Serum Vitamin A and Beta-Carotene Levels in Children with Giardiasis Before and After Treatment

*Giardia lamblia* is now considered the most common human intestinal parasite which is seen particularly in developing countries. 1 *Giardia lamblia* inhibits vitamin A absorption from the gastrointestinal system. The clinical spectrum of infected persons often changes from asymptomatic to heavy chronic malabsorption. Giardiasis is a self-limiting disease. In this respect, most cases of acute giardiasis can recover in a 4–6 week period while others can become chronic. Chronic giardiasis may cause malabsorption of fat, vitamin A and B12, carbohydrate, and folic acid, and cause protein-energy malnutrition in children. 2 Our study was planned to determine vitamin A and beta-carotene levels in children with symptomatic giardiasis and evaluate their malabsorption levels.

The study was done on 34 children (11 girls and 23 boys), age 7–12 years, with chronic diarrhoea (more than 4 weeks) due to giardiasis. Giardiasis was confirmed after microscopic examination of three fecal samples from each patient. Metronidazole was given to all children (20 mg/kg/day for 10 days). Blood samples (3 ml) were obtained from each child by venepuncture before and immediately after treatment and collected in a vacutainer tube. The serum was separated by centrifugation, frozen at −40°C and protected from light with aluminium foil until the assay was performed. All assays were carried out within 1 week of the collection of blood. The serum vitamin A and beta-carotene levels were determined according to the method described by McCormick, 3 using a Jenway 6105 UV/Vis spectrophotometer. Statistical analysis of data was carried out using the t-test. Thirty-four children with symptomatic giardiasis were enrolled into the study. Their serum vitamin A and beta-carotene levels were determined before and immediately after treatment with metronidazole. Serum vitamin A levels before and after treatment were 123.42 ± 6.42 μg/dl and 143.14 ± 6.41 μg/dl, respectively. Despite blood concentration of vitamin A increasing after treatment, the results were not statistically significant (p < 0.05). Serum beta-carotene levels before and after treatment were 123.42 ± 6.42 μg/dl and 143.14 ± 6.41 μg/dl, respectively, and the results were statistically significant (p < 0.05). The increase in serum beta-carotene levels after treatment indicates an improvement in the absorption mechanism. On the other hand the increase in vitamin A was not large enough to reach significant levels after metronidazole treatment. We suggest that because blood was collected immediately after the treatment not enough time had elapsed for a significant rise of vitamin A level.

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Reference

A total of 302 children irrespective of sex, nutritional status, socioeconomic status, and food habit up to the age of 2 years, suffering from acute watery diarrhoea of less than 3 days’ duration for which they received ORS for a minimum period of 24 h amounting to at least 5 per cent of their body weight, were included in the study (ORT group). One hundred and forty-two, age, sex, nutritional status, socioeconomic status, food habit, and duration of diarrhoea-matched children who did not receive ORS for the present episode of diarrhoea were included in the control group.

Hypernatraemia (a serum sodium level more than 150 mmol per litre) was observed in only 4/302 (1.3 per cent) children of the ORT group and in 4/142 (2.8 per cent) children in the control group. In contrast, hypokalaemia (a serum sodium level less than 130 mmol per litre) and hypokalaemia (a serum potassium level less than 3.5 mmol per litre) were observed in 57/302 (19 per cent) and 71/302 (24 per cent) children respectively in the ORT group compared to hypernatraemia in 34/142 (24 per cent) cases and hypokalaemia in 33/142 (23 per cent) cases in the control group. A reduced incidence of hypernatraemia was observed in the ORT group compared to the control group, but the fact was not proven statistically. Hypokalaemia was observed equally in both groups.

Only 26/119 (22 per cent) children developed hypokalaemia and hypokalaemia who received ORS as recommended by WHO, compared to 18/72 (25 per cent) children who became hypernatraemic and 19/72 (26.4 per cent) children who became hypokalaemic after receiving ORS which was not according to the WHO formula. However, the incidence of hypokalaemia (21/66, 31.8 per cent) was higher in children who received home-available fluids.

No children in either the study or control groups showed signs and symptoms of hyponatraemia and hypokalaemia, as the levels of serum sodium and potassium were not severely depressed (126.1 ± 2.5 and 3.0 ± 0.4 mmol per litre respectively).

Our findings show that hypernatraemia is not a problem among diarrhoeal children and does not occur frequently among children who receive ORS at home, unsupervised, from their mothers. However, hypernatraemia and hypokalaemia are major biochemical abnormalities among diarrhoeal children in Calcutta where malnutrition is prevalent, as in other developing countries.13 The use of ORS unsupervised, at home, does not lead to or exacerbate hypernatraemia or hypokalaemia; it rather reduces the occurrence of these biochemical abnormalities. Our experience also shows that hyponatraemia and hypokalaemia, though frequently observed in diarrhoeal children, are biochemical abnormalities without clinical importance and implications.

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Editor, Management of Cardiogenic Shock in Asphyxiated Babies Using a Clinical Scoring System

There are reasons to believe that asphyxia is a major cause of neonatal mortality and morbidity in developing countries. The heart bears the brunt of hypoxic–ischaemic insult caused by asphyxia and cardiogenic shock is its severe form. There are few reports on the management of cardiogenic shock from developing countries. This may be because documentation of shock is difficult due to lack of facilities for accurate monitoring of blood pressure, central venous pressure, or pulmonary hypertension. This communication describes our experience of dopamine therapy where shock was diagnosed using a modified clinical scoring system described by Cabal and Siassi.1

This study was conducted at the Neonatal Intensive care Unit, J. J. Hospital, Bombay, between October 1992 and September 1993. During this period 713 babies were admitted to the Unit; 107 of them had a 1 min Apgar score of 7 or less, of whom 55 babies had mild or no respiratory distress. They improved on supportive care in the form of warmth and nutrition with or without oxygen. The remaining 52 babies, who are the subjects of this study, had a modified shock score of 4 or more (Table 1), suggesting moderate to severe shock. These babies received dopamine by infusion at the rate of 10 µg/kg/min in addition to warmth, nutrition, and oxygen. Nineteen babies died, 11 of them with an Apgar score of less than 5 at 5 min. Death was less likely to occur when dopamine was started within 6 h of birth or required 24 h after birth (Table 2). Babies who had respiratory distress with cyanosis at the time of starting