

COMMENTARY

Did Carrie Fisher Die From Chronic Magnesium Deficiency?

George D. Lundberg, MD | February 13, 2017

Hello and welcome. I am Dr George Lundberg and this is At Large at Medscape.

Magnesium and Sudden Death

Did Carrie Fisher die from low total body magnesium? I don't know, but I say "probably yes." News reports stated that she was suddenly unresponsive and not breathing while traveling on an airplane. She was resuscitated, transferred to the UCLA Medical Center after the airplane landed, never regained consciousness, and died again a few days later.

It has long been known that low magnesium levels can trigger a range of cardiac rhythm abnormalities, including some that are potentially lethal.^[1] It has also long been known that magnesium infusions are successful at quickly reversing many cardiac arrhythmias.^[2]

Sudden unexpected, unattended death is probably the most common mode of death in the United States,^[3] with an annual estimated incidence of 300,000-400,000.^[4] This is a huge number. For perspective, the most common causes of death in a recent year were^[5]:

- Heart disease (including sudden death): 600,000
- Cancer: 591,000
- Chronic lower respiratory diseases: 147,000
- Unintentional injuries (eg, accidents): 136,000
- Stroke: 133,000
- Alzheimer's disease: 93,000
- Diabetes: 76,000
- Influenza and pneumonia: 55,000

The vast majority of sudden deaths occur outside of a hospital and are unobserved. Without a cardiac rhythm monitor in place at time of death, or an informed autopsy, the actual cause of death in this large cohort is unknown. However, daily practice and conventional wisdom suggest that sudden cardiac death (cardiac arrest, asystole, cardiac standstill, or ventricular fibrillation) is the cause in most cases.

The large body of observational literature that has evolved over many decades, beginning with magnesium concentrations in drinking water, suggests that low total body magnesium could be causative of sudden death. Others have recently noted that a low serum magnesium level is associated with increased likelihood of coronary artery heart disease and sudden cardiac death.^[6] The problem has always been the difficulty in measuring total body magnesium stores. Serum magnesium levels are protected metabolically and only become "low" if overall stores are very low. A careful dietary history can tease out the likelihood of insufficient magnesium intake, but this is rarely done in medical practice.

There is no doubt that magnesium is a vital element that is required for a large number of metabolic cellular activities. The National Institutes of Health (NIH) website says: "Magnesium is needed for more than 300 biochemical reactions in the body. It helps maintain normal muscle and nerve function, supports a healthy immune system, keeps heart rhythm steady, and helps bones remain strong."^[7] Serious magnesium deficiency could adversely affect many vital human bodily functions, producing so many malfunctions that I termed magnesium deficiency "the emperor of all maladies" in 2015.^[8]

Meanwhile, Back to Carrie Fisher

I do not know why Ms Fisher died suddenly on an airplane at age 60, nor do you or, I might add, the physicians who cared for her until she died again. I credit the UCLA physicians and staff for keeping her information private, and I credit the Los Angeles County Medical Examiner-Coroner's office for requiring an autopsy--quite proper. The results have not been made public at this time. But it would be very difficult for either the UCLA physicians or the pathologists to confirm the cause of death, taking into account the clinical interventions that doubtless were applied between Ms Fisher's sudden collapse on the airplane and subsequent studies. Regardless, I will assure you that an assessment of total magnesium stores will not have been done.

Average physicians seem to care about this; leading research scientists and government agencies, not so much.

What is my point? I called for much more study about magnesium deficiency in 2015.^[7] I don't think that it has been done. This is a pity. Judging from the large number of comments we received in 2015, average physicians seem to care about this; leading research scientists and government agencies, not so much.

Look at the numbers of sudden unexpected deaths in adults, which are allegedly sudden cardiac deaths. Wake up, people! This could be a really big deal. Study it. Intervention studies have been proposed for many years.^[9] I have been unable to find that any such studies have been done or are being done.

The 2003 book *The Magnesium Factor*,^[10] by Seelig and Rosanoff, may be the best source for reliable information. Drugs that increase magnesium excretion include diuretics, proton pump inhibitors, ethyl alcohol, and cola drinks. Do you know any people who use these? Do you know any people who don't?

We should use food as our principal source of magnesium, especially almonds, cashews, shrimp, crab, spinach, peanuts, pecans, whole grains, soy, black beans, edamame, dark chocolate, brown rice, oatmeal, figs, apricots, and bran. Unfortunately, the best data I can find indicate that nearly half of all Americans and two thirds of teens and people over age 80 do not ingest the recommended daily allowance of 300-400 mg of magnesium.

What to Do?

If you are an American physician, nurse, or other healthcare professional, you are probably magnesium deficient. Be selfish; correct that now. Either eat high-magnesium foods or take nutritional supplements, or both. I take 400 mg of magnesium citrate daily. Other magnesium salts are also okay.

Assuming normal renal function, you can't overdose on magnesium. If your magnesium stores are low, they will replenish, and when you reach magnesium balance, any excess is eliminated by the kidneys. If you take more magnesium than you need, your stools may become loose; then cut back. Give your patients the same advice.

If you work in academia or at NIH, try to get some serious interventional trials going. If you work at the Department of Agriculture or the US Food and Drug Administration, try to establish policies that get much more magnesium into the American people. If you are a clinical laboratory scientist, try to figure out how to measure total body magnesium stores so that physicians can order the test(s). It could be some combination of serum, plasma, or red blood cell magnesium levels, urine magnesium (eg, a 24-hour collection), and a detailed dietary history. Physicians "manage what they measure," so

just making a good test available would do wonders for ascertaining truth and changing behavior, if needed.

I do not understand why there seems to be no sense of urgency about better understanding the causes of sudden, unobserved, unexpected death in Americans. There is a vast interest in cardiac resuscitation (with a < 5% success rate) but not in prevention. Go figure.

Fix it.

That is my opinion. I am Dr George Lundberg, at large at Medscape.

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