THE FEEDING PRACTICE ON ACUTE DIARRHEAL
DISEASE IN INFANTS AND CHILDREN

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INTRODUCTION

The effect of acute diarrhoeal disease is a condition equivalent to acute malnutrition.

1. There is a loss of nutrients, fluid, electrolytes, fat, carbohydrate, amino acids, vitamins and trace elements due to direct losses with the stools and vomits. Patients suffering from Shigellosis were losing between 100 to 500 ml of serum in faeces each day (Rahaman, 1983).

2. Reduced intake is caused by anorexia, vomiting and withholding food during diarrhoea. A study in Bangladesh showed a decrease of 30-40% in the acute stage and the consumption was 60-80 kcal/kg body weight/day (Sarker, 1982). In a longitudinal study in Guatemala 477 children were observed. The reduction in intake was 16% from 15 to 36 months of age, 22% from 42 to 60 months and 19% across all ages in the diarrhoeal cases (Mortara et al., cited by Kish, 1983).

3. Reduced absorption. A diminished capacity of the mucosa to absorb macro and micronutrients is caused by the adhesion of bacteria to the mucosa, release of toxins, direct damage to the enterocytes and crypt cells, bacterial hydrolysis of bile acids and carbohydrates and other pathogenic actions. A decrease of lactase (75%) and sucrase (85%) was found by Chatterjee et al. in their study on 20 diarrhoeal children (Chatterjee, 1977). Another study in Bangladesh indicated that during the acute stage of diarrhoea, absorption of nitrogen was 41%, 58% and 43%, absorption of fat 61%, 78%.

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and 42% in Shigella, ETEC and Rotavirus patients respectively, while the absorption of carbohydrate was least affected (Hoia et al., 1983). Another study of 274 Indian infants with diarrhea showed that 41% developed carbohydrate malabsorption where as 90 infants were lactose intolerance, 6 malabsorbed sugar as well as lactose and 14 developed total carbohydrate intolerance and prolonged diarrhea. These altered function of the gastrointestinaltract can be explained by intestinal mucosal biopsies obtained during the acute stage which showed sparse and severely distorted microvilli. Carbohydrate malabsorption not only results in loss of calories, but also prolongs the symptom of diarrhea. When unabsorbed sugar enters the colon, they are fermented by colonic bacteria to organic acids. These acids act as an osmotically active solute that retains the water of the intestine (Kish, 1983).

4. Metabolic alterations, acute infectious illnesses are accompanied by interrelated nutritional and metabolic responses within the host. At the moment of exposure, nutrient-related metabolic events begin. The physiologic activity that takes place requires an increased production of polymorphonuclear cells. This increase in turnover reflects itself in a decrease in available substrates, such as amino acids.

At the onset of fever, the secretion of so-called acute phase serum proteins begins. To maintain this synthesis amino acid are needed. At the height of the illness, negative balances of many nutrients including nitrogen, potassium, magnesium and phosphorus begin. Negative nitrogen balance can also develop in a subclinical infection, in the absence of fever (Kish, 1983).

Du Bois showed in 1973 that to maintain an increase in core temperature of 1°C in adult subjects, a 13% increase in basal metabolic rate was required. In a 9 kg infant whose basal metabolic requirements are 60 kcal/kg/24 hour, one degree of fever would increase caloric requirements by a minimum of 70 cal/day. Malnutrition is not a rare case in rural areas of Andong (Burma of Community Services, 1973). It is enhanced to correct as early as possible the nutritional deficit in diarrhea and to maintain the nutrition of the child during diarrheae (WHO, 1980).
After a starvation during one day a child needs several days until a week to get his previous body weight (Morley, 1973). And Starvation results in alteration of the Jejunal enzymes for absorption of fluids and electrolytes (Hesschorn, 1975).

A substantial part of nutrients is still absorbed during diarrhoea (Molla et al., 1963). On the third day of diarrhoea a full strength formula was well tolerated (Gennarto, 1979).

Suprapto studied an early refeeding in infantile diarrhoea with a very good result. A 8-fold increase in body weight and a decrease in hospital-stay up to 50% happened in the study group compared with the control group who was treated at the classic schedule of refeeding. In the early refeeding diluted formula was offered immediately after completion of rehydration formula. On the successive days gradually one, two and three (if needed) semi-solid meal was added to the gradually less diluted formula.

There was no side effect of increased diarrhoea (Suprapto, 1979). Another study was done on diarrhoeal children, 5 to 24 months of age with mild and moderate dehydration by giving diluted formula and rice porridge immediately after 4 hours initial rehydration, if needed along with further oral rehydration fluid. The amount of semi-solid food is completely offered, that is as many meals as a normal child at the age usually gets.

The result was that the study group had less diarrhoea than the control group (as by Suprapto). This is easy to imagine, because the early intake of nutrients resulted in an early repair of the villi (Hoengma, 1963). The benefit of breast feeding is well-known. Based on all this knowledge a nutritional management on diarrhoeal disease is practiced.

**NEONATAL MANAGEMENT ON ACUTE DIARRHOEA**

In-patients: Infants - 4 years
Severe, moderate or mild dehydrated
- Breast fed infants
  - Continued breastfeeding, beside oral or intra-venous rehydration (pressed out or direct from the breast).

Day 1: semi-solid food as in 2 (infants with formula)
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2. Infants with formula

Day I: After 4 hours rehydration therapy (intravenous or oral), 1/3 diluted formula, semisolid food (porridge containing rice flour, salt, a bit of coconut milk), 5, 6, 7, months old 1, 2, 3 meals respectively.

Day II: 2/3 diluted formula + semisolid food, banana (fruit juice)

Day III: Full strength formula + semisolid food + banana (fruit juice). To take as much as possible from the meals it is encouraged to give the child 5-6 meals by 11/2 hours frequently.

If diarrhoea continues gets worse during this dietary management in a child with formula and the client of the feces is positive or the pH = 5 or less, a low lactose formula is offered. Another special formula, a low LCT (Long Chain Triglyceride) milk or UFA unsaturated fatty acid milk and sub-elemental diet are given on indication.

Unsick Infants: Infants - 4 years

Moderate or mild dehydration

1. Breast fed infants

Continue breast-feeding alone oral rehydration solution semisolid food as in 2 (infants with formula).

2. Infants with formula

Day I: After 4-6 hours rehydration solution, 1/3 diluted formula along with full number of semisolid food, banana as a child of this age normally gets.

Day II: 2/3 diluted formula + semisolid food as in day I.

Day III: Full strength formula + semisolid food as in day II.

In the areas covered by the health workers, rural or urban, rice porridge containing rice flour with or without milk, or rice porridge with vegetables (haisi tam) are recommended. While in the other parts of the rural areas semisolid food for infants consisting of rice with sugar, salt, or soybean sauce, or rice mixed with banana, or rice cooked in banana leaves (ketupat) which is more solid, are still present (Tan, 1970).

These traditional infant food can continuously be given to the infants and children with diarrhoea.
REFERENCES


