

PROTEIN TURNOVER IN CHILDHOOD CROHN'S DISEASE

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Studies have shown increased protein turnover in adults with active Crohn's disease. To assess protein turnover 13C-leucine was administered as a primed constant infusion before and after treatment in 16 children with active disease. Patients were randomised to receive either steroids or an elemental diet.

	n	Protein synthesis ( $\mu\text{mol leu/kg/hr}$ )			Protein breakdown ( $\mu\text{mol leu/kg/hr}$ )		
		before	after p		before	after p	
steroids	7	157	125	<0.01	175	147	<0.01
elemental diet (not stunted)	4	159	129	ns	177	144	ns
elemental diet (stunted)	5	131	151	0.05	144	168	<0.05

Protein turnover decreased in 7 patients treated with steroids. In those treated with elemental diet a similar decrease was seen in 4 well grown patients. Protein turnover increased in 5 stunted patients and was associated with improved growth velocity. Elemental diets thus appear particularly useful in stunted patients. Measurement of protein turnover may be a useful means to predict growth improvement.

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HUMAN GASTRIC LIPASE: ONTOGENY AND VARIATIONS IN CHILDREN  
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Hydrolysis of dietary triglycerides begins in the stomach through an acid-stable lipase. After a prolonged controversy this preduodenal lipase has been recently demonstrated to be exclusively secreted by the fundus in the adult human (1). We have studied the gastric lipase (GL) all along the pre- and post-natal development and its change in children with gastritis or pancreatic insufficiency. Material: 4 fetal stomachs (7,9,11, and 18 weeks of gestation) and 1 whole upper GI tract (from the tongue to the pylorus) from a 27 weeks foetus have been studied as well as 57 fundic biopsies from children (0 to 17 years old). 38 biopsies were obtained from 36 children without any gastric damage; 9 from children with an endoscopically obvious gastritis, 10 from CF patients with severe pancreatic insufficiency. Methods: GL has been measured according to Gargouri et al (2) Results: Prenatal development

	7 weeks	9 weeks	11 weeks	18 weeks	27 weeks
Tongue-					
oesophagus	ND	ND	ND	ND	0
Fundus	0	0	Traces	78 u/g	200 u/g
Antrum	0	0	0	0	0

During the first weeks of life GL level was around 1000 u/g and reached its adult level (between 2000 and 5000 u/g) at the end of the first month. It was then stable all during childhood. CF patients had a normal GL activity in the fundic mucosa. Finally, 2 out of 9 children with gastritis had an absence of GL activity, whereas it was normal in the 7 others. Conclusion: GL appears around the 11th weeks of gestation and increases slowly during pre- and post-natal development. It seems to be always localised to the fundus without any lingual localization. Enzymatic activity is "mature" from the birth on, and does not vary in relation to pancreatic insufficiency. It is only rarely impaired during gastritis. (1) H.MOREAU et al. Gastroenterology.1988;95:1221-26 (2) Y.CAGOURI et al. Gastroenterology.1986;91:919-25

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ANORECTAL MANOMETRY IN CHILDREN WITH PHYSICAL HANDICAP  
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In order to assess bowel function in children with physical handicap, 39 children with Spina Bifida (SB) and 25 children with Cerebral Palsy (CP) had anorectal manometry performed. Mean age was 11.3 years (range 3-22) and there were 34 m and 30 f. Twenty four enuretic children served as controls. Portable anorectal manometry equipment was used comprising a computer linked via pressure transducers to an anal probe with 3 waterfilled anal sensor balloons (b1, b2 and b3) and a terminal 200 ml air filled balloon. Resting pressure in the outermost balloon (b1) was lower in both patient groups than in controls (41.5 ± 21.5 in SB and 43.6 ± 15.4 in CP vs 52.3 ± 18.4 mm Hg, p<0.001). In the middle balloon (b2), overlying the internal sphincter, the pressure was similar to controls (33.7 ± 24.3 in SB and 36.0 ± 17.2 in CP vs. 35.7 ± 15.3 mm Hg). Mean anal resting pressure (average b1 and b2) was lower in patients than controls (37.6 ± 21.5 in SB and 39.8 ± 14.5 vs. 44 mm Hg). Anal rhythmic activity, generated by the internal sphincter, showed slower waves with large amplitudes in SB and CP compared to controls. An indirect assessment of rectal size can be gained by observing the change in anal pressures in the innermost balloon (b3) during maximal rectal distension. In b3 the pressure increased less in SB than controls but fell in CP (+2.6 ± 15.4 in SB and -2.2 ± 10.5 in CP vs. +9.2 ± 15.3 mm Hg, both p<0.001). In SB the pressure in b1 fell as in controls whereas in CP the pressure fell less (-19.0 ± 17.8 in SB and -8.6 ± 18.4 in CP vs. -17.8 ± 11.1, p<0.001 for CP vs. controls). The pressure fall in b2 was equal in SB and controls but more pronounced in CP (-11.15 ± 19.7 in SB and -14.7 ± 16.9 in CP vs. -11.1 ± 18.9 mm Hg). Anal pressure is low in SB and CP. Internal sphincter pressure is normal but its dynamics are altered. Rectal size is increased but megarectum is not found. These findings explain why patients with CP tend to constipation whilst patients with SB are characterised by greater incontinence rather than constipation.

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PLASMA CONCENTRATION OF CCK AND NT IN PATIENTS WITH CYSTIC FIBROSIS BEFORE AND AFTER KREON.

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A negative feedback control exists between the content of duodenal proteases and pancreatic enzyme secretion which is mediated by CCK and secondary probably by NT. The aim of the study was to determine CCK and NT levels in children with cystic fibrosis (CF). Methods: In 28 patients (18 M, 10 F: 1 - 16 years old) suffering from severe CF (steatorrhoea) and in 10 patients (6 M, 4 F: 2 - 16 years old) with a moderate form of CF plasma concentrations of CCK and NT were measured (RIA) before and after Kreon therapy under basal conditions as well as 30 and 60 min. after breakfast. Control: n=9. Results: Both, under basal conditions and after breakfast, CCK plasma levels were not changed in children with severe or moderate CF compared to controls. However, NT concentrations were significantly elevated in the basal (20 ± 4 pg/ml) and postprandial state (60 ± 9 pg/ml) compared to controls (basal: 9 ± 4, postprandial 22 ± 2 pg/ml). KREON diminished both basal and postprandial levels of NT and basal CCK concentrations (before Kreon: 3.7 ± 1.3 pmol/l, after: 2.9 ± 1.9 pmol/l) in children with severe CF.

Conclusions: 1) CCK-mediated feedback mechanism is not operating under basal conditions in CF patients. 2) Meal-stimulated pancreatic exocrine secretion in these patients could be inhibited by higher intraduodenal loads of proteases (e.g. after Kreon). 3) Kreon therapy diminished elevated NT levels in children with CF. Supported by Kali-chemie AG, FRG and DFG, grant Fo 73/7-8, FRG.

CCK - cholecystokinin  
NT - neurotensin

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A COMPARISON OF IMPEDANCE EPICGASTROGRAPHY WITH A DYE DILUTION METHOD TO MEASURE GASTRIC EMPTYING IN INFANTS AND YOUNG CHILDREN

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Established methods for measuring gastric emptying are scintigraphy and dye dilution. Both are invasive. Scintigraphy also requires sophisticated equipment and is not portable. The dye dilution method requires laboratory facilities and considerable time to prepare materials and process results. Impedance epigastrography is a non-invasive and inexpensive method which has been evaluated in adults.

The aim of this study was to assess the value of impedance epigastrography in infants and young children. The basis of the test is that when liquids of low electrical conductivity enter the stomach the impedance of the epigastric region increases. This increase and subsequent return to baseline can be measured and recorded using paired electrodes placed anteriorly and posteriorly over the stomach and connected to specially designed equipment. 8 preterm infants, mean age of 57 days, mean weight 2.69 kg and one developmentally delayed child aged 56 months (8.4kg) were studied by simultaneously measuring gastric emptying by impedance and dye dilution. Paired results could not be obtained in one child due to movement interfering with impedance measurement and in one child due to milk residue interfering with dye dilution assay.

The results were compared using Pearson's correlation coefficient. In individual patients the correlation coefficient ranged from 0.522 - 0.993. Pooling the results gives a correlation coefficient of 0.508 with a significant P value of 0.003. The half emptying time according to impedance varied between 2.6 minutes and 10 minutes (mean 6.8 minutes). Impedance epigastrography was easy to learn and administer and gave rapidly interpretable results in most cases. This study suggests that epigastric impedance testing deserves further evaluation in infants and children.

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CAMPYLOBACTER BYLORI IN CAMBIAN CHILDREN WITH CHRONIC DIARRHOEA AND MALNUTRITION

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The prevalence of C.pylori in children in the tropics is unknown. Primary C.pylori infection is known to be associated with achlorhydria and in the context of individuals living in highly contaminated environments this may be of importance in the genesis of small bowel bacterial overgrowth such as that seen in children with chronic diarrhoea and malnutrition (CDM). The aim of this preliminary study was to establish the prevalence of C.pylori infection in children in the Gambia, West Africa and especially amongst those with CDM. We used a serological method of diagnosis validated in 43 individuals from the local population by positive identification of the organism on the gastric mucosa with histological and microbiological techniques. In a cohort of 361 children we have established a prevalence rate of C.pylori infection of 14% in children under 20 months of age rising to 46% in those up to 60 months of age. In 77 children less than 3 years of age with CDM, the prevalence rate of C.pylori infection was 53% and significantly (p<0.001) greater than in equivalent groups of age - and sex-matched control children whether healthy (26%) or with marasmus without diarrhoea (24%). Thus C.pylori infection appears to be very common in children with CDM and this leads us to speculate that it may have a role in the pathogenesis of the condition possibly as a result of its effect on the gastric acid barrier.