25 K. KOUVALAINEN, M. ANTILA^{*}, H. KORHONEN^{*}, K. HALI-NEN^{*}, V. MERILÄINEN^{*}, and A. NIITTYMÄKI^{*}, Department of Pediatrics, University of Oulu, Oulu, Finland, and Institute of Dairy Science, University of Helsinki, Helsinki, Finland. Immune milk against *Salmonella typhi* murium.

It is a well known fact that human milk protects the nursing infant from a number of enteral infections, e.g. salmonellosis. The protective effect is due to specific antibodies and several nonspecific factors. The protective agents are principally similar in the cow's milk. Because it is known that a certain part of antibodies in cow's milk pass the human intestine in intact form, also these might be useful weapons against enteral infections in man.

We immunized five cows with a whole cell vaccine from a human pathogenic strain of *Salmonella typhi* murium. The vaccinations were carried out in the subcutaneous tissue and the mammary gland. High titers of antibodies against both the flagellary and somatic antigens were found in blood and milk. The titers were exceptionally high (up to 1:16384) in the colostrum of a cow vaccinated during the last weeks before term. The immune colostrum was added in the ratio one to one in yoghurt. The antibody titers in the yoghurt remained unchanged during one week in refrigerator. The immune yoghurt was administered in a dose of 0.9 l/day to carriers of *Salmonella typhi* murium. The preliminary results suggest that administration of the immune yoghurt may destroy *Salmonella* bacteria in the colon.

26 B. BJURKSTÉN^{*} and B. KAIJSER^{*} (Intr. by J. Winberg). Department of Paediatrics, University Hospital, Umeå and Institute of Medical Microbiology, University of Gothenburg, Sweden. Interaction of human serum and neutrophils with *E. coli* strains.

Strains of *E. coli* isolated from the urine of children with pyelonephritis (P) or asymptomatic bacteriuria (ABU) were compared with respect to serotype, amount of capsular antigen, opsonic requirements, sensitivity to serum and phagocytosis by neutrophils. The ABU-strains more often had the capacity to activate alternative complement pathway ($p < 0.001$), were better opsonized in fresh human serum ($p < 0.01$) and were more often serum sensitive ($p < 0.001$) than the P-strains. Neutrophil chemiluminescence during phagocytosis of the ABU- and P strains did not differ significantly. There was no correlation between presence of a particular O or K antigen and opsonic requirements. However, the P strains produced greater amount of capsular antigen than the ABU strains. The results indicate that ABU strains more often are sensitive to non-specific host defence mechanisms than P strains even when similar serotypes are tested. The differences may be relevant for further studies of bacterial virulence and host defence factors.

27 J. VÄHÄ-ESKELI^{*} and K. KOUVALAINEN, Departments of Pediatrics and Anatomy, University of Oulu, Oulu, Finland. Studies on the role of Hassall's corpuscles in the thymus.

Though the function of the thymus is well known, the function of Hassall's corpuscles (HC), the characteristic micro-organs in the thymic medulla, has remained obscure. It has been suggested to may be linked with phagocytosis and/or control of thymus cell population. For further characterization of HC we have made following experiments in guinea pigs. 1. Carbon particles injected intravenously do not accumulate in HC more than in the surrounding tissues. This excludes phagocytic function of HC in normal thymus. 2. A number of cortical thymocytes labelled with radioactive thymidine were seen in autoradiographs inside of HC within 1-3 days. 3. The mononuclear cells in HC show high activity of alkaline phosphatase, an endogenous label of guinea pig cortical thymocytes. 4. Homogenates made from microdissected HC do not depress or stimulate the rate of mitoses of cultured thymocytes. 5. In hydrocortison-induced involution of the thymus HC greatly increase in size. This is more marked in those HC, which contain high numbers of dying thymocytes. - It is known that the maturation thymocytes into T-cells takes place during their travel from the thymic cortex to the medulla. Only few immature cells are seen in the medulla and, at least one part of them, are destroyed in HC. Our theory is that HC inhibit immature thymocytes to leave the thymus.

Grant: Sigrid Jusélius Foundation.

28 I. BERKEL, W. HENLE^{*}, G. HENLE^{*}, C. KLEIN^{*} and F. ERSOY^{*}, Hacettepe Children's Hosp; Ankara, Turkey; Philadelphia Children's Hosp; Philadelphia, Pa, U.S.A; Karolinska Institutet, Stockholm, Sweden. Epstein Barr Virus (EBV) Associated Antibody (Ab) Patterns in Ataxia-Telangiectasia (A-T).

Serum anti-EBV Ab titers determined by immunofluorescent techniques in 27 patients (pts) (ages 3.5-20 yr) with A-T showed elevated anti-viral capsid antigen (ag) (VCA) 1:320 and anti-early ag (EA) 1:10 titers in 55% and 48.2% of the pts. Anti-EBV associated nuclear ag (EBNA) titers were low (<1:10). In 44.2%. Comparison with 22 healthy family members, 23 healthy controls, 10 pts with primary immunodeficiency, 10 pts with Behçet's disease showed the geometric mean titers to be 6 fold higher for anti-VCA and 5 fold lower for anti-EBNA than in the healthy controls. Nineteen A-T pts with low anti-EBNA titers had suggestive evidence of greater T cell deficiency than 8 pts with normal anti-EBNA titers, detected by absolute lymphocyte count, skin tests and E rosettes.

It is hypothesized that EBNA for maintained ab stimulation is derived from EBV transformed cells by cell mediated anti-cellular reactions. Therefore highly immunosuppressed pts should develop and maintain very low anti-EBNA titers. Low anti-EBNA Ab patterns were also observed in 5 pts with primary immunodeficiency and in 3 pts with Behçet's Disease.

29 A. AYNLEY-GREEN and J.M. POLAK University Department of Paediatrics, John Radcliffe Hospital, Oxford, and Department of Histochemistry, Hammersmith Hosp. London. Metabolic and endocrine studies in newborn infants with nesidioblastosis of the pancreas.

Three infants born in Oxford during a 26 month period required total pancreatectomy to control persistent hypoglycaemia and hyperinsulinism due to pancreatic nesidioblastosis. The infants (birth wt. 3.65-4.38 Kg., gestation 38-40 weeks) developed hypoglycaemia (blood glucose 0.91 ± 0.21 mmol/l; controls 3.67 ± 0.22 mmol/l; n:12) within 6 hours of birth, with elevated plasma insulin (28.7 ± 3.3 μ U/ml) and lower blood ketones (0.14 ± 0.01 mmol/l, controls 0.25 ± 0.04 mmol/l). Plasma insulin increased to a mean peak value of 51.3 (range 32-64) μ U/ml after glucose (0.5g/Kg I.V.) and to 85.5 (range 34-137) μ U/ml after glucagon (0.1mg/Kg I.M.). The latter caused an increase in mean blood glucose from 0.65 to 3.35 mmol/l (Δ glucose range 1.1 - 6.09 mmol/l). Glucose infusion alone (15-20 mg/Kg/min) did not increase blood glucose above 2.0 mmol/l in any infant. Addition of hydrocortisone (10mg/kg/day) and diazoxide (20mg/kg/day) caused a temporary increase in blood glucose in only one infant. 75% pancreatectomies were performed at 12, 16 and 98 days of age; post-operatively all three infants remained hypoglycaemic despite glucose, hydrocortisone, diazoxide and depotglucagon. Total pancreatectomy at 2½, 16 and 20 weeks corrected the hyperinsulinism and caused hyperglycaemia, now controlled with insulin. Pancreatic immunohistology showed all three to have nesidioblastosis and an increased total endocrine area (3.1-4.2%, control range 1.6-2.4%) with varying A:B:D:PP cell ratios. The investigation and management of neonatal pancreatic nesidioblastosis is defined.

30 M. HALLMAN^{*} and K. KANKAANPÄÄ^{*} (Intr. by N. Hallman). Children's Hospital, University of Helsinki, Finland.

Efficient ventilation relieves pulmonary vasospasm in persistent fetal circulation (PFC). Evidence on surfactant deficiency.

The characteristic feature in PFC is pulmonary vasospasm leading to hypoxia in the absence of radiological evidence on parenchymal lung disease. According to Riggs right ventricular pre-ejection period/right ventricular ejection time ratio (RPEP/RVET) correlates to pulmonary diastolic pressure (Pediatrics 59(1977)338). Ten newborn having PFC were studied by echocardiography and phospholipid analysis of lung effluent. Mechanical ventilation was started if hypoxia and metabolic acidosis persisted despite O_2 and $NaHCO_3$ (fr 30 (27-32)/min, Tinsp 1 sec, PEEP 4 (3-5) cmH $_2$ O, Pinsp 25 (21-32) cmH $_2$ O). After changing the frequency to 60 (54-64)/min and Tinsp to 0.6-0.7 sec., the arterial pO_2 increased by 52 (30-110) mmHg within 15 min (N=5). Meanwhile RPEP/RVET decreased from 0.64 to 0.46 (N=2). During 4 days RPEP/RVET fell from 0.62 (.43-.84) (age 0.3-1.2d) to 0.37 (.30-.48) paralleling the clinical course. One infant died. Among phospholipids isolated from endotracheal suction phosphatidylglycerol (PG) was absent in eight cases, and present in two (one meconium aspiration, one pulmonary haemorrhage). PG always appeared during the recovery. Deficient surfactant indicates the importance of microatelectasis in PFC. High frequency ventilation with long Tinsp seems to be an effective and safe treatment.