

Is Your Cardiologist Killing You?

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Medicine is a strange field. Even though one of the roles of research biochemists is to make important discoveries about human health, doctors in general do not read the biochemistry research journals. Instead, they read medical journals which are often between 10 and 45 years behind the actual scientific discoveries. And should anyone take a preview peak into the literature and report it before some mysterious self-appointed authority in medicine does, they have down through history (and into this very moment in history) been proclaimed as quacks or the information is branded as unsubstantiated.

Oddly enough, this mysterious self-appointed keeper of the facts can rely on being believed, because rarely does anyone go to the scientific literature to see if indeed what was said is true. This innominate group actually decides what shall be publicized and what shall not, despite the obvious benefits to mankind. It is almost as though there is an unwritten rule. "It shall not be discovered and announced and taken for common knowledge until we are ready."

For example, most grocery store cooking oils and margarines are purified and hydrogenated. This means the oils and margarines have been processed with strong chemicals that remove most of the vitamins and minerals. This is so that the product can last for months on a shelf and not spoil. Unfortunately, these nutrients, like vitamins E, B₆, and minerals like magnesium, chromium, and copper are the very ones that are necessary to prevent arteriosclerosis (to include early heart attacks, high blood pressure, impotence, Alzheimer's presenile dementia, strokes and premature aging), the number one health problem in the United States.

But more importantly, hydrogenation means that the product has been exposed to a temperature often in excess of 1000 degrees Fahrenheit. This causes a twisting of the molecule. In chemistry terms, this changes the configuration or shape of the molecule from a cis

form to a trans form. Normally, lipid (fat or oil) molecules fit into the membranes of cells as part of the structure, upon which all function depends. When these heat twisted molecules (trans fatty acids) are ingested, they fit into the membranes like a broken key. They get locked into the structure, but they stop it from functioning properly, and they compete with natural cis form fatty acids that are necessary for membrane function.

Meanwhile, the trans form fatty acids are capable of doing the very same damage that saturated fats (bacon, cheese, steaks, and other saturated fats, etc.) do. After decades of scientific journal articles warning of this, it was reported in the medical literature in the *New England Journal of Medicine* in 1990, but never made the lay news.

Margarines, recommended by cardiologists to prevent cardiovascular disease, are as much as 35% trans (the bad twisted molecules) fatty acids. Corn oil, artificial ("plastic") egg substitutes and most "natural whole grain health breads" contain significant amounts as well. So the cardiologists of the U.S. have been actually accelerating disease by recommending corn oil margarines, egg substitutes, corn and safflower oils, etc. all of these years. I designate U.S. cardiologist, because medicine in Europe is neither so ignorant of biochemistry, nor so egocentric that they cannot listen to docs who do read the latest science, or perhaps not as controlled financially by other interests, like food and chemical manufacturers. I suggest this because Europe won't even allow the sales of our margarines there because they are so high in trans fatty acids, and notoriously bad for the health of the populus.

Now that this has been known for over 20 years, the *New England Journal of Medicine* finally published it in 1990. They showed physicians across the world that margarines and grocery store polyunsaturated oils are at least as harmful to the body as saturated oils. That was three years ago. But I do not yet know of one cardiologist who has caught on and stopped recommending margarines, plastic eggs, processed foods and corn oil.

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What did make national news, however, from that issue was a study designed to refute a technique to test for food and chemical sensitivities. In spite of this technique having been published in over half a dozen reputable journals, including the United States government's National Institutes of Health journal, *Environmental Health Perspectives*, no one actually studied the article to find its 13 flaws. And overwhelming publicity was manufactured for this study (over two dozen major newspapers across the U.S. were alerted by the journal two days before doctors received their copies in the mail - I know because I was personally telephoned by these two dozen papers for a comment). Interestingly, the publicity that this article had was way out of proportion to its importance, even if the conclusions had been correct. But in the very same August 16, 1990 issue was the article showing the dangers of trans fatty acids, and not a peep was heard about this.

The most outrageous flaw of all was the fact that because the researchers were so unknowledgeable about the technique that they had set out to disprove, they had the technique backwards. They actually used the dose that is supposed to cause symptoms or provoke them in place of the dose that is supposed to turn off the symptoms. So no wonder they were successful in showing the technique does not work. If you have it absolutely backwards, it is not the technique. But that is neither here nor there. The point is that there is some power in medicine so influential and at the same time dangerously unfamiliar with the scientific literature while concomitantly being under the influence of those with their own agendas that the best is not done for the American people.

Let's go back to the cardiologist (since he specializes in the treatment of the number one cause of death and illness in the U.S.) and see another example of how he has been hoodwinked by this mysterious governing body.

Magnesium Leads the Way as an Example

With the processing of foods such as going from whole wheat or brown rice down to bleached white rice and bleached white flour,

over 75% of the magnesium is lost (Schroeder, 1969). U.S. government surveys confirm that the average American diet provides only 40% of the recommended daily amount of magnesium (Anonymous, 1988). In another study 39% of the population had less than 70% of the RDA for magnesium (Marier, 1986). Add to this the fact that sugar, phosphates (high in processed foods, soft drinks), alcohol, stress, and a high fat diet further potentiate magnesium deficiency (Seelig, 1989), and it is not surprising that leading authorities in magnesium estimate that 80% of the population is magnesium deficient.

There is no blood test to adequately rule out magnesium repletion. The serum level is the most commonly performed, but is far too insensitive to be of any value except in cases of severe deficiency, since only 1% of body magnesium is extracellular (Rhinehart, 1988). A major disservice has been done since this has become a member of the chemical profile so commonly done on patients, because it allows the doctor who does not know how insensitive the test is to assume magnesium repletion when he sees it reported as normal. This is a serious assumption, especially in light of the JAMA study (Whang, 1990) showing that 90% of physicians never even think of looking at even the least sensitive test (a serum magnesium) in over 1000 patients who were so ill as to be hospitalized (and many of whom died as a consequence of magnesium deficiency not being diagnosed and corrected).

The intracellular erythrocyte level is the best currently available blood test (Elin, 1987), but that also is too insensitive to be of reliable value. The best test is a loading test (Rasmussen, 1988; Seelig, 1989; Rea, 1986; Nicar, 1982; Ryzen, 1985; Rogers, 1991). Magnesium causes muscle relaxation, while calcium causes muscle contraction or spasm, which is especially pronounced if unbalanced in the face of an undiagnosed magnesium deficiency. If the spasm is in the smooth muscle of the vascular tree, it can lead to hypertension (Altura, 1984; Seelig, 1989), peripheral vascular disease (Howard, 1990), angina, arrhythmia, and sudden death (Singh, 1982; Leary, 1983). Magnesium deficiency also damages the sodium pump (Cachs, 1988), providing a dual mechanism for hypertension.

But if a magnesium deficiency is causing hypertension and the cause is not sought, or just as bad, a mere serum magnesium is done

and found to be normal, often the first drug to be prescribed is a diuretic, known for its ability to not only induce hypokalemia, but a magnesium deficiency as well, thereby accentuating the underlying cause of the symptom for which the drug was prescribed. Hence the hypertension can worsen, requiring other drugs, or go on to cause other symptoms such as refractory hypokalemia (Whang, 1992) or recalcitrant cardiac arrhythmia (Seelig, 1980; Marino, 1991). The latter spurs the use of calcium channel blockers, but magnesium is nature's calcium channel blocker (Iseri, 1984) and controls the calcium pump (Abraham, 1982).

So even though the calcium channel blocker ameliorates the symptoms, the undiagnosed magnesium deficiency continues, plus the calcium channel blocker can cause further magnesium deficiency by itself (Ebel, 1983). We get into the familiar downward spiral of disease where the *sick get sicker*. And this is only the beginning.

For not only does the diuretic accentuate hypomagnesemia, but it causes the loss of other nutrients used in the daily work of detoxifying it. If that were not enough, diuretics raise lipids (Lardinois, 1988); but magnesium deficiency itself also disturbs proper lipid metabolism (Rayssiguier, 1981). So now disordered lipid metabolism is added to the initial problem of hypertension. Therefore, by using drugs to mask symptoms, the path of illness is accelerated. Multiple mechanisms intertwine and snowball and we get, just as in chemical sensitivity, the spreading phenomenon where the *sick get sicker, quicker*.

With the exercise craze, our unsuspecting patient may decide to jog, but sweating accelerates the loss of magnesium through the skin (Stendig-Lindberg, 1987). Sudden death from magnesium deficiency-induced cardiac arrhythmia may result (Anonymous, 1990), and may indeed have been the cause of sudden death among famous athletes.

There are many examples in the literature that demonstrate medicine's serious neglect of the facts regarding nutrient biochemistry. For example, in one study of 22 cardiac arrest victims, 59% had abnormal serum magnesium levels. 100% of those with abnormal serum magnesium died. In the "normomagne-semic" group (many were not actually magnesium replete because the least sensitive indi-

cator of magnesium status, a serum level, was used), 66% died (Cannon, 1987). So magnesium status (determined by the inadequate serum value) still made a significant difference between 0% versus 44% survival.

In another study of 103 patients with documented acute myocardial infarction, patients were randomized into two groups; one received intravenous magnesium, the other group received placebo. The in-hospital mortality of the placebo group was 17% compared to 2% for the magnesium group, leaving the magnesium-treated group with a reduction in mortality of 88.2% (Schechter, 1990). Yet with all this data, magnesium status is not routinely and optimally evaluated to this date. At least many hospitals and emergency rooms are, however, giving a bolus of magnesium stat to MI victims.

But it is not yet universally routine for physicians to check the magnesium status of patients currently under indefinite treatment for chronic diseases of the vascular system, despite reports where hypokalemia, hypocalcemia, and/or hypophosphatemia could not be corrected until the hypomagnesemia was diagnosed and corrected (Whang, 1984, 1992). And, of course, magnesium deficiency has a major bearing on the development of arteriosclerosis, the number one cause of morbidity and mortality (Orimo, 1990).

Despite the fact that there are over 30 million hypertensive Americans (Kaplan, 1986), and despite the fact that magnesium deficiency is a part of the cause for many (Altura, 1981, 1984, 1985; Resnick, 1984), 90% of physicians do not check for a magnesium deficiency in the United States in patients so sick as to be hospitalized (Whang, 1990). And in an era where such phrases as "reasonable and customary" dictate what the patient can have as his standard of care, it becomes clear that the standard is not in the best medical interest of the patient or the society that often picks up the medical tab.

As another example of how we tend to undervalue nutrient biochemistry in medicine, in an issue of a popular internal medicine journal there was an article on muscle cramps, one on Raynaud's phenomenon, and one on the correction of hypokalemia. All three problems can be classic symptoms of magnesium deficiency, yet magnesium deficiency was not mentioned in the entire issue (*Arch. Int. Med.* 1990).

Since diseases of the cardiovascular system are the number one cause of death and dying in the United States, and consequently a major part of the 12% of GNP expenditures that go for medical care, this is no small matter. And bear in mind that magnesium is an example of but one of over 40 nutrients that we are limiting this whole discussion to for simplicity.

In one study that did not use sophisticated nutrient analyses, 59 patients with a mean age of 82 and a recent hip fracture were studied. One half of the group received a few nutrient tests and supplements, while the other half of the group did not. The rate of medical complications for the group that had attention to its nutrients was 44% compared with 87% for the other, nearly double. And the mean duration of hospital stay for the nutrient group was 24 days versus 40, nearly half. The death rate in this highly fragile, aged and injured group was 24% for the nutrient group versus 37%. Yet still in spite of the enormous health and financial benefits, this is not standard care (Delmi, 1990), in an era where patients and their physicians are penalized for deviating from the "standard" of care.

Furthermore, chronic magnesium deficiency has been implicated in some cases of TIA (Fehlinger, 1984), organic brain syndrome (Hall, 1973), and contributing to the pathology of Alzheimer's disease. And we haven't begun to touch upon the over 40 other symptoms that this one deficiency, magnesium, can produce. Intestinal spasms mimicking colitis (Main, 1985), cerebral vascular spasms called migraine, bronchial spasms of asthma (Rollo, 1987), chronic fatigue (Cox, 1991), unwarranted depression, or the fallopian spasms of infertility are possible. And, of course, the symptoms of chemical sensitivity can be wholly or in part produced by magnesium deficiency (Rogers, 1991).

It is interesting that emergency injections of magnesium have been the time-honored treatment for often tragically fatal toxemia of pregnancy for over 60 years (Lazard, 1925), for example, but the correct prophylactic determination of magnesium status, so easy to do with a urine loading test (Rogers, 1991), is not routine with pregnancy, before this sometimes fatal event.

Other common magnesium deficiency symptoms include a host of psychiatric symptoms

like irritability, anxiety, agitation, panic attacks, and more (Hall, 1973). You can begin to appreciate how one almost feels clairvoyant when he/she sees an article on panic disorder in cardiology patients (Beitman, 1991). And again, with no mention of the one common deficiency that could be the cause of both symptoms, an undiscovered magnesium deficiency. But remember, magnesium deficiency isn't the only thing that can cause panic disorder, as many chemicals can cause this. Yet the recent National Institutes of Health Consensus Statement on panic disorder mentions neither environmental triggers nor nutrient deficiencies in the differential diagnosis (Anonymous, 1992). Nor do they mention that stress and magnesium deficiency are mutually enhancing (Seelig, 1981; Boullin, 1967), in that stress through catecholamine induction enhances magnesium deficiency, while magnesium deficiency cause irritability, agitation, and panic, which in turn push more on the catecholamines, etc.; another spiral mechanism of how the *sick get sicker* when environmental and biochemical causes are not sought.

If You Eat a Balanced Diet, You Can't Get Deficient

This commonly offered medical advice overlooks the fact that the majority of the SAD (standard American diet) is processed, leaving 25-75% of the original nutrients in food. We are the first generation to ever be continually detoxifying such an unprecedented number of daily chemicals (over 500 average). Add to that the fact that the work of detoxification loses or uses up nutrients, and it is really a tribute to the design of our bodies that we do as well as we do. In a Food and Drug Administration study to analyze 234 foods over two years, they found the average American diet to have less than 80% of the RDA (recommended daily allowance) of one or more: calcium, magnesium, iron, zinc, copper, and manganese (Pennington, 1986).

In one study of patients admitted to an acute medical service, 23-50% had undiscovered deficiencies, and this was not a sophisticated analysis (Roubenoff, 1987). When other studies have demonstrated magnesium deficiency in well over 50% of the population (Rogers, 1991; Whang, 1990), it behooves any of us to condemn any symptoms to a lifetime of medi-

cations without ruling out deficiencies. For as you can appreciate, even the most seemingly minor of symptoms, like anxiety or insomnia can herald a magnesium or other nutrient deficit that can begin to insidiously disrupt arterial and cardiac integrity and consequently increase the vulnerability to life-threatening events (Seelig, 1989). But if they are unknowingly masked with a seemingly harmless tranquilizer or hypnotic, the opportunity to prevent more serious sequelae is lost or at best delayed.

For in fact it is fortunate that a magnesium deficiency can manifest as a plethora of symptoms, since many other nutrient deficiencies that contribute to arteriosclerosis often do so silently, like chromium (Boyle, 1977; Schroeder, 1970; Fuller, 1983; Press, 1990; Elwood, 1982). And when a chromium deficiency does cause one of its classic symptoms, like hypoglycemia (Anderson, 1984, 1986; Uusitupa, 1983; Offebacher, 1980), that symptom is still not a routine trigger to assess the adequacy of the rbc chromium.

If this were not enough, look at how we compound some of these biochemical blunders in medicine. Magnesium deficiency plays a major role in the development of arteriosclerosis (Orimo, 1990; Seelig, 1980). Vitamin E is deficient in the average processed diet. And vitamin E deficiency is also important in the development of cardiovascular disease (Grey, 1990), in fact it can even protect against a magnesium deficiency-induced cardiac myopathy (Freedman, 1990) as well as reduce the size of experimentally-induced myocardial infarct (Axford-Gatley, 1991) and the extent of reperfusion injury (Ferreira, 1991; Reilly, 1991). And as you might guess, magnesium deficiency can be induced by vitamin E deficiency (Goldsmith, 1967; Haddy, 1960). Another way for the downward spiral where once symptoms are masked with drugs and the environmental trigger and nutritional defect are not found and corrected, the *sick get sicker*.

And it should come as no surprise that both deficiencies, magnesium and vitamin E, also promote chemical sensitivities as well as cancer (Seelig, 1979), in addition to arteriosclerosis, since the pathologies of many diseases are similar; it just depends upon the hereditary target organ predisposition and environmental vulnerability, the individual biochemistry, and the

xenobiotic dose and time frame. In

other words, the causes are different for each individual, each having his own unique total load. Somehow in medicine, because one drug type will ameliorate the symptoms in most people with common symptoms, the thinking has erroneously led physicians to assume that when a cause is found, it too, must be the same for all sufferers. But nothing could be further from the truth, and this one fact has enormously slowed progress in conquering many diseases, especially cancer.

A similar error has occurred when researchers have attempted to study nutrients like they would study a drug: along. They ignore the fact that the total load is crucial. For example, some studies on vitamin A were inconclusive for its cancer-sparing effect, in spite of its well-known anti-oxidant properties. This was in part because they tried to study it alone as though it were a drug. But high doses of vitamin A alone, or unbalanced, tend to suppress the level of vitamin E by as much as 40% (Meyskins, 1990). Since vitamin E is a necessary complementary anti-oxidant that keeps the carcinogen out of the cell, it negated the benefit of A. Likewise, when you do a study on vitamin E, for example, and do not include sufficient vitamin C, you cannot regenerate tocopherol from the tocopheroxyl radical to recycle and restore its usefulness (Bendich, 1986). The result is that vitamin E does not manifest its full potential.

It is no small wonder that so many drugs stifle symptom manifestations when you see how similar the biochemical pathologies are. And yet how individually unique the cause and treatments are if a search is made for the nutritional or biochemical defects and environmental triggers (Mago, 1981; Rea, 1977, 1978, 1981; Rogers, 1992), or deficits and toxicities. And you can readily appreciate that by resorting to drugs, we set the patient up for the inevitable worsening, like the ultimate premature failure in the form of a fatal cardiac event (Marino, 1991).

You can begin to appreciate how clairvoyant you become as you read such article titles as "Excess mortality associated with diuretic therapy in diabetes mellitus" (Warram, 1991). There was no mention of magnesium in this article either. But yes, diabetes does foster the loss of magnesium (Lau, 1985; Martin, 1947) and vice versa, magnesium deficiency potentiates diabetes (Zonszein, 1991); and

you know the diuretic causes magnesium loss, and so it comes as no surprise, in fact it is inevitable, that a person with not one, but two mechanisms to potentiate magnesium loss would succumb faster, probably of sudden death. Now you are beginning to think like a specialist in environmental medicine when you see the connectedness. For environmental medicine forces the practitioner to relate all events in the body to the total load, or he simply cannot help people heal, and the *sick get sicker, quicker*.

As one appreciates the complexity of this, it becomes easier as you learn how interrelated everything is. And this knowledge helps the physician to avoid further blunders that only serve to potentiate illness. The recommendation of calcium for the prevention of osteoporosis is one of a multitude of examples.

Many people are deficient in calcium because the standard processed diet is high in hidden phosphates (most processed foods, but soft drinks especially). Also by eating large quantities of meats and sweets, this requires a huge amount of buffering. When the plasma buffer reserves are exhausted, the body calls upon the calcium from the bone to buffer. When building bone, calcium is laid down in bone only when enough of the complementary minerals are present, such as zinc, copper, boron, and magnesium (Abraham, 1991). But when these are not present, taking extra calcium merely deposits the calcium in the toxic waste heap of the body, the blood vessel wall (Tanimura, 1986).

In other words, by haphazardly recommending calcium to a nation of people who are already consuming vast quantities of cheese, milk, ice cream and meats, and without measuring the erythrocyte (rbc) zinc, rbc copper, magnesium loading test, etc., we are potentiating the development of vascular calcifications instead of bone calcification. We are enhancing the deposition of extra calcium in the vessels of the heart and brain to hasten coronary artery disease and senile brain disease, two items already taking their toll on the economy.

And all because we fail, in an era of unprecedented high tech medicine with powerful prescription medicines, to analyze an individual's nutrient biochemistry and then prescribe a

balanced correction. So it matters not whether we address a symptom, a disease, a metabolic process, or even an endocrine problem (Fatemi, 1999); a complete workup has not been done if a nutritional defect is not sought. In summary, we see (1) that by not reading the current biochemical and environmental literature, the cardiologist is helping the *sick get sicker, quicker*, and one nutrient has served as an example of how (2) when drugs are used in the current medical system to mask symptoms, that by ignoring the underlying cause, it is left to worsen and inevitably leave new symptoms in its wake, and (3) that medications also have effects of their own that induce further nutrient deficiencies, thus potentiating the decline in health of the patient. Of course, it is not the cardiologist's fault as much as that of the system with this mysterious unnamed governing board. So in the meantime, a good rule of thumb would be for the cardiologist to recommend minimum processed foods, nothing that contains hydrogenated oils, and no margarines. Instead have non-farmed ocean fish twice a week, cut down on saturated fats from red meat, eat butter on breads (select breads that contain no hydrogenated oils), and cook with olive oil. Then start to assess the nutrient levels of all sick patients in an attempt to identify some of the biochemical defects that are at the bottom of many symptoms (Rogers, 1990).

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