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SPECIAL ARTICLE

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Problems and Solution of Malabsorption  
Syndrome in Indonesia\*

by

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Abstract

I. Problems of malabsorption syndrome in developing countries like Indonesia are associated especially with :

- (1) Protein Calorie Malnutrition
- (2) Low Birth Weight
- (3) Gastroenteritis
- (4) Post bowel surgery
- (5) Being unused to drink milk after weaning.

They show a big difference with those in developed countries where they usually are correlated with a.o. coeliac disease, cystic fibrosis, etc.

II. Solving the problems :

- a. Since in diarrhoeal patients, with or without PCM, sugar intolerance and or fat malabsorption usually occur, a formula consisting of low or free lactose with easily absorbable fats i.e. MCT or UFA, might be the best solution as a refeeding regimen.
- b. Besides treating the malabsorption syndrome, other measures are much more important i.e. correction of fluid and electrolyte imbalance and treatment of predisposing condition.

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## I. Problems

Problems of malabsorption in most developing countries like Indonesia are commonly associated with gastroenteritis, protein calorie malnutrition (PCM), low birth weight (LBW) and post bowel surgery (Suharjono et al., 1974). Infection or parasite of the small bowel in the malnourished child occur very frequently.

Twenty one per cent out of 4938 hospitalized children in the year 1975 in this department were suffering from gastroenteritis and the case fatality rate of this disease was 9.1%. Fifteen point one per cent of the gastroenteritis cases were malnourished children (Adnan and Suharjono, 1976).

### *Sugar intolerance*

Two important factors that might play a role in causing sugar intolerance in Indonesian children are :

- (1) the high incidence of gastroenteritis and PCM,
- (2) Being unused to drink milk after weaning.

That gastroenteritis can cause mucosal damage in the small bowel and disaccharide malabsorption resulting in diarrhoea has already been well described (Barnes and Townley, 1973).

Intestinal biopsy study of PCM children showed a notable varying degree of vilous atrophy (Suharjono et al., 1971).

The presence of overgrowth of bacteria in malnourished children can also cause sugar intolerance indirectly through gastroenteritis.

A survey in Indonesian malnourished children with diarrhoea showed marked small bowel microbial contamination with a wide variety of microorganisms (Gracey et al., 1973).

A recent trial on intestinal microbes using enterotest duodenal capsule showed that nearly all cultures of intestinal samples of the patients had also microbial contamination of upper gut similar to the results that had been found in a similar group of patients in this department three year ago (Gracey et al., 1976). Some results from laboratory abroad (Elliot et al., 1972) suggest that bacteria isolated from malnourished patients, although not considered enteropathogenic in the usual sense, are capable of interfering with the intestinal of small, water-soluble molecules.

Being unused to drink milk after weaning in Indonesian children is very common. These children, especially of the low socioeconomic group usually stop to consume milk after weaning, so that the microvilli are not able anymore to adapt to lactase production after a long time of absence of lactose in the diet (Belin and Davis, 1968).

In low birth weight newborns, temporary milk intolerance for a few days could occur until their lactase reaches adequate levels to be able to digest

the lactose in the formula (Bayless and Christopher, 1969).

The causes of disaccharidase deficiency or sugar intolerance in post bowel surgery are among others :

1. damage to the mucosa which occurs after enteritis.
2. decrease of enzyme production and of absorption areas after intestinal resection.
3. "overgrowth of the normal flora" in cases of intestinal obstruction.
4. bacterial contamination in patients using stomach tube or undergoing gastrostomy, ileostomy. (Halimun et al., 1973).

During the last 5 years (1971 — 1973) 1423 Indonesian children were investigated for malabsorption syndrome, i.e. :

960 for lactose intolerance,  
563 for fat malabsorption.

With the following results :

52.8% out of 856 infants with chronic diarrhoea, 86.4% out of 22 children with PCM, 72.0% out of 50 "healthy" preschool children and 21.9% out of 32 neonates with post bowel surgery show lactose intolerance (Suharjono et al., 1976).

#### *Fat malabsorption*

The high prevalence of PCM, LBW and gastroenteritis in Indonesian children causes high frequencies of fat malabsorption as well.

74.3% out of 35 malnourished children with diarrhoea, show fat malabsorption, in LBW infants it is even higher, i.e. 89.5% out of 76, whereas in full-term neonates it is 60.9% out of 121 and in infants more than 1 month old it is 57.9% out of 331 (Suharjono et al., 1976).

Fat malabsorption usually can occur in PCM, LBW, gastroenteritis due to insufficiency of organs e.g. pancreas, liver and/or intestine.

It is also suggested that overgrowth of bacteria in the intestines might cause deconjugation of the bile salts, which might impair fat absorption and these microbiological abnormalities are also related to the pathogenesis of diarrhoea in children with malnutrition.

Our findings, using the lipiodol absorption test (L.A.T.) indicate that it is a reasonable, but not flawless, discriminatory tests in children with intestinal malabsorption. This L.A.T. is simple to perform and these results in our study confirm that it is a reasonably good screening test for steatorrhoea in children, but despite its simplicity it has not become widely used for this purpose. The findings also suggest that it might be particularly useful in determining the prevalence of fat malabsorption in communities where more reliable but sophisticated tests of intestinal fat absorption of a formal stool fat excretion study are not readily available or very limited. (Gracey et al., 1974).

Besides these sugar intolerance and fat malabsorption, it needs further investigations on other malabsorptions i.e. protein, B12 malabsorption etc.

## II. Solution

Management of sugar (lactose) intolerance and fat malabsorption in diarrhoeal children with or without malnutrition consists of :

- (1) correction of fluid and electrolyte imbalance
- (2) treatment of predisposing condition
- (3) temporary withdrawal of any lactose in the diet or giving lactose low formula, beside MCT (Medium Chain Triglycerides) or UFA (Unsaturated Fatty Acids).

In order not to impair the patient's nutritional intake it is recommended to give a complete formula which is lactose low or free and containing MCT. The first choice to treat fat malabsorption is the use of MCT in the milk formula, whereas UFA can also be used as second choice.

In treating PCM with steatorrhoea a lactose-low or lactose-free and MCT containing milk formula is highly recommended (Sutejo, 1974 and Sutejo et al., 1976).

To lactose intolerance children, due to gastroenteritis, a lactose free or low lactose can be used. i.e. Al 110 (Nestle), LLM (Sari Husada), Almiron (Nutricia). These milks are widely used in Indonesia.

To lactose intolerance and fat malabsorption cases, a combination therapy should be given. In a recent study on the clinical usefulness of MCT and simultaneously low lactose containing formula in 41 LBW infants and children with steatorrhoea and diarrhoea, caprilon formula (Nutricia, Holland) was used with success :

- (i) 76.2% gave good to excellent results in improving fat malabsorption.
- (ii) in 75.9% the diarrhoea was cured and
- (iii) 71.5% revealed an increase of body weight.

Assessment of the response to therapy was done on clinical grounds including careful assessment of the patient's overall clinical state, the nature of the stool, weight gain during the period of observation, steatorrhoea using the lipiodol absorption test. Evaluation was carried out over a period of 4 to 12 weeks.

Other clinical trials that were done previously are:

- (i) in 35 PCM children with diarrhoea and steatorrhoea, MCT. low lactose containing milk formula, i.e. capricid (Nutricia, Holland) was tried with success as well (Suharjo et al., 1976).

- (ii) in 41 children aged between 2 and 16 months with gastroenteritis and dehydration, it revealed that LLM (Sarihusada, Yogyakarta) gave already similar result (Suharjo et al., 1976).

LLM is an Indonesian product, the source of fat in this milk is peanut and coconut in equal amounts, so that it contains low lastose (0.8%) and high amount of U.F.A. i.e. 44.5% of total

fats and 31.5% MCT, linoleic acid 13.5% in diluted form.

In case MCT is not available, UFA as another easily absorbable fat can be used for the dietetic treatment of fat malabsorption.

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