

A.Mujajati

DECLARATION

I declare that this dissertation is my own work. It is being submitted for the Masters degree in Internal Medicine at the University of Zambia, Lusaka. It has not been submitted before for any degree or examination at this or any other University.

Signed.....

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APPROVAL

This dissertation of **Dr. Mujajati Aaron D** is approved as fulfilling the requirement for the award of the degree of **Master of Medicine in Internal Medicine** by the University of Zambia.

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Hypomagnesaemia in AIDS Patients on *Amphotericin-B* Therapy at UTH, Lusaka, Zambia.

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DEDICATION

To Science

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ABSTRACT

Background

Amphotericin-B deoxycholate is an essential agent in the management of cryptococcal meningitis. Despite its proven antifungal potency it has several untoward side effects which include renal failure, hypomagnesaemia, hypokalaemia, phlebitis and nephrogenic diabetes insipidus. Hypomagnesaemia is an important but under diagnosed electrolyte abnormality in patients on Amphotericin-B therapy. The effects of hypomagnesaemia on mortality and morbidity in critically ill patients are well documented.

In clinical practice, when patients are receiving Amphotericin-B for treatment of cryptococcal meningitis, routine monitoring of serum potassium and creatinine are advocated for but with little to no emphasis on magnesium. Therefore, this study was carried out on HIV infected patients with cryptococcal meningitis, who were treated with amphotericin-B at the University Teaching Hospital in order to determine the incidence of hypomagnesaemia if any.

Methods

Design: Observational Cohort study.

Setting: University Teaching Hospital (UTH), Lusaka, Zambia.

Data Collection and Analysis: 54 HIV infected patients with cryptococcal meningitis and scheduled to receive Amphotericin-B therapy were enrolled and each was followed up prospectively for 14 days. Baseline and follow-up (day 14) data which included socio-demographic characteristics, drug history, co-morbidities vital signs, Glasgow Coma Score (GCS), Karnofsky Score, serum creatinine, urea, magnesium, potassium, sodium and haemoglobin were collected. Statistical software STATA version 12.0 was used to analyse the data. The incidence of hypomagnesaemia was calculated using *Binomial exact* methods. A *conditional logistic regression* was used to estimate the unadjusted and adjusted odds ratio of hypomagnesaemia for various variables.

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Results

We recruited fifty-four participants out of which thirty-three (n=33) were male and twenty-one (n=21) were female. The baseline prevalence of hypomagnesaemia was 40.7% and 96.8% after 14 days of *Amphotericin-B* therapy. CD4 count, NSAID use and rise in creatinine were associated with hypomagnesaemia. However, there was no significant association with alcohol, chronic diarrhea, HAART use and anaemia. The incidence of hypomagnesaemia after 14 days of *Amphotericin-B* therapy was 97 per 100 person days (95 % CI: 84, 99). We did not find correlation between serum magnesium and potassium ($R^2 = 0.025$). All-cause mortality was 25% but the odds of death in those who were hypomagnesaemic were low OR= 0.95 (95% CI: 0.93, 0.96).

Conclusion

The baseline prevalence and Incidence of hypomagnesaemia after 14 days of *Amphotericin-B* therapy were high. Therefore, routine magnesium testing, monitoring and supplementation should be considered in HIV infected patients who are treated with *Amphotericin-B*. The study was inconclusive on the use of potassium levels as a surrogate marker for hypomagnesaemia because there was no correlation between serum magnesium and potassium.

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LIST OF ABBREVIATIONS

ART	-	Anti Retroviral Therapy
AIDS	-	Acquired Immune deficiency syndrome
Ampho-B	-	Amphotericin-B
BMI	-	Body Mass Index
CSF	-	Cerebral Spinal Fluid
CD4	-	Cluster of Differentiation number 4 T-Cell Lymphocytes
CM	-	Cryptococcal Meningitis
Cr	-	Creatinine
GCS	-	Glasgow Coma Score
HAART	-	Highly Active Antiretroviral Therapy
HIV	-	Human Immunodeficiency Virus
K	-	Potassium
K Score	-	Karnofsky Score
Mg	-	Magnesium
Na	-	Sodium
NSAIDS	-	Non-steroidal Anti-inflammatory Drugs
PID	-	Patient Identification Number
TB	-	Tuberculosis
UTH	-	University Teaching Hospital

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