PREVALENCE AND FACTORS ASSOCIATED WITH HYPOMAGNESAEMIA IN SEVERELY MALNOURISHED CHILDREN ADMITTED TO MULAGO HOSPITAL

BY

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ABSTRACT

Introduction

Magnesium, an alkaline earth metal type II nutrient participates in over 300 metabolic reactions that are very crucial for life and health. Hypomagnesaemia is known to compromise primary and secondary immune responses and may increase tissue susceptibility to lipid peroxidation; observations that are of vital significance in children with severe malnutrition whose magnesium nutriture are frequently poor. Hypomagnesaemia once present leads to refractory hypokalemia, a condition that is both common and associated with mortality in severely malnourished children. There has been a paucity of information on the prevalence of and factors associated with hypomagnesaemia in severely malnourished children.

Objective

To determine the prevalence and describe the factors associated with hypomagnesaemia in severely malnourished children admitted to Mulago hospital.

Study design

Cross sectional study.

Method

One hundred and eighty six severely malnourished children, aged 2-59 months, who fulfilled the eligibility criteria, were consecutively enrolled on arrival to the paediatric acute care unit of Mulago national referral hospital. Clinical history, physical examination, and blood samples for biochemical tests were removed using the aseptic technique and delivered to the respective laboratories within 2 hours after removal. Serum electrolytes were measured by calorimetry using a COBAS INTEGRA 400 plus – an advanced integrated system for diagnostic clinical chemistry testing. HIV testing of the children was determined using the already established system of routine counselling and testing (RCT) within ACU. Raw data was coded and entered into Epidata 3.1 and exported to STATA version 10 soft ware package for analysis.

P – Value <0.05 was considered for statistical significance.

Results

Out of 186 children, 15(8.1%) had hypomagnesaemia. On multivariate analysis, the factors independently associated with hypomagnesaemia were; Age of the child being 24months and above (AOR 7.5; 95% CI: 1.6 – 34.2); maternal age less than 20 years (AOR 6.3; CI 1.3-29.9); reported diarrhoea on admission (AOR 4.5; CI 1.1 – 18.4); and Serum albumin less than 20g/l

(AOR 6.0;CI 1.6 – 22.9).

HIV infection was only associated with hypomagnesaemia at bivariate analysis. However, the mean serum magnesium level was 0.87mmol/L (SD 0.2) in HIV infected children while it was 0.90 mmol/L (0.2) in HIV negative children. The difference in the mean serum magnesium level was statistically significant (P= 0.04).

Conclusions

One in twelve children admitted with severe malnutrition has hypomagnesaemia. The prevalence of hypomagnesaemia in our severely malnourished is low compared to other published studies.

The factors independently associated with hypomagnesaemia in this study are comparable to other studies apart from maternal age less than 20years which has not been studied.

HIV infected severely malnourished children have significantly low serum magnesium.

Recommendations

Severely malnourished children presenting with diarrhea, serum albumin less than 20g/l should have their serum magnesium included on the electrolyte workup.

A bigger study is needed to find out whether serum magnesium level improves with nutritional rehabilitation in our setting.

We also need to find out whether hypomagnesaemia has an impact on the management outcome of our severely malnourished children.