Perspective
Volume 10:10, 2022

Journal of Cardiovascular Diseases & Diagnosis

ISSN: 2329-9517 Open Access

Adults with Coronary Heart Disease or at Risk for Coronary Heart Disease Should Take an Oral Magnesium Supplement

Bela Merkely*

Department of Cardiology, Center for Molecular Cardiology, University of Zurich, Zurich, Switzerland

Introduction

Atherosclerosis, or the fatty build-up of plaque in the coronary arteries, is the cause of coronary heart disease (CHD), also known as coronary artery disease (CAD), which is the leading cause of death in the United States. Ischemia is frequently the result of this narrowing, which reduces blood flow and oxygenation to heart muscle. CHD affected 15.8 million Americans in 2004, resulting in as many as 451,326 deaths that year, according to estimates. Usually caused by ventricular fibrillation; sudden cardiac arrest was the cause of the vast majority of those deaths. According to Rosemond et al., another 1.2 million Americans are expected to suffer a coronary event this year.

Dysrhythmias, congestive heart failure (CHF), recurrent heart attacks and death are CHD's long-term effects and complications. Ablation therapy, implantable defibrillators, coronary artery bypass surgery, valve replacements, stent procedures and even a heart transplant may be required to treat these complications. Long-term medication therapy, surgical interventions to restore flow and a concerted effort to alter risk factors are all forms of CHD treatment. Obesity, a poor diet, drinking alcohol and tobacco, not exercising and inadequate management of diabetes, hypertension and serum cholesterol are all modifiable risk factors [1].

Description

The pathogenesis of coronary atherosclerosis, acute thrombus formation and elevated supraventricular ectopy may all be influenced by magnesium deficiency, as evidence suggests that many CHD patients may also present with low serum magnesium levels. Endothelial health is directly linked to serum magnesium levels, according to studies. High normal magnesium levels protect the endothelium and boost the production of nitric oxide, a potent vasodilator, while low serum magnesium levels put the endothelium at risk for inflammation, thrombus formation and atherogenesis by Maier, Bernardini, Rayssiguier and Mazur; Rayssiguier, Mazur, Maier, Malpuech-Brugere, Zimowska, andIn an effort to stop further thrombosis, the vasodilator effect of nitric oxide may be especially helpful for hypertensive patients. Even though actual magnesium deficiency symptoms are uncommon in the United States, many Americans may not consume enough magnesium through their diets to ensure endothelial health and a healthy blood level. Hence, oral magnesium supplementation might give defensive cardiovascular advantages [2].

Magnesium Magnesium (Mg) is a cation that is mostly found within the cells of muscles and bones (40 to 60 percent). Extracellularly, only a small amount, about 1%, can be found. According to Maier, serum magnesium levels typically range from 1.8 to 2.4 mEq/L, with two thirds of magnesium being ionized (usable) and the remaining third bound to plasma proteins. Because serum magnesium levels are well correlated with intracellular free magnesium levels (Maier), serum magnesium measurements continue to be the most widely used parameter for determining magnesium metabolism. According to McCance and Huether, malabsorption, alcoholism, malnutrition, renal disease and diuretic use are all associated with hypomagnesemia (a serum level of less than 1.5 mEq/L).Low serum convergences of magnesium allegedly additionally advance aggravation and have been related with expanded endothelial injury. A serum level of more than 2.5 mEq/L, or hypermagnesemia, can cause muscle weakness, hypotension, respiratory distress, bradycardia and nausea and vomiting. This rare condition is typically brought on by renal failure. Magnesium is mostly found in whole, unrefined grains, legumes, nuts, seeds and green vegetables. Magnesium can also be found in tap water—the best kind is hard water—but the amount of magnesium in the water varies greatly depending on the mineral content of the source. According to NIH, eating a diet high in magnesium-rich foods helps meet daily dietary requirements for magnesium [3].

The "American-type diet" is low in magnesium, according to studies and between 8% and 30% of hospitalized patients have hypomagnesemia. According to Maier, an "Oriental diet," which includes more fruits and vegetables, has been linked to higher magnesium levels and may be responsible for lower CHD levels among oriental populations? According to Touyz, a Western diet does not contain sufficient magnesium to protect against cardiovascular disease, which can be accompanied by high normal serum magnesium levels, even though the typical Western diet contains sufficient amounts of magnesium to prevent serum magnesium deficiency.

In the past, studies have shown that 23% of adults in the United States did not get enough magnesium from their diets and had hypomagnesemia. Low magnesium levels were even more likely to occur in diabetics. Ford and Mokdad examined the 24-hour dietary recall data from the National Health and Nutrition Examination Survey (NHANES) in an effort to provide more up-to-date information regarding magnesium intake among people living in the United States. They looked over the data from 4257 male and female subjects who were at least 20 years old and came from a variety of ethnic backgrounds. According to Ford and Mokdad, the amount of magnesium consumed decreases with age and is more pronounced in certain ethnic groups than in others (p =.035 for Whites *vs.* p.001 for both African Americans and Mexican Americans). Additionally, men typically consume more magnesium in their diets than women do [4].

Magnesium is required for more than 300 biochemical reactions and plays a number of important roles in the body. Magnesium has been used to control cardiac excitability, reduce arrhythmias, neuromuscular transmission, vasomotor tone and blood pressure in addition to being a natural calcium channel blocker. In addition, there is evidence that magnesium enhances endothelial function in CHD patients and that CHD patients may benefit from oral magnesium supplementation, which will help maintain serum magnesium levels on the high side of normal and maximize endothelial health. In CHF, it has also been reported that magnesium and potassium deficiencies coexist (Champagne). According to Fuentes; Salmon and Silver, magnesium supplementation may be an option for CHD prevention and treatment [5].

Discussion

According to Fuentes et al., oral magnesium supplementation may improve

***Address for Correspondence:** Bela Merkely, Department of Cardiology, Center for Molecular Cardiology, University of Zurich, Zurich, Switzerland, E-mail: merkely_b@gmail.com*

Date of Submission: 03 October, 2022, Manuscript No. jcdd-22-82079; **Editor assigned:** 04 October, 2022, PreQC No. P-82079; **Reviewed:** 14 October, QC No. Q-82079; **Revised:** 21 October, 2022, Manuscript No. R-82079; **Published:** 28 October, 2022, DOI: 10.37421/2329-9517.2022.10.518

endothelial function in patients with heart failure, a lower risk of coronary heart disease (CHD) and they improve exercise tolerance. However, no conclusive evidence exists to suggest that women are less likely to develop CHD [5].

Conclusion

Magnesium, which is necessary for good health, is used in more than 300 biochemical reactions in the body. These reactions include supporting bones and immunity, maintaining the heart rhythm and maintaining muscle and nerve function. These reviewed studies suggested maintaining magnesium levels on the high side of normal serum values due to its crucial role in endothelial health. According to Horner, additional studies demonstrated that adequate magnesium intake reduces the risk of cardiac arrest, death and fatal arrhythmias associated with myocardial infarction. Magnesium toxicity is uncommon and typically indicates supplement misuse. Therefore, oral magnesium supplementation is recommended due to its relative safety, low cost and importance to numerous body functions. There is currently insufficient research to demonstrate that oral magnesium supplementation lowers the risk of CHD development in the future. However, in the interim, it has been demonstrated that maintaining a high normal serum magnesium level has very few side effects and is clearly beneficial for preventing additional heart disease complications after CHD diagnosis. Overall, studies indicate that more research is required to better explain the connection between the risk of CHD development and magnesium intake in the diet and blood levels.

References

1. Nattel, Stanley. "New ideas about atrial fibrillation 50 years on." *Nature* 415 (2002): 219-226.

2. Haissaguerre, Michel, Pierre Jaïs, Dipen C. Shah and Atsushi Takahashi, et al. "Spontaneous initiation of atrial fibrillation by ectopic beats originating in the pulmonary veins." *N Engl J Med* 339 (1998): 659-666.

3. Hwang, Chun, Tsu-Juey Wu, Rahul N. Doshi and C. Thomas Peter, et al. "Vein of Marshall cannulation for the analysis of electrical activity in patients with focal atrial fibrillation." *Circulation* 101 (2000): 1503-1505.

4. Wijffels, Maurits CEF, Charles JHJ Kirchhof, Rick Dorland and Maurits A. Allessie. "Atrial fibrillation begets atrial fibrillation: a study in awake chronically instrumented goats." *Circulation* 92 (1995): 1954-1968.

5. Allessie, Maurits, Jannie Ausma and Ulrich Schotten. "Electrical, contractile and structural remodeling during atrial fibrillation." *Cardiovasc Res* 54 (2002): 230-246.

How to cite this article: Merkely, Bela. "Adults with Coronary Heart Disease or at Risk for Coronary Heart Disease Should Take an Oral Magnesium Supplement." J Cardiovasc Dis Diagn 10 (2022): 518.