1063

HEMORRHAGIC ENDOVASCULITIS OF THE PLACENTA - A POSSIBLE FORM OF THROMBOTIC MICROANGIOPATHY. Charles H. Sander (Spon. by Mason Barr, Jr.). College of Human Medicine, Mich. State Univ., Dept. of Pathology, East Lansing.

This paper describes the clinicopathologic events associated with a recently documented placental alteration. "Hemorrhagic endovascularitis" is occurring with considerable (20%) frequency in placentas referred to the Michigan Placental Tissue Registry. Slightly more than half of the associated infants are stillborn. Live-born infants are frequently in distress or small for gestational age. The alteration appears to focus on fetal placental blood vessels resulting in intimal proliferation, nonexudative necrosis of vessel walls, widespread thrombosis, destruction of the infant's RBCs and hemorrhage within the placenta. Many features simulate the placental and fetal response to some viral infections that occur in pregnancy. Chronic villitis is a frequent associated finding. Inclusion bodies have been observed in approximately six percent of cases; three were cytomegalovirus inclusions associated with known intrauterine cytomegalovirus infection. Placentas so affected have occurred in successive pregnancies in several patients who delivered infants who are stillborn, in distress or small for gestational age. Similarities to other infectious associated conditions including the hemolytic-uremic syndrome, other microangiopathic hemolytic anemias, post-measles encephalitis and Reye's syndrome exist. Commonality in pathogenesis may involve an altered immunologic response resulting in selective tissue damage.

1064

COURSE OF PULMONARY DYSFUNCTION IN CHILDREN SURVIVING PNEUMOCYSTIS CARINII PNEUMONITIS (PCP): A PROSPECTIVE STUDY. Shyamal K. Sanyal, William C. Mariencheck, Paul W. Mackert. Cardiopulmonary Disease Service, St. Jude Children's Research Hospital. Memphis, TN.

Twenty-five pulmonary function studies were done serially in 23 children, 7-18 years of age, who had survived the acute stage of PCP and were asymptomatic. Spirometric indices, expiratory flow rates, pulmonary gas transfer factor (DLCO), blood gases and other clinical variables were assessed a few days before hospital discharge and at 1-, 3-, 6- and 12-month intervals. Two patients developed recurrent PCP during follow-up and were studied twice. All but 5 (80%) had pulmonary dysfunction when tested initially. A decrease in DLCO in 17 studies was the most common abnormality. Restrictive lung disease was seen in 11, an obstructive component in 1, and arterial hypoxemia at rest in 9 cases. Roentgenologic evidence of lung opacities, seen in 11 studies, was positively correlated ($P < 0.001$) with decreases in DLCO. Arterial hypoxemia was significantly related to intrapulmonary right-to-left shunting ($P < 0.001$) but not to DLCO indicating the importance of ventilation-perfusion abnormalities in the genesis of hypoxemia in these patients.

Serial follow-up studies showed significant improvement in lung functions within 1 month ($P < 0.001$) and complete resolution by 6 months in all survivors. The recovery was not related to the amount or duration of oxygen therapy or to the need for mechanical ventilation. Histopathologic studies in 9 patients who died during follow-up or subsequently did not indicate any residual interstitial fibrosis, collagen deposits and alveolopathy or vascular proliferation.

We conclude that PCP in older children commonly does not result in long-lasting pulmonary sequelae.

1065

CHLORAMPHENICOL KILLS H. INFLUENZA MORE RAPIDLY THAN AMPICILLIN. V. Schauf, D. Green, L. Vanderstuyf. University of Illinois Hospital, Department of Pediatrics, Chicago.

Although a combination of chloramphenicol (CHL) plus a penicillin is the initial therapy for *H. influenza* type B (H flu) meningitis, it is not known whether the combination, CHL alone, or ampicillin (AMP) alone is most effective against AMP sensitive H flu. We, therefore, studied the bactericidal effects of these agents against H flu isolated from blood or CSF of 21 infants. Cultures contained 10^2 CFU in 1 or 10ml Mueller-Hinton broth with supplement C. Over 90% of isolates were killed by 18h incubation with 3µg/ml CHL or 3µg/ml AMP. The median time to kill 99.99% of the inoculum was only 5.8h for 20µg/ml CHL in contrast to 17.4h for 20µg/ml AMP. The combination of 20µg/ml each CHL plus AMP produced 99.99% killing in a median time of 5.6h, indicating that AMP did not significantly retard the rapid bactericidal action of CHL. In checkerboard titrations, CHL increased the minimal bactericidal concentration of AMP 4-fold or more for 6 isolates, but AMP influenced the bactericidal effect of CHL in only one isolate. Although CHL can increase the AMP concentration required for AMP bactericidal effects, CHL has a much more rapid bactericidal action, and is as effective gravimetrically as AMP. Therefore, the combined use of CHL plus AMP may be more effective than AMP alone and as effective as CHL alone for H flu.

• 1066

DECREASED NEUTROPHIL PRODUCTION AFTER LITHIUM CHALLENGE IN NEWBORN RATS. K.E. Schuit, R.E. Krebs and F.V. Castello (Spon. by R.H. Michaels) Department of Pediatrics, University of Pittsburgh, PA.

Abnormal host defenses are associated with the neonate's inability to deal with infectious diseases. This study tested the hypothesis that granulocytopenia is less efficient in the newborn than the adult. One day old and adult rats were challenged with lithium chloride, an agent which produces neutrophilia by increasing granulocyte production. LiCl (20mg/kg) was administered daily for up to 10 days and the bone marrow and peripheral blood pools measured daily. LiCl did not have a significant effect on the magnitude of the femoral marrow pool in either adults or neonates. The blood neutrophil pool of adults increased by 19% after one day of LiCl treatment. This neutrophilia persisted (260% increase by the day 10). Conversely, the neonatal blood neutrophil pool decreased by 90% after one day of LiCl treatment and remained at that or pretreatment levels throughout the subsequent 10 days ($p < 0.001$ for adults and newborn neutrophil values on days 2-10). Neonates thus were able to maintain a dynamically stable bone marrow pool of neutrophils but were unable to produce a blood neutrophilia in response to LiCl, suggesting a limited responsiveness of hematopoietic tissues. These data demonstrate another relative defect in the life cycle of the neonatal neutrophil (for example, we have already reported indolent release of neutrophils from the bone marrow pool after endotoxin challenge and inefficient recruitment of phagocytes to focal sites of infection). These abnormal features of neutrophil function may play an important role in the neonate's altered response to infection.

1067

CLINICAL STUDIES IN INFANTS OF TWO PNEUMOCOCCAL VACCINES. Sarah H. Sell, Peter F. Wright, William K. Vaughn, Juliette M. Thompson and Gerald Schiffman. Depts. Ped. and Micro., Vanderbilt U. Sch. of Med., Nashville and NYU, Brooklyn.

As a step towards prevention of diseases due to *Streptococcus pneumoniae*, separate studies of 2 polyvalent polysaccharide vaccines [8-valent Eli Lilly (L) and 14-valent Merck, Sharp and Dohme (MSD)] were undertaken involving 210 normal infants. At age 6 months children were assigned to groups receiving 5 to 50 mcg per vaccine component doses at 6 and/or 12 months or to serve as unvaccinated controls (C). Clinical reactions were monitored by a home visit at 24 hours after vaccination. Antigenicity was determined by radioimmunoassay (RIA) of type specific antibody at ages 6, 7, 12, 13 and 24 months.

RESULTS: Clinical reactions to both vaccines were mild. The 8-valent L vaccine stimulated significant antibody to type 3 at 6 months and types 3, 7, 18 and 23 at 12 months when compared to controls. The 14-valent MSD vaccine stimulated significant antibody at 12 months to types 6, 7, 8 and 14 when compared to controls. Vaccination at 6 months depressed antibody responses at 12 month re-vaccination. RIA antibody rose in control groups ≥ 1.8 fold for all types between the ages of 6 to 13 months indicating some natural acquisition of antibody. By age 24 months, GMTs of all vaccinated groups were similar to C. No influence of vaccination on pneumococcal nasopharyngeal carriage or otitis could be demonstrated. It is concluded that the present pneumococcal polysaccharide vaccines are poor immunogens in infants in all dosage schedules tested.

1068

THE NORMAL BACTERIAL FLORA OF THE MAXILLARY SINUS OF RHESUS MONKEYS. Eugene D. Shapiro, Ellen R. Wald, William Doyle, Dale Rohn. Univ. of Pittsburgh, Depts. of Pediatrics and Otolaryngology, Children's Hospital of Pittsburgh, Pittsburgh.

It is not known whether the paranasal sinuses have a normal bacterial flora which may play a role in the pathogenesis of sinusitis. Factors such as viral infection or allergy may impair normal sinus drainage and potentiate bacterial multiplication and infection. If the maxillary sinus (MS) is sterile, then the infecting bacteria may be introduced by other factors, such as nose blowing or intermittent negative intrasinus pressure accompanied by impairment of mucociliary transport. The MS of rhesus monkeys provides an animal model for investigation. Transantral punctures of 13 MS of rhesus monkeys were performed after Betadine cleansing of the overlying nasal mucosa. Quantitative nasal cultures were done before and after the cleansing. Saline was gently instilled into the MS, then aspirated and quantitatively cultured both aerobically and anaerobically. Eleven of 13 (85%) of the sinus aspirates were sterile. One sinus aspirate grew 2 colonies of *S. pneumoniae* and the other aspirate grew 3 colonies of *S. epidermidis* and one colony each of alpha streptococcus and a *Micrococcus* species. The very low colony counts suggest nasal contamination rather than *in situ* colonization. The MS of rhesus monkeys is either sterile or is colonized with extremely small numbers of bacteria.