204 ADHERENCE OF ENTEROBACTERIA AS PATHOGENETIC MECHANISM IN DIARRHEA AND BLOCKAGE OF ADHERENCE

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Enterobacteria (E.coli, Pseudomonas aerug., Enterobacter) and Candida albicans have been isolated in concentrations of more than 10^5 organisms /ml from the duodenum of 48 infants with longstanding severe diarrhea. Organisms have been investigated for their enterotoxin and cytotoxin production in tissue culture models and in the piglet ileal loop. All isolates showed the production of an ST-, half of them also the formation of an LT enterotoxin. The cytotoxic effect was established by hemolysis of sheep red blood cells and disruption of mouse fibroblast monolayers by the cell free supernatant of cultures.

The majority of isolates showed hemagglutination of human red blood cells and adherence on isolated human and pig intestinal epithelial cells.

Hemagglutination and adherence of some strains was blocked by mannose; Carob and carrot soup - in particular the mono-, oligosaccharide fraction isolated by gel permeation chromatography - was able to reduce adherence of the majority of these isolates by 75 to 90 %. The chemical composition of these carbohydrate fractions will be described.

Bacterial contamination of the upper small intestinal tract with enterobacteria and Candida albicans is thought to be a major pathogenetic factor in longstanding severe diarrhea in infants. A strong adhering capacity aids bacteria in colonization of the upper small intestinal tract. Blockage of adherence by various carbohydrates may prove to be an important therapeutic and prophylactic measure.

205 KILL KINETICS AND REGROWTH OF BACTERIA UNDER FLUCTUATING CONCENTRATIONS OF ANTIBIOTICS

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Traditional antimicrobial susceptibility testing completely omits pharmakologic properties of antibiotics. A model was developed which allows the investigation of kill kinetics and regrowth pattern of bacteria under the influence of fluctuating concentrations of antibiotics observed in vivo. The influence of various host defense mechanisms was studied and also the morphological changes of bacteria .

Data indicate, that kill kinetics and regrowth pattern of bacteria are frequently not reflected by their MIC values. A high peak concentration seems to be less important for bacterial eradication than a long halflife of elimination. The antimicrobial activity however is best expressed by the area under the concentration curve. Rapid elimination of an antibiotic from the growth medium seems to induce the development of resistant mutants. If the halflife of an antibiotic is short, readministration in 2 - 4 hourly intervals can prevent emergence of resistant mutants. The investigation of combinations of antibiotics revealed, that different kill kinetics are seen if combination partners are administered simultaneously or in intervals.

Regrowing bacteria do not express all their surface properties in the presence of subinhibitory concentrations of antibiotics; they show frequently lower surface charges than the original strain and enhanced phagocytosis. These investigations, give us information not available previously regarding the choice of rational administration schedules, optimal total daily doses and dosage intervals.

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206 URINE COUNTERCURRENT IMMUNOELECTROPHORESIS FOR THE DIAGNOSIS OF PNEUMOCOCCAL PNEUMONIA.

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We report the results of a prospective trial in which counterimmunoelectrophoresis (CIE) and coagglutination (COA) have been used for the detection of specific pneumococcal capsular antigens in urine of 215 community-acquired pneumonia. Urines were studied unconcentrated and concentrated by ethanol precipitation and by an ultrafilter system (Minicon B 15 concentrator Amicon).
CIE was positive in 18 patients. Three of them, had untreated urine positive, 14 ethanol precipitated urine and 12 Amicon concentrated urine. COA was positive in none of these 18 CIE positive patients, and blood cultures only in two. In 3 children coexisted other etiology with a positive CIE.
CONCLUSION: Althoug COA of urine does not apper to work sufficiently well to warrant its use, CIE can be useful in the diagnosis of pneumococcal pneumonia in children.

207 LASER NEPHELOMETER AND LATEX DETERMINATION OF CRP SERUM LEVELS IN A PEDIATRIC POPULATION.

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CRP is an acute phase reactant which rises rapidly during inflammation and infection and whose values can be usefully utilised in the precocious diagnosis of sepsis in infants and children. CRP serum levels are usually determined using two different techniques: laser nephelometry (LN) and latex agglutination test (LA). The former is the most sensitive and specific method but long and expensive, while the latter is a simpler, cheaper and rapid test. The aim of our study was to value if LA had enough sensitivity to be used as a general screening test, even in the wards, and to use LN only in positive latex patients where it is important a serial quantitative determination of CRP.
We studied 262 patients between 2 months and 12 years of age, admitted to the Dpt. of Pediatrics, University of Padua, with a suspicion of infection. CRP levels were determined by means of Behring LN module I, type B and by Rapi-tex CRP by Behring Institute. In our laboratory normal value of CRP concentration in newborn serum by LN have been found to be < 1.0 mg%. Accordingly we consider, in agreement with other authors, that value to be normal also for infants and children.
In our study LA showed a sensitivity of 67%, a specificity of 93% and a predictive value of 74%. Even if we consider, in agreement with some others authors, < 1.5 mg% the normal LN value of CRP, LA shows a sensitivity of 73% with a specificity of 94% and a predictive value of 76%.
We conclude that LA is not as sensitive to be used as screening technique and that actually only LN method is useful for CRP determination.

208 ELECTROENCEPHALOGRAPHIC STUDIES IN CHILDREN WITH CEREBRAL MALARIA

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Cerebral malaria in childhood plays an important role among the acute diseases in the tropical countries because of the high mortality rate. 20 children with clinical symptoms of cerebral malaria were examined by EEG in the Department of Paediatrics at Luanda. In 15 cases severe bioelectrical modifications were found by means of EEG characterized by severe generalized abnormalities as a result of extensive hypoxia. A normal record of EEG was shown in 5 children. These cases were interpreted as febrile seizures. In children with cerebral malaria the EEG is of great value for diagnosis and differential diagnosis.

209 PLATELET ASSOCIATED IgG and IgM IN PAEDIATRIC INFECTIOUS DISEASE

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Platelet associated IgG (PAIgG) mediates the destruction of thrombocytes during the acute postinfectious thrombocytopenic purpura. Elevated levels of platelet associated IgM (PAIgM) are not uncommon in the course of this illness.
In our micro-ELISA system the normal range ($\bar{x}$ + 3 S.D.) in age matched controls has been 9.6 fg IgG and 4.4 fg IgM/platelet, respectively. Fever in 35 children (median age 6 years) was classified to be of viral origin 17 x (↗ PAIgG: 4, ↗ PAIgM:3, ↗ both: 8), to be due to bacterial infection 11 x (↗ PAIgG: 2, ↗ PAIgM: 3, ↗ both: 5), and to be of unknown aetiology 7 x (↗ PAIgG: 1, ↗ PAIgM: 5, ↗ both:1). In no group was any correlation between PAIgG and PAIgM. No child experienced a profound thrombocytopenia. The platelet count was best correlated with PAIgM in the bacterial group (r = -0.53) and with PAIgG in the viral infected children (r = -0.35).
We conclude that the thrombocyte is likely to be involved physiologically also in both viral and bacterial infections. It possibly acts as a vehicle to remove bacterial and viral antigens from circulation by means of both IgG and IgM antibodies.