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CHRONIC NON-SPECIFIC DIARRHEA OF INFANCY-SUCCESSFULLY TREATED WITH TRIMETHOPRIM-SULFAMETHOXAZOLE. Dahlström KA, Danielsson L, Kalin M
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18 children who fullfilled the criteria of chronic non-specific diarrhea of infancy were evaluated for intestinal bacterial overgrowth as a cause of their diarrhea. The children were randomized into group I (n=10), who were treated with trimethoprim-sulfamethoxazole (TMX) and group II (n=5), three children were excluded because of Yersinia enterocolitica infection) treated with low lactose diet only. The aim of the study was to investigate whether colonization of the small intestine with upper respiratory tract microflora was related to the diarrhea and if treatment with TMX resolved the diarrhea.

METHODS. Stringtest (Enterotest Pediatric^{R}) was used to assess bacterial growth in duodenum. Duodenal fluid were cultured aerobically and anaerobically and examined directly for Giardia and Ameba. Stool was analyzed for pH, haemoglobin, chymotrypsin, Clostridium difficile toxin and direct microscopy for ova and cyst and aerobic and anaerobic bacterial cultures were performed.

RESULTS. In ten of eleven successfully investigated children we found bacterial overgrowth of the small intestine (>10^5cfu/ml) with upper respiratory tract microflora. Alpha haemolytic streptococci dominated in all but one string. In nine of ten children in group I the diarrhea resolved immediately while the diarrhea persisted in all children in group II. All children i both groups had adequate calorie and fat intake.

CONCLUSIONS. The results indicate that bacterial overgrowth of the small intestine with upper respiratory tract microflora may be a cause of chronic non-specific diarrhea and that this diarrhea can be treated successfully with TMX.

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HLA D/DR Ag EXPRESSION IN THE JEJUNUM OF CHILDREN WITH IDIOPATHIC PROTRACTED DIARRHOEA (IPD) AND CIRCULATING ENTEROCYTE ANTIBODIES (EcAb) R Mirakian, CA Richardson, JA Walker-Smith, S Hill, PJ Milla, GF Botazzo. Middlesex, Queen Elizabeth Hospital and Hospital for Sick Children, London

Small intestinal villous enterocytes express Class II molecules whereas crypt cells do not. The role of such molecules in the gut is unknown but it has been suggested that they may be involved in maintaining tolerance to oral antigens. In some children with IPD, circulating EcAbs are present together with other autoimmune manifestations. Jejunal biopsies from 9 children with IPD, EcAbs and an enteropathy were compared with histologically normal jejunum from 9 controls. We studied HLA Class I and II molecule expression in the enterocyte epithelium by immunofluorescence. HLA Class I products were normally expressed in the jejunal epithelium of IPD patients. Class II (DR complex) expression in controls was restricted to upper villous enterocytes. In 6/9 patients with IPD and EcAbs (titres $\geq$1:64) aberrant expression of DR molecules was seen in crypt enterocytes. It can be suggested that by analogy with a similar phenomenon detected in glands from patients with classical autoimmune diseases, DR+ve crypt enterocytes would be able to act as Ag presenting cells, bypassing macrophage requirement. In the other 3 patients with EcAbs (titres $\leq$1:8) a decreased reactivity was seen in villous enterocytes. In all 9 patients numerous DR+ve cells were present in the lamina propria compared to controls. We postulate that aberrant MHC molecule expression in the small intestine might reflect loss of tolerance to luminal antigen which could lead to autoimmune disease.

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LEUKOTRIENE B_4 (LTB_4) CONTENT OF SMALL INTESTINAL MUCOSA IN RAT MODEL OF PREOTEIN HYPERSENSITIVITY. D. Branski, M. Eran, J. Weidenfeld, P. Navon, S. Adler, S. Freier.
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Both prostanoids and leukotrienes are metabolic products of arachidonate via separate enzymatic pathways. We have previously shown that prostaglandin E_2 content in small intestinal mucosa from ovalbumin (OA) sensitized rats is elevated as compared to controls. The purpose of this investigation was to establish whether there is an elevated LTB_4 content in the intestinal mucosa in rats suffering from an immediate type gastrointestinal allergic reaction. 8 rats of the Hooded-Lister strain were sensitized with 250 µg OA IP together with B. Pertussis adjuvant. On the 14th day a booster of 2.5 µg OA was given IP. 8 control rats were given adjuvant only. 5 days after the booster the test and control rats were challenged with 25 mg OA intragastrically and 45 minutes later the rats were sacrificed and 5 cm of proximal small intestine removed. LTB_4 content of scraped mucosa was determined by radioimmunoassay. It was found that the LTB_4 content in the sensitized intestine was 50±9 pg/mg tissue as compared to a level of 38.7±8.8 pg/mg tissue in controls. This difference was significant ($p < 0.025$). We conclude that LTB_4 may participate in intestinal immediate type responses and may explain some of the clinical manifestations of food protein allergy.

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COW'S MILK (CM) WHEY PROTEIN AS A CAUSE OF INFANTILE COLIC IN FORMULA FED INFANTS. A DOUBLE-BLIND CROSS-OVER STUDY. Lothe L., Lindberg T.* Departments of Paediatrics Univ. of Lund, Malmö and University of Umeå*, Sweden.

There are several causes to infantile colic. We have shown that bovine whey protein via the mother's milk can provoke infantile colic in breast-fed infants, and that formula-fed colicky infants can become symptom free on CM-free diet. The aim of this study was to evaluate, under controlled conditions, the effect of bovine whey protein given to colicky infants. We found in 24 out of 27 infants with severe colic that the symptoms disappeared when they were given a CM-free diet (Nutramigen). The mean age for colic debut was 6.4 weeks. These 24 infants were entered into a double-blind cross-over study. The infants (on CM-free diet) were given the contents of identical capsules with each meal, during day 6. The same procedure was repeated on day 10. The capsules contained either whey protein (with Nutramigen added) or human albumin powder (with Nutramigen added). We found that 18 infants reacted with colic on the whey protein challenge, 2 infants reacted with colic on placebo ($p < 0.001$) and 4 infants did not react at all. Crying hours per day for the 24 infants were 5.5 h on formula feeding and 1.0 h on Nutramigen ($p < 0.001$). Crying hours per day were 3.2 h on whey protein challenge and 0.96 h on placebo ($p < 0.001$). In conclusion: Bovine whey protein can give colic symptoms in infants with severe infantile colic.

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INTESTINAL PERMEABILITY IN CHILDREN WITH COW'S MILK ALLERGY. B.Descos, C.André, A.Lachaux, M.A. Pegat, J.Robert, M.Hermier. Hôpital E. Herriot, 69374 Lyon, France.

Testing of intestinal permeability appears to be an objective means of diagnosing food allergy. Permeability was measured by the differential absorption of mannitol and lactulose in 17 healthy children aged 1-38 months, and 11 aged 2-46 months, with milk allergy agreed on clinical history. After an oral load containing 2.5 g of mannitol and 2.5 g of lactulose, urine concentrations were determined by gas-liquid chromatography. Statistical analysis was performed using Mann and Whitney's or Wilcoxon's T test. In children with cow's milk allergy, lactulose/mannitol excretion ratios were 1) before milk challenge (mean 0.056 ± sd 0.040) significantly higher ($p < 0.01$) than in controls (0.017 ± 0.018), 2) after challenge (0.239 ± 0.303) significantly higher ($p < 0.05$) than before ; 3) when the challenge was preceeded by 100 mg of oral sodium cromoglycate the permeability ratios (0.050 ± 0.033) were close to the basal ratios before challenge. This triple evaluation of intestinal permeability could be useful for the diagnosis of cow's milk allergy.

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ORAL REHYDRATION SOLUTIONS (ORS): ASSESSMENT IN HUMAN AND ANIMAL MODELS OF INTESTINAL PERFUSION. EJ Elliott, JB Hunt, AJM Watson, JA Walker-Smith, MJG Farthing.
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Our previous work suggests rat intestinal perfusion is a useful model for studying ORS efficacy. In this study we compared water and Na movement in rat (whole small intestine in situ) and human (jejunal triple lumen) perfusion models to establish whether parallelism exists. Test ORS include WHO recommended ORS (Na90, Cl 80, K20, $HCO_3$30, glu 111mmol/l), British National Formulary BNF-ORS (Na35, Cl37, K20, $HCO_3$18, glu 200) an experimental ORS EXP-ORS (Na60, Cl50, K20, $HCO_3$30, glu 111) and isotonic saline. In the rat all ORS promoted water absorption. EXP-ORS (176±10 µl/min/g;n=6) was superior to BNF-ORS (109±8,n=12) and WHO-ORS (107±11,n=7;$p < 0.01$). In the human model, all ORS promoted water absorption and the profile was similar to that seen in the rat; EXP-ORS (3.3±0.4 µl/min/30cm,n=7), WHO (2.7±0.3,n=7) and BNF-ORS (2.4±0.3,n=6), although no single ORS was superior. All ORS were superior to isotonic saline and Na movement was related to ORS Na concentration. In rat, Na absorption was greater from WHO-ORS (7±2 µmol/l/g) than EXP-ORS (4±0.5;$p<0.01$). Similarly, in human Na absorption was greater from WHO-ORS than EXP-ORS (185±33 vs 126±29 µM/min/30cm;$p < 0.05$). In these studies Na and water movement from ORS in rat and human models are similar and suggest that animal models may be of value in optimising ORS for treatment of acute diarrhoea.