Abstract

Background: The relationship between serum minerals and homocysteine, lipoprotein and glucose homeostasis markers at birth has been scarcely reported. This study aims to determine a) the relationship between calcium, magnesium, cardiovascular disease (CVD) markers (e.g. lipids, lipoproteins, homocysteine) and insulin sensitivity/resistance markers (e.g. glucose, insulin, HOMA) in cord serum; and b) to find out the possible influence of reduced or increased levels of serum calcium and magnesium on those markers. Subjects and Methods: Forty-eight eutociic, normoweight and appropriated-for-gestational age, full-term, singleton without foetal distress newborns from the Mérida Study were studied. Parameter percentiles for serum calcium and magnesium as well as for the Ca/Mg ratio were stated. CVD and insulin sensitivity/resistance markers in neonates within the first quartile for calcium, magnesium and their ratio were compared with those of neonates within the forth quartile for these minerals. Results: Serum calcium negative correlated with HDL-c (p<0.05), arylesterase (AE) (p<0.01), the Apo A1/Apo B (p<0.05) and AE/HDL-c (p<0.05) ratios. Also, negative and significant correlations were found between the Ca/Mg ratio and AE (p<0.01), and AE/HDL-c (p<0.05). Neonates within the highest quartile for Mg displayed significantly higher levels of LDL-c and homocysteine (p<0.05). Newborns within the Ca/Mg ratio first quartile presented higher activities of AE while those of with high Ca/Mg ratio showed low levels of insulin. Conclusions: Calcium and magnesium levels appear related to CVD and insulin sensitivity/resistance markers at birth. Future follow-up studies, mostly in neonates, with high magnesemia and/or high Ca/Mg ratio at birth are recommended.

Keywords
Calcium, Magnesium, Lipids, Lipoproteins, Insulin, HOMA, Neonates.