Conclusion. L-NAME treatment during endotoxemia markedly reduces liver perfusion and oxygen supply. This may explain the liver damage reported in previous studies.

61 Interactions of Endotoxin with Blood Components
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Endotoxin (lipopolysaccharide, LPS) interacts with several plasma protein systems and blood cells, causing release of a multitude of endogenous mediators that contribute to the pathophysiologic process of septic shock. Plasma is also known to be a potent LPS inhibitor. Although many serum proteins and blood cells may bind LPS it is difficult to evaluate the relative importance of such interactions.

Methods and results: Binding of radiolabelled 125I-LPS to human blood cells were investigated in the following sets of experiments: 125I-LPS (0.1-10 μg/ml) were incubated with whole blood (heparinized) for 2-12 hours at 37°C. Plasma and formed blood elements were isolated and the major part (80%) of the 125I-LPS was recovered in plasma, 6-7% was associated with the blood platelets, whereas only small amounts (<2%) were retained in granulocytes, erythrocytes, monocytes and lymphocytes. Incubation of freshly isolated blood cells with either 125I-LPS or FITC-LPS and subsequent analysis by radioactive counting, autoradiography, flow cytometry and immunofluorescence microscopy showed that monocytes were by far the most effective blood cell binding LPS. Purified lipoprotein fractions incubated with 1 μg/ml 125I-LPS for 2 h at 37°C were subjected to lipoprotein electrophoresis and staining and subsequent autoradiography. 125I-LPS bound to all lipoprotein fractions (HDL, LDL, VLDL). The same result was obtained when heparinized plasma or whole blood were incubated with 0.1-10 μg/ml 125I-LPS. Superoxide dismutase 12 chromatography of 125I-LPS incubated plasma showed 2 marked peaks; one coeluting with the macromolecular plasma proteins in the void volume and the other in the IgG/albumin region.

Conclusion: In vitro, radiolabelled LPS were able to bind both to HDL, LDL and VLDL as well as to several other serum constituents. Monocytes represents the most important target blood cell for LPS binding and are also the most important mediator cell of LPS effects in the body.

62 Catheter-Related Sepsis in Patients on Home Parenteral Nutrition

In the period from 1980 to 1993, 78 patients received HPN for 1 to 198, median 33 months, corresponding to a total treatment period of 344 patient years.

The patients had a Broviiac silicone rubber catheter placed on the chest or upper arm. The exit site of the catheter was covered with a sterile dressing twice a week until 1988, and hereafter with a transparent dressing (Tecaderm) once a week. The exit site of the catheter and the connections of the infusion line was painted with Povidone-iodine 10% (Isobetadine) until 1985, and hereafter with 0.5% chlorhexidine in 70% ethyl alcohol. Since 1987 most of the patients received their nutrition from 3-litre bags. The patients were trained to administer parenteral nutrition by a special nursing team during a 2-4 week period before they were discharged from the ward.

Results: 108 episodes of catheter sepsis occurred in 35 (45%) of the patients, corresponding to one episode of catheter sepsis per 3.2 catheter treatment year.

The sepsis incidence (number of episodes of catheter sepsis per catheter treatment year) from 1980-1993 was:

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<tr>
<td>Incidence</td>
<td>0.61</td>
<td>0.52</td>
<td>0.47</td>
<td>0.23</td>
<td>0.22</td>
<td>0.15</td>
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Conclusion: A significant reduction in sepsis incidence was observed, which could be related to the change of disinfectant in 1986 and the introduction of 3-litre bags in 1987. The change in transparent dressings in 1988 did not result in increased frequency of sepsis.

63 IgA Antij jejunal Antibodies: A Further Improvement in Childhood and Adult Coeliac Disease Screening
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IgA antij jejunal antibodies (JAB) were identified some years ago, but only a few studies have been produced on their utility in coeliac disease (CD) screening. Our aim was to establish if IgA JAB improve the sensitivity and specificity of IgA antiendomysial (EmA) and antigen antibodies (AGA) for CD. IgA JAB were searched for by indirect immunofluorescence (IFL) on crypt section of monkey jejum in the sera of 81 patients with untreated adult and child-

hood CD and, as controls, in the sera of 95 patients with various gastroenterological diseases and of 60 blood donors. IgA JAB were positive in 96% of the untreated coeliacs in comparison with a positivity of 93% and 72% for EmA and AGA respectively. Like EmA, JAB persisted at low titre in 7 (14%) of 50 coeliacs tested after 1 year of gluten free diet (GFD) in spite of the regrowth of jejunal villi, whereas IgA AGA disappeared in all these patients. IgA JAB and EmA reappearance was close to 100% in the 13 children with CD studied after 6 months of gluten challenge, while IgA AGA reached their highest prevalence (about 70%) after 1 month of gluten ingestion. All disease and healthy controls were negative for the 3 IgA antibodies. The search for IgG JAB was unreliable not only for the high number of "false positives" in control sera, as already described for IgG EmA, but even for a cross-reactivity between IgG, normally present in primate tissues, and FITC anti-human IgG.

Our results prove that IgA JAB and EmA are the best screening tests for CD, but it must be underlined that JAB display a slightly higher sensitivity than EmA. Moreover, the routine use of IgA JAB instead of IgA EmA could also be advantageous in terms of cost/benefit ratio, as for the former we have the whole primate jejumun available, whereas for the latter the only small portion of the lower part of primate oesophagus. IgA AGA, instead, must be preferred to IgA JAB and EmA for monitoring the answer to GFD in treated coeliacs.

64 Rapid Increase of Bone Mineral Density with Diet in Adult Coeliac Disease
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Purpose: In order to evaluate the effect on the bone mass of gluten free diet, we investigated prospectively the bone mineral density in consecutive adult patients with newly diagnosed coeliac disease.

Methods: Sixty-six patients with untreated coeliac disease (aged 17-79 years) were examined at diagnosis and 43 of them one year after dietary recommendation. Bone mineral density was measured in the forearm using Single Photon Absorptiometry and in the lumbar spine, femoral neck and trochanter using Dual Energy X-ray Absorptiometry. The values were compared with those in healthy controls, matched for sex, age and menopausal state.

Results: Bone mineral density was reduced at all sites in patients with untreated coeliac disease (p < 0.001). Bone mineral density increased within one year after dietary recommendation in the lumbar spine, femoral neck and trochanter (p < 0.01). In the forearm the increase of bone mineral density was non-significant (p = 0.0504).

Conclusion: Bone mineral density in patients with untreated coeliac disease increases rapidly after treatment with gluten free diet is started, emphasizing the importance of early diagnosis and treatment.

65 Coeliac Disease in Adult Diabetes – A Common Association
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The purpose of this study was to determine the prevalence of coeliac disease (CD) among adults with diabetes mellitus. The measurement of serum IgA antigliadin antibody (IgA-AGA) concentration was used as a screening test for CD, followed by small bowel biopsy in those patients with a value >90 UI.

Of 1785 patients with insulin dependent (IDDM, 43%) and non insulin dependent (NIDDM, 57%) diabetes mellitus, 73 had raised IgA-AGA, while 8 had IgA deficiency. Duodenal biopsies were obtained from 57 subjects (49 with raised IgA-AGA and 8 with IgA deficiency) of whom 11 had total villous atrophy (1 with IgA deficiency) and 3 had severe partial villous atrophy, characteristic of CD. Eight of these 14 had symptoms compatible with CD which resolved on a gluten free diet (GFD). Significant reductions in haemoglobin, ferritin and red cell folate were found and corrected by the diet and supplements. In 7 patients who were adhering strictly to a GFD, a repeat biopsy showed morphological improvement. Included in the 1785 patients screened were an additional 4 with known CD. Thus the overall prevalence of coeliac disease in this diabetic population is 1 in 100. In IDDM it is 1 in 52 and in NIDDM 1 in 340.

Unsuspected CD is common among adults with diabetes and is an additional cause of ill health which can be corrected by a GFD. The measurement of IgA-AGA is a useful screening test to identify those who require small bowel biopsy.
66 Epidemiology of Childhood Coeliac Disease in the Netherlands
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The incidence of coeliac disease (CD) varies internationally. We studied the incidence of identified cases of childhood CD in six Dutch provinces (47.9% of the surface area, 67.6% of the population of The Netherlands). Children with CD aged 0–14 years diagnosed from 01.01.1975 until 01.01.1991, were traced by a) contact with all paediatricians, b) the data of the Dutch National Medical Registration and c) the membership records of the Dutch Coeliac Society. These data were cross-checked by the Dutch Network and National Database of Pathology. 97.3% of the paediatricians answered to our inquiry; 46.1% had CD patients under treatment. 342 CD patients were identified. The mean cumulative incidence rate, calculated per 1000 live births per year, was 0.18, which is significantly lower than the incidence rates found in other European countries, except for Denmark. However, a significant increase in reported incidence was detected from 0.10 in 1936 to 0.32 in 1990. The clinical picture at presentation (abdominal distension 76%, chronic diarrhea 71.3% and growth failure 63.2%) did not change significantly during the study period.

When compared with other European countries, the amount of gluten intake at a young age and the duration of breastfeeding do not explain the low incidence of CD in the Netherlands. A significant positive correlation was found between the number of small intestinal biopsies taken and the number of identified cases of CD.

On behalf of the Dutch Society of Paediatric Gastroenterology and Nutrition

67 Effects of PACAP on Intestinal Circulation, Myoelectric, and Metabolic Activity

Pituitary adenylate cyclase activating polypeptide (PACAP), originally isolated from ovine hypothalamus, is a new member of the secretin-glucagon peptides family, and shows a close homology with vasoactive intestinal peptide (VIP). The presence of PACAP immunoreactive nerve cell bodies and nerve fibers in the gut wall suggests its involvement in the regulation of physiological functions of the organ. The present study was undertaken to determine the effects of PACAP on the intestinal blood flow (BF), mucosal blood demand of the microvessels (MBF), intestinal oxygen uptake (VO2). In addition, intestinal myoelectric activity (MA) was monitored. In anesthetized dogs BF was measured by ultrasonic blood flowmeter (Transonic System T206), MBF was determined by laser Doppler flowmetry (Laser Flo 403A). VO2 was calculated as the product of the arteriovenous oxygen difference (AVO2) across the intestinal segment and mass flow (MF) and (BF). PACAP 38 (0.5–20 μg/kg) injected into the mesenteric artery supplying the intestinal segment caused on immediate (within 30–60 s) and dose dependent increase in the BF reaching about 40%, 60%, and 80% of the control value (58.5 ± 2.9), and in MBF 60%, 80% and 110% respectively. MA was dose dependently decreased by 35%, 50%, and 67%. Systemic arterial pressure and VO2 were not significantly influenced by i.a. injection of PACAP in the doses used. The results of this study indicate that PACAP is a potent vasodilator in the intestinal circulation and relaxes the intestinal muscularis. The lack of changes in oxygen uptake, at least in part, might be due to the decreased intestinal motility with reduced metabolic demand of the muscularis for oxygen. This study shows that PACAP, which is present in the gut may play an important role in the modulation of the intestinal circulation motility.

68 Lactose Malabsorption in Irritable Bowel Syndrome
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The prevalence of Lactose Malabsorption (LM) is low in the Caucasian population of Northern Europe. However, functional bowel symptoms, diagnosed as Irritable Bowel Syndrome (IBS), are very common and nearly identical to those of LM.

Therefore, we tested 60 IBS patients for the prevalence of LM, with the hydrogen breath test and serum glucose test, after an oral dose of 50 gram lactose in 100 ml water, in fasting conditions, and compared them with 30 healthy controls. All IBS patients were treated with a lactose restricted diet, for 6 weeks, and their symptoms were scored before the test, and at 3 and 6 weeks, according to the Manning criteria with a maximum score of 18. A positive breath test was defined as a peak rise in hydrogen concentration of more than 20 PPM, while a positive serum test was defined as a flat curve in which the rise of glucose was less than 1.9 mmol/l.

In 19 of the 60 (32%) IBS patients a positive breath test was found, while 16 (27%) had also a positive serum test. In the healthy controls 2 of the 30 (7%) had both a positive breath and serum test. The IBS group showed significant more patients with both a positive breath and serum test versus the control group (Fisher exact test, p < 0.006). There was no difference between the pre-entry mean score in the LM positive and negative groups (13.4/13.2 resp.). In the LM positive group a significant decrease of the mean symptom score after diet therapy at 3 (8.0) and 6 weeks (4.7) was found (p < 0.001). In the LM negative group only the difference between the results at the study entry and at 3 weeks was significant (p < 0.001).

The investigated population of IBS patients showed significant more frequent LM, suggesting that a substantial part of IBS symptoms are due to a clinical not recognized Lactose Intolerance. A lactose restricted diet in LM positive patients resulted in a marked decrease of their symptoms. Therefore, it is recommended, that LM is excluded before the diagnosis IBS is made, and a lactose restricted diet is prescribed.

69 Diagnostic Value of Saliva in H. Pylori Infection and Its Use in Screening Dyspeptic Patients
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Background Saliva is increasingly being used as an alternative to serum to diagnose infections as it is easy to collect and handle. Measurement of immunoglobulins to H. pylori in saliva has received little attention. In whole mixed saliva, IgA, IgG and IgM are present at approximately 1/10, 1/800 and 1/400 of their serum concentrations respectively. Aim To develop and assess the measurement of H. pylori specific IgG and to compare its performance to saliva IgA and to serum IgG for diagnosis. Furthermore, we aimed to assess the use of saliva in screening young, dyspeptic patients prior to endoscopy. Subjects & Methods 119 consecutive patients (89 male and 50 female) undergoing upper GI endoscopy for dyspepsia were recruited and serum and unstimulated saliva were obtained prior to endoscopy. Two antral biopsies were obtained for histology and rapid urease test. Saliva samples were centrifuged at 2000 g for 10 minutes to remove mucus and debris and the supernatant stored at -20°C. A sandwich ELISA was carried out by adaptation of the Helico-G kit. Serial standards used with each run, gave a linear correlation (r = 0.99) with optical density readings and these were used to standardise each plate. Results The mean salivary IgG titre (SD) for H. pylori positive and negative patients was 6.86 (4.52) and 2.01 (1.43) respectively. There was a good positive correlation (r = 0.72, p < 0.0001) between salivary and serum IgG values. The sensitivity and specificity was 90% and 98% and the false positive rate for saliva was 76% and 61% for serum IgG was 90% and 90%. We prospectively evaluated a screening policy in patients under 45, based on our salivary assay, of endoscoping only those who were either positive or using NSAIDS regularly. Adoption of this policy picked up all DUs, GUs and 83% of duodenitis patients while saving 36% of endoscopies. Conclusion We have developed an ELISA for measuring salivary IgG to H. pylori based on an existing serum ELISA kit (Helico-G). Salivary IgG reflects serum IgG, gives a reliable indication of H. pylori infection and is superior to salivary IgM. Measurement of salivary IgG in screening patients under 45 prior to endoscopy detects the majority of pathology while saving over a third of endoscopies.

70 Helicobacter Pylori: DNA Fingerprints in Patients with Duodenal Ulcer and their Spouses
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In spite of the accumulation of serological evidence for intrafamilial spread of Helicobacter pylori (Hp) infection, detailed typing studies of the Hp strains isolated from members within families have not been performed. The aim of the study was to compare the ribotyping profiles of Hp strains isolated from Hp positive DU patients with profiles of strains from their asymptomatic Hp positive partners. Patients-Methods: Twelve patients (10 men, 2 women) aged 31–63 years (average 47) with DU and their spouses, aged 23–67 (average 43.8) were found Hp positive by both histologic examination and culture. Ribotyping using a biotinylated cDNA probe was used for the comparison of Hp strains isolated from the patients and their partners.

Results: In seven couples the DU patient and his or her spouse harboured similar Hp strains. In the remaining five couples the Hp strains were different between the spouses. Similar Hp strains weren't found among non-relatives in this study. Spouses with the same Hp strains were older than those with