0031-3998/90/2705-0529$02.00/0
PEDIATRIC RESEARCH

Vol. 27, No. 5, 1990
Printed in U.S.A.

EUROPEAN SOCIETY FOR PAEDIATRIC GASTROENTEROLOGY AND NUTRITION (ESPGAN)

AND

NORTH AMERICAN SOCIETY FOR PAEDIATRIC GASTROENTEROLOGY (NASPGN)

Abstracts presented at the Third Joint Meeting
Amsterdam, The Netherlands
May 23–26, 1990

1 DELINEATION OF AN INSULIN-SENSITIVE-PERIOD DURING RAT SMALL INTESTINAL GROWTH

Jean-Paul BUTS, François VAN HOOF

Lab Ped Gastroenter, Univ of Louvain, Brussels

In suckling pups treated with exogenous insulin (IN:12.5 mU.g.b.wt), twice daily, from day 8 to 12, sucrase-isomaltase (SI) measured in BBM was precociously induced while maltase, aminopeptidase and neutral lactase were markedly enhanced (+30 to +131%, $p < 0.01$ vs controls). N-acetyl-β-glucosaminidase (lysosomes), sulfatase C (microsomes) and lactate dehydrogenase (cytosol) were also sensitive to IN with decreases in villus and crypt cells ranging from -37 to -63% ($p < 0.05$ vs controls). Whatever the dose of IN given, the production of plasma corticosterone remained similar to saline controls. In weaned rats (d. 23 to 32), IN (12.5 mU) failed to influence the activity of BBM, lysosomal, microsomal and cytosolic enzymes. The synthesis rate of mature S-I, measured by the incorporation of ^{14}C-leucine into S-I precursor was equivalent in IN-treated rats (0.039 ± 0.006) and controls (0.034 ± 0.005 ratio cpm ^{14}C-SI/cpm^{14}C BBM prot.).

In conclusion : (1) the immature enterocyte of the rat is responsive to IN throughout the nursing period while at weaning, the mature enterocyte lost IN responsiveness (2) the effect of IN on the enterocyte is not mediated by endogenous corticosterone release.

2 REPRODUCIBILITY OF OESOPHAGEAL pH MONITORING DATA.

Yvan Vandenplas, Harry Goyvaerts, Rudy Helven.
Academisch Ziekenhuis Kinderen VUB, Brussels, Belgium.

Oesophageal pH monitoring has been shown to be a valuable method to detect (acid) reflux. It was extended to 24 hours to "allow observing GOR patterns during one complete human circadian cycle" (Johnson;J Clin Gastroenterol 1986;8(suppl):52). Although pH data are influenced by numerous technical and patient related factors, the question of reproducibility has not been thoroughly studied. An oesophageal pH monitoring was performed in 30 infants and children using a Memolog 2a-600 duirng 24 hr. All events, including feeding and activities, were carefully reported by the nursery staff and/or the parents. After 24 hr, data were read-out, and the investigation was repeated using the same equipment after recalibration, and the "activity-report" of the previous day was precisely repeated. Pearson-correlation coefficients ranged from 0.88 to 0.98 for the parameters studied: percent of the investigation time with a pH < 4, the number of reflux episodes with a pH <4, those lasting longer than 5 min, and the duration of the longest episode. The % of the investigation time < 4 and the number of long lasting episodes are the most reproducible parameters. The limits of agreement, who represent the 95% confidence interval of the recorded differences of all pairs (day 1-day 2), revealed clinically irrelevant differences. The correlation coefficients between normal data(n:11) were higher (p:0.95 to 0.98), if compared to the coefficients between abnormal data (n:19) (p:0.88-0.97). Regarding "normal/abnormal", all data were confirmed by the 2nd monitoring. Despite the multifarious patient-related factors influencing pH data, reproducibility of 24 hr pH monit data is very satisfactory for routine clinical application.

3 IMPROVEMENT OF NUTRITIONAL AND LIPOPROTEIN STATUS IN CYSTIC FIBROSIS (CF) PATIENTS AFTER IV ANTIBIOTHERAPY (IV AB) ON AN EQUICALORIC BASIS.

D.C. Belli, D. Pometta, J.M. Dayer, P. Roux, P.C. Sizonenko, S. Suter.
Clinique Universitaire de Pédiatrie, Geneva, Switzerland.

Malnutrition, pulmonary and digestive disease are interrelated in CF. If the effects of nutrition on pulmonary function were closely studied, the adverse is not true, particularly concerning AB and nutritional status. To determine the per se effect of AB on nutritional and lipoprotein status, 7 patients (m = 13.3 ± 1.9 yrs) were studied prospectively before and after a 14-day course of IV AB on an equicaloric (2618 ± 353 vs 2745 ± 392 kcal/d; NS) and equilipidic (97 ± 18 vs 109 ± 20 g/d; NS) spontaneous intake basis. Results : without change in lipid absorption coefficient, IV AB lead to a significant increase of weight (d : 1157 ± 485 g; p<.05) and both mid-arm circumference and triceps skinfold were improved. This gain of weight was significantly correlated (p<.01) to an increase of IGF1- somatomedin-C (d : 0.64 ± 0.15 U/l) and of retinol binding protein (d : 17 ± 4 mg/l). Serum lipids (mmol/l) and apoproteins (mg%) are tabulated below :

	Cholesterol (C)	Tryglycerides (TG)	Phospholipids(Ph)	Apoprotein A1
Before IV AB	2.81 ± 0.41	0.71 ± 0.09	1.55 ± 0.17	69.5 ± 11.7
After IV AB	3.77 ± 0.52	0.94 ± 0.07	2.13 ± 0.22	92.3 ± 13.5
Statistics	p<.01	NS	p<.005	p<.05

The significant increases in C and Ph were noted in both LDL and HDL fractions (p<.01) but not in VLDL. However, Apoprotein B was not significantly modified. On the other hand, inflammatory serum parameters (ESR, IgG, elastase-complex) were unchanged despite notable improvement of pulmonary function tests. In addition, cytokines (tumor necrosis factor (TNF) and interleukin-I alpha and beta), which could influence the lipoprotein metabolism, were measured and found only occasionnaly elevated. In summary, this prospective study showed that profound changes in nutritional and lipoprotein status are induced by IV AB in the absence of modification of caloric or lipidic intake or absorption in patients with CF. Cachectin-like activity of TNF at levels below the assay detection limit could contribute to this metabolic phenomenon.

4 A HUMAN LACTOBACILLUS STRAIN (LACTOBACILLUS GG) PROMOTES RECOVERY FROM ACUTE DIARRHOEA IN CHILDREN

E. Isolauri, T. Jalonen, M. Juntunen, T. Rautanen, T. Koivula
University of Tampere, Department of Clinical Sciences, Tampere, Finland

To determine the effect of a human Lactobacillus strain GG (Gefilac^{TM}) on the clinical outcome and recovery from mucosal damage of acute diarrhoea (82 % rotavirus), 71 well-nourished children between 4 and 45 months of age were studied. After oral rehydration, the patients were randomly assigned to receive either Lactobacillus GG-fermented milk product 125 g (10^{10-11} CFU) twice daily (Group 1), Lactobacillus GG-freeze dried powder one dose (10^{10-11} CFU) twice daily (Group 2) or a placebo milk product (Group 3) with no lactic acid bacteria 125 g twice daily, each for 5 days. In addition, normal full diet otherwise free of fermented dairy products was given. Intestinal permeability was assessed by urinary recovery ratios of orally-administered lactulose (4g) and mannitol (0.8 g). The mean (SD) duration of diarrhoea after commencing the therapy was significantly shorter in Group 1, 1.4 (0.8) days, and in Group 2, 1.4 (0.8) days, than in Group 3, 2.4 (1.1) days; $F = 8.70$, $p < 0.001$. The decrease in the number of diarrhoeal stools became apparent after the first day of therapy in Group 1 and Group 2. After rehydration, each dietary group maintained a positive weight trend. The urinary lactulose/mannitol recovery ratios (means [95 % confidence intervals]) were on admission in Group 1, 0.09 [0.03, 0.24]; Group 2, 0.12 [0.07, 0.22]; Group 3, 0.08 [0.04, 0.18], and no significant alterations were observed at retesting after 2 days of realimentation. The result indicates that early nutritional repletion after rehydration causes no mucosal disruption, and is beneficial for the recovery from diarrhoea. We suggest that fermented dairy products, with viable lactic acid bacteria that are able to colonize the gut, are effective in shortening the course of acute diarrhoea.