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한국인에서 낮은 혈청 마그네슘 농도는 관상동맥 석회화와 연관이 있다

성균관의대 강북삼성병원 내과

이신영, 현영율, 이규백, 김향

Low Serum Magnesium is associated with Coronary Artery Calcification in Relatively Healthy Koreans

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Objective: Magnesium is one of major intracellular divalent cation in our body. Magnesium is not only necessary for the regulation of neuromuscular function, but also known to have anti-inflammatory and anti-platelet function. Recent studies have suggested its association with metabolic or cardiovascular diseases and hypomagnesemia was reported as a risk factor for diabetes or coronary artery disease, although the mechanism is not well known. One recent study has shown that hypomagnesemia is associated with carotid artery alteration, but there is no previous study on its relation to coronary artery calcification (CAC), another important marker of cardiovascular risk. In this study, we investigated the relationship between hypomagnesemia and CAC by using health check-up data.

Methods: We analyzed 34,965 participants who underwent a coronary MDCT as a health check-up program at a tertiary hospital in Korea. The check-up program also measured serum magnesium level and was done in 2010-2012. Coronary artery calcification was analyzed by using CACs (CAC score) developed by Agatston et al and CAC was defined as CACs>100 in this study. Logistic regression analysis was used to estimate the odds ratio for CAC.

Results: Participants were divided into three groups according to their serum magnesium level: hypomagnesemia, <1.9 mg/dL (n=941); normal, 1.9-2.3 mg/dL (n=32,732); hypermagnesemia, >2.3 mg/dL (n=1,292). CACs were different between hypomagnesemia, normal and hypermagnesemia groups (15±91 vs 8±71 vs 10±57, p=0.0043). The percentages of participants with CAC were 3.9, 1.6 and 2.5 in each group. In multivariate analysis, hypomagnesemia was associated with CAC after adjustment for age, sex, body mass index, diabetes, hypertension, cardiovascular disease, systolic blood pressure, diastolic blood pressure, LDL cholesterol, HDL cholesterol, eGFR, hsCRP, current smoking status, alcohol intake and vigorous exercise frequency. The odds ratio of hypomagnesemia group for CAC compared with normal group was 2.00 (1.34-2.97, p=0.001).

Conclusion: Low serum magnesium level was associated with coronary artery calcification in relatively healthy Koreans. Further studies are warranted to verify the causal relationship and the role of magnesium in the development of cardiovascular disease.

Key Words: 저마그네슘혈증, 관상동맥 석회화, 아가츠톤 점수
Hypomagnesemia, Coronary artery calcification, Agatston score