natural surroundings and ate the foods we were suppose to eat, then it would seem that we need more Mg. and K, rather than Ca. and Na. So how much of these electrolytes are in a wild chimpanzee, who eats a lot of fruits, herbs, leaves, termites, and for 2-3 mths., eats the Red Colobus monkey, because I'm afraid that's the only place we're going to get the real answer. The chimp. doesn't drink milk in his adult life, nor does he salt his food.

Richard

Hans,

How does one really know how much Mg. or K is really in the body, being that it is more intracellular? Has anyone ever taken the contents from a cadaver and measured or are they just estimates? And by using salt, does that distort what the real levels of sodium should be?

Richard

Richard,

Whole body content of Mg, K, Ca and Na can be measured with neutron activation analysis or by analyzing the mineral content of human ash. To the best of my knowledge (it is not easy to find the information) the mineral content is approximately:

Total calcium content in the body is about 1-2 kg, most of it in the skeleton. Magnesium content is considerably less, only about 70 grams in a person weighing 70 kg (67% in bones, 31% in cells (intracellular) and 1% outside the cells (extracellular)). Potassium content is about 200-250 gram in a 70 kg person and sodium content about 80-100 grams in a 70 kg person (40% in bone, 57% intracellular and 3% extracellular).

I don't believe a pinch of Celtic sea salt (1/4 teaspoon or less per liter) will materially affect the sodium:potassium balance in the body.

Hans

Hans,

Thank you for that information. I'm definitely not disputing the addition of sea salt added to your water, it was just a

revelation to me, of how much more K there is in our foods than Na. I was completely under the assumption that there was more Na in the body than K, but from your breakdown, that's not true. Did you know what the breakdown in the body was for K, as you didn't list that, but maybe it was Na you didn't list, as you showed Na to be more intracellular, and I thought it was the other way? Based on the comparisons of foods, it would almost seem that the ratios for Ca to Mg would be somewhere around the 1:1 mark. So, if foods tell the story, then how would one get more calcium, as the body's needs would indicate, if we lived in Paleo times, or are we meant to get most of our Ca. stores from birth to weaning? Maybe the difference would be in the naturally mineralized waters. But, on the other hand, are these ash results of unnatural findings, because of our current day diet of milk? Was someone ever analyzed that ate an optimum and natural diet?

Thank you, Hans.

Richard

Hi Richard

Some following the paleo diet are adamant that salt was not available to our ancestors except in high sodium foods such as celery and think we should not consume salt on its own FULLSTOP. I, and others, however, do not agree. Man always lived by water courses or the sea. They moved from camp to camp following the wild herds, or the salmon migration etc. Salt would have been available at some point on their travels be it from rocks or the sea. The best way to cook fish is in sea water, why not a bit of venison too. History and archaeology tells us salt has always been a prized commodity. I watch the wild animals as well as the domestic seeking out salt. They need it, just as we do. I therefore think that salt is a food source of its own. The man who held the salt would maybe have been a well-respected person.

I agree with your deduction about Ca and Mg ratio. I think that Mg intake needs to be higher as Mg is used in far more processes of metabolism and hormone shifts etc than Ca. So it needs to be replaced more frequently. Therefore when the ash of a human body is recorded the Mg will be lower as it is not stored to the same extent as Ca - eg bones, teeth, nails etc. Just my thoughts though.

Fran

Nuclear Magnetic Resonance

John

Hi all -

I've been trying to find some time to respond to Hans's new topic before it blips off the radar, as I feel it speaks to me since I have been touting the success I've had with increased doses of magnesium glycinate.

Rest assured, I have done my homework before embarking on this protocol. I've based my research mainly on opinions, books and research articles by experts in magnesium such as Alan Gaby, MD, Mildred Seelig, MD, PC's contact, Herbert Mansmann, MD, and many less prominent professionals...as well as advice from my functional medicine MD.

The recently-issued book, The Magnesium Factor, has been my bible. To quote important points of the book here on the BB, would be equivalent to reproducing the book all over again. It is all relevant and important.

Hans published a Magnesium Report which is a summary of journal articles. It is at least 10 pages and very significant in the value of magnesium. I wish Hans would publish this here on the CF since it is so relevant.

Let me start by saying, in no way am I minimizing the importance of adequate calcium or other mineral intake for optimal cellular function. That's a given. However, in the many papers and books I've reviewed, the focus seems to be on magnesium and the propensity for deficiency and not on calcium; in fact, the calcium deficiency as seen in

osteoporosis is described as a magnesium deficiency

There is a questionnaire in Dr. Seelig's book that helps the reader determine magnesium deficiency. There are lists of factors that contribute to magnesium deficiency and there are references to the magnesium content of foods. She assesses the popular diets including the Atkins, and discusses drugs such as beta blockers.

Based on my history of symptoms that indicate a magnesium deficiency of long-term standing (and which include a lifetime of high stress), I decided to increase the dose I was already consuming of magnesium glycinate. This form is recommended by my MD because of its patented formulation that allows exceptional absorption without creating bowel intolerance. Also convincing to my case were journal articles written by Dr. Seelig on the topic of magnesium deficiency and its relationship to cardiac arrhythmia.

The book emphasizes the need for balancing intake of other minerals including calcium but also emphasizes that too much calcium can sabotage magnesium absorption. Likewise "in magnesium deficit, it is easier for calcium, phosphorous and vitamin D to become toxic or, conversely, for resistance to Vitamin D to develop." (p. 261)

However, the book and other sources consistently point out that high calcium intake from supplements is not as necessary as the media and the medical community might have us believe as long as there is adequate magnesium intake. When there is too much calcium, it is not stored in the bones but rather in soft tissue – heart, blood vessels, kidneys and joints... creating arthritic symptoms, bone spurs, kidney stones, and the killer arteriosclerosis and hypertension as well as contributory to asthma. These calcifications are dangerous and they come from excess calcium and magnesium deficiency. This can be the case even without supplements.

We all know the references to the prevalence of osteoporosis in highly industrialized nations compared to remote villages in Asia and Africa where populations do not consume highly-processed foods, eat mainly grains and vegetables, don't have access to dairy or protein from meat...and osteoporosis is non-existent.

In dental observations, patients exhibiting heavy deposits of calculus (mineral deposits) frequently correlate radiographically with severe bone loss of the jaw (periodontal disease.) Women with osteoporosis frequently have raging periodontal disease as well. These women typically are on high doses of calcium and consistently inadequate doses of supplemental magnesium.

So, for me, it makes sense to step up my magnesium intake. I like Dr. Abraham's observation (The Calcium Controversy) that increasing intake of magnesium favors deposition of calcium in bone and removal of calcium from soft tissues. I reason increased intake of magnesium is a win/win situation – clean out my arteries, increase elasticity, allow calcium to go into the bone where it belongs and calm down afib, all at the same time.

There can be no question that the best method of consuming minerals and vitamins is from food sources. Unfortunately, at least here in the US, our food sources are not good sources. The soil is depleted from over-farming and over-utilization of manufactured fertilizers (not to mention contaminated with pesticides.) Magnesium is rarely found in commercially-produced fertilizer or in quantities considered therapeutic. Organic sources are becoming popular but are not always available or affordable. Organic sources from California bear the added burden of being contaminated by water sources containing jet fuel. So unless one has an organic farm they oversee themselves, nutrition from food deserves close scrutiny. It's truly a sad statement.

In closing, I urge every person plagued by atrial fibrillation to read *The Magnesium Factor* by Mildred Seelig, MD, MPH. It's a guideline for healthy living and is a clear connection to what is most likely the major cause of afib.

However, don't think magnesium supplement is a quick-fix cure. Manifestations of magnesium deficiency begin early in life, show up in later years and take a very long time to correct; testing is critical. Serum levels of magnesium and calcium are virtually worthless. Intracellular levels or newer assay by nuclear magnetic resonance measures cellular-free magnesium – that is the unbound magnesium inside brain, heart, muscle and other cells and is closely correlated with heart health.

If you made it this far, congratulations. Sorry it is so long, but I feel compelled to direct afibbers to the book. (I have no connection with Dr. Seelig or the publication of the book.)

Healthy is Wealthy,
Jackie

Jackie,

Thank you for your very interesting and thoughtful posting. Great idea to post PC's magnesium article as published in previous issues of the AFIB Report. I'll do that very soon and make it a separate part of the Proceedings.

Also, I would like to emphasize that some, if not most afibbers, could likely benefit tremendously from taking a good brand of digestive (plant) enzymes with all their meals. Without proper digestion the breakdown and absorption of even magnesium glycinate will be severely compromised and the additional availability to the heart tissue of elemental magnesium may be vanishingly small.

Hans

Hans,

Have you yourself noticed any improvement in your AF as a result of taking plant enzymes in association with magnesium supplements? I appreciate that magnesium supplementation a) will for many of us here take a L O N G time to bear fruit, and b) that it might bear no fruit at all in terms of AF frequency and/or duration for some here, but I'm nevertheless curious to learn in what ways - magnesium supplementation included - you feel that plant enzymes have helped you since you've been using them. I ask particularly since I'm considering ordering some from the supplier you kindly suggested to me in conjunction to ordering a bulk batch of Kal brand magnesium glycinate from the US.

Kind regards,

Mike F.

Hans - I agree about enzymes. I've taken digestive enzymes for about 8 years... I never miss a day nor do I miss a day of probiotics.

The magnesium summaries to which I referred came from your International Health News - if PC was the author, I was not aware. Thought you had done it from your other newsletter. In any event, those summaries are most interesting and I definitely think the Conference Room Readers would enjoy them.

Mike F. Magnesium supplements work faster than you might imagine. I noticed a difference in about 2 weeks and by week 3 my PACs were gone.

It's now been three months on higher doses and all reports are good. While I did have a few breakthrough episodes, for the majority of time, I've been in NSR.

Magnesium has such a calming effect overall, it is turning out to be a very pleasant and much needed therapy...in my personal experience.

I hope you have success in ordering some of the glycinate form.

Jackie

Jackie,

Sorry, I misunderstood you. I thought you were referring to PC's Mg articles in The AFIB Report, but I now realize what you meant. I'll put both in the Proceedings. Thanks for the suggestion. The link to the IHN magnesium summaries is:

<http://www.afibbers.org/magnesium.html>

Hans

Perhaps the first and most noticeable benefit of Magnesium for me has been that it has lessened insomnia considerably. I sleep more hours each night and wake up more rested.

John

Mike,

I am afraid I am sometimes (most of the time :-)) not very scientific in the way I go about evaluating different approaches to controlling afib. I have not evaluated the effect of plant enzymes on their own but only in combination with probiotics and a significantly increased intake of chelated magnesium. What I can say for sure is that my digestion has improved immeasurably since I started supplementing with enzymes (N-zymes) and probiotics (Friendly Flora). No more bloating or gas or or feelings of discomfort after eating - None! I can't help but thinking that this improvement in digestion has also improved my magnesium absorption.

It is too early to say if my episode frequency has changed significantly, but I have noticed improvements in my autonomic balance and max. power spectrum on the FreezeFramer.

I'll keep you posted re. any changes in episode frequency.

Hans

Hans,

Thanks very much for the additional input. After my most recent episode (related on the BB), I'm DEFINITELY going to (as well as cut out the boozing once and for all) get hold of some plant enzymes, probiotics, and Kal brand magnesium glycinate. That plus an even stricter paleo diet and my continuing psychotherapy is the way ahead for me..... certainly for improved health, more than likely for less ectopy, and hopefully - in time - little-to-no AF.

Thanks again for the superb service you provide Hans.

Mike F.
