

Abstract

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Serum and intracellular magnesium deficiency in patients with metabolic syndrome--evidences for its relation to insulin resistance.

Lima Mde L, Cruz T, Rodrigues LE, Bomfim O, Melo J, Correia R, Porto M, Cedro A, Vicente E.

Department of Medicine, Faculty of Medicine, Federal University of Bahia, Brazil.

OBJECTIVE AND METHODS: This cross sectional study evaluated serum (SMg) and intramononuclear (MMg) magnesium in patients with metabolic syndrome without diabetes and correlated them with cardiovascular risk factors. 72 patients and 57 controls (blood donors) were studied.

RESULTS: Hypomagnesemia (SMg<1.7 mg/dL) was seen in 23.2% and intracellular depletion in 36.1% of the patients. SMg and MMg means were significantly lower in patients than in controls: 1.80+/-0.18 mg/dL vs. 2.43+/-0.43 mg/dL and 0.98+/-0.55 microg/mg vs. 1.67+/-0.64 microg/mg of protein (P<0.001). Inverse correlation was observed between, SMg and MMg with BMI; SMg with systolic blood pressure and waist circumference in women. Patients with acanthosis nigricans had lower SMg (1.75+/-0.18 mg/dL vs. 1.85+/- 0.18 mg/dL, P<0.05). Non-white people had lower SMg (1.78+/-0.16 mg/dL vs. 1.92+/-0.24 mg/dL, P=0.007) and MMg (0.95+/-0.59 microg/mg vs. 1.13+/-0.42 microg/mg, P=0.03). Patients with IR showed lower MgM means (0.84+/-0.33 microg/mg vs. 1.14+/-0.69 microg/mg, P<0.05). The same occurred in patients with low HDL-c levels (0.92+/-0.46 microg/mg vs. 1.20+/-0.70 microg/mg, P=0.03), and those with moderate and severe hepatic steatosis (0.77+/-0.29 microg/mg vs. 1.21+/-0.80 microg/mg, P<0.05).

CONCLUSION: In conclusion, magnesium depletion in serum and mononuclear cells is common in obese people with metabolic syndrome, and it is more evident in non-white people with insulin resistance. This depletion may contribute to a post-receptor insulin resistance.

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