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COURSE AND SEQUELAE OF H. INFLUENZAE B (HIB) EMPYEMA
Mathuram Santosham, Bradley Chipps, Janet L. Strife, Kenneth B. Roberts, Ellen Wall, E. Richard Moxon. Baltimore City, Johns Hopkins, University of Maryland and Sinai Hospitals, Departments of Pediatrics, Baltimore, Maryland.
(Sponsored by: Walter Hughes).

The natural course and sequelae of HIB Empyema have not been well characterized. Among 12 cases seen between 1966-1977, 8 were aged 6 months to 6 years and 4 were aged 6 - 11 years. Although 8 received antibiotics prior to diagnosis, 6 had positive blood cultures and 5 had positive cultures of pleural fluid. Among 4 receiving no prior treatment, none had positive blood cultures, 3 had positive pleural fluid cultures and 1 had sterile fluid with HIB antigen detected by CIE. All survived. Chest tube drainage was required in 3. Additional complications included pericarditis (2), Meningitis (1), and cellulitis (1). Mean duration of hospital stay was 21 days (range 9 - 35).

Chest radiographs 6 months after diagnosis were available in 8 patients. 6 had pleural thickening, 4 had scoliosis and 2 had prominent hilum. Lung function studies were also performed on 5, 18-36 months following discharge. Four patients demonstrated a restrictive and 1 patient an obstructive ventilatory defect by plethysmography or helium dilution. 3 of the 5 patients with abnormal lung function studies showed simultaneous residual pleural thickening. Persisting defects of lung function may be a sequel of HIB empyema.

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ABSENCE OF INCREASING INCIDENCE OF H. INFLUENZAE B (HIB) MENINGITIS IN BALTIMORE (1965 - 1975).
Mathuram Santosham, Clay Kallman, E. Richard Moxon, John Neff, Baltimore City & Johns Hopkins Hospitals, Departments of Pediatrics, Baltimore, Maryland.

Several studies published within the past 20 years have reported an increase in the incidence of HIB meningitis. We sought to investigate whether there was evidence of a recent increase in metropolitan Baltimore. Cases of HIB meningitis occurring in children aged 0-5 years residing in Baltimore City & County were identified through: (1) medical records bearing the discharge diagnosis of meningitis or sepsis and (2) laboratory reports of positive blood or CSF cultures of HIB. The survey included all 19 hospitals in Baltimore City & County, plus an additional 41 hospitals surrounding this area. The study period was Jan. 1965 - Dec. 1975. A case was included if there was (a) CSF pleocytosis and isolation of HIB from blood or (b) CSF culture was positive for HIB. These criteria were met by 253 patients. Age adjusted incidence rates were calculated per 100,000 population at risk using the Baltimore City & County census data with appropriate adjustments for changing distribution of age.

YEAR:	65	66	67	68	69	70	71	72	73	74	75
A.R.*	20	12	17	18	22	19	20	21	27	18	19

There was no difference in incidence rates between blacks and whites or between males and females. In contrast to most previously published studies, we failed to document any increase in incidence of HIB meningitis. Important factors explaining this difference include the timing, geographical location and methodology of the study. *Attack rate per 100,000 at risk.

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PHAGOCYTIC KINETIC DEFECTS OF HUMAN NEWBORN MONOCYTES CORRECTABLE WITH LEVAMISOLE.
Kenneth E. Schuit* and Dwight A. Powell. University of North Carolina, School of Medicine, Department of Pediatrics, Chapel Hill.
(Sponsored by Wallace A. Clyde, Jr.)

Despite reports that phagocytosis in the newborn is comparable to that in adults cells the temporal aspects of this function have not been examined. We have thus compared the kinetics of phagocytosis by monocytes isolated from cord blood and from the blood of adult volunteers. Monocytes attached to glass coverslips were incubated with polystyrene spheres (1.10u diameter) for up to 120 minutes. At intervals, the cells were fixed and extracted in xylene to remove noningested particles. The number of cells containing two or more particles was counted using a phase contrast microscope. In this system, the rate of phagocytosis was considerably more indolent in newborn monocytes than in those from adults. By 50 minutes, phagocygosis had occurred in virtually all of the adult cells, while only 38% of the neonatal monocytes had engulfed particles. However, this defect was not absolute, since by 120 minutes all the newborn cells contained engulfed spheres. Levamisole, a low molecular weight compound which stimulates the function of phagocytes and T-lymphocytes from compromised hosts, had no effect on normal adult monocytes but accelerated phagocytosis of newborn cells to a rate identical with that of adult cells. These data suggest that newborn monocytes are less efficient at phagocytosis than are comparable cells from adults, a compromise which may be critical in the early phases of infection. *Supported by NIAID 5-F32-AI05395

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USE OF PROPHYLACTIC ANTIBIOTICS AFTER PROLONGED RUPTURE OF MEMBRANES.
Natalio Schwartz, Eduardo Bancalari University of Miami, School of Medicine, Department of Pediatrics, Miami, Florida.

We studied the effect of antibiotic prophylaxis in neonates born after PROM. 95 infants $\geq$ 35 weeks gestation, with PROM $>$ 24 hrs., were randomly assigned to 2 groups. Group A received Penicillin and Gentamicin for 3 days and group B did not receive antibiotics. Birth weight, gestational age, and Apgar score were similar in both groups. Cultures were taken in the first 4 hours of life from blood, CSF, urine, gastric content, ears and axilla. 92% of all infants had a positive surface culture. Three of 95 infants had a positive blood culture; 2 in group A and 1 in group B. One infant in group A had Group B β hemolytic Streptococcus (GBβ HS) septicemia with uneventful recovery and another had asymptomatic bacteremia with α hemolytic Streptococcus. In group B, one infant had asymptomatic bacteremia with GBβ HS. Rectal swab cultures done on the 3rd day of life, demonstrated 22% colonization with antibiotic-resistant organisms in group A compared to 5.4% in group B. The duration of hospitalization in Group A (6.3 days) was longer than group B (4.8). The risk of systemic infection in infants born after PROM appears low and cannot be determined by surface cultures. Routine use of antibiotics in infants born after PROM increases the duration of hospital stay and increases the incidence of antibiotic resistant intestinal flora. Because of this and the low incidence of systemic infection, prophylactic use of antibiotics does not seem justified in cases of asymptomatic PROM.

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CONCOMITANT LOSS OF MUCOID TRAIT AND ANTIBIOTIC RESISTANCE IN PSEUDOMONAS AERUGINOSA STRAINS FROM CYSTIC FIBROSIS PATIENTS.
Thomas W. Seale, Martha M. Tarpay, Hillary M. Thirkill, Marinus Flux, Owen M. Rennert. University of Oklahoma Health Sciences Center, Department of Pediatrics, Oklahoma City, Oklahoma.

The unusual frequency of pulmonary colonization of cystic fibrosis patients by mucoid (mu^+) strains of P. aeruginosa suggests a special relationship between these strains and the pulmonary milieu of CF patients. To better characterize the control of slime production, we isolated P. aeruginosa from sputum cultures of CF patients collected during respiratory therapy. 16 of 19 patients yielded P. aeruginosa which was identified by the API method with growth at 41° and on Pseudomonas isolation agar. Mu^+ strains were isolated from 13 of 16 patients; 11 of 16 had both mu^+ and nonmucoid (mu^-) strains. All 13 mu^+ strains were unstable in nutrient broth, producing mu^- variants at characterisic frequencies ranging from 1-97% of c.f.u. in 24 hours. Mu^- segregation frequency is medium-and temperature-dependent. The low frequency ($<1x10^{-5}$) of reversion of mu^- to mu^+ suggests inherited loss of the capacity to produce slime. 2 of 13 mu^+ strains showed concomitant loss of slime production and selected antibiotic resistance on Mueller-Hinton agar. Each of 10 independently derived mu^-clones from VLO-1 became bactrim sensitive; MIC by the agar dilution method for trimethoprim and sulfamethoxazole were respectively 64 and 160μg/ml for VLO-1mu^+ vs 8 and 40μg/ml for VLO-1mu^-. Strain TWH-1mu^- showed a similar increase in sensitivity to chloramphenicol. This suggests that slime production is encoded by a plasmid which also specifies resistance to certain antibiotics.

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TRACHEAL ASPIRATION AND ITS CLINICAL CORRELATES IN THE EARLY DIAGNOSIS OF CONGENITAL PNEUMONIA.
Michael Sherman, Boyd Goetzman, Charles Ahlfors, and Richard Wennberg. University of California, Davis - Sacramento Medical Center, Sacramento, California.

Since the lungs of neonates should be sterile after birth, we investigated the ability of tracheal aspiration to provide early diagnosis of congenital pneumonias. Forty infants presenting with respiratory symptoms and positive chest radiographs by eight hours of age were assigned to control or suspect groups based on the presence of bacteria after sputum analysis. These groups showed no difference in maternal age, parity, duration of membrane rupture or labor, Apgar scores, or birth weight and gestational age. Polymorphonuclear leukocytes (PMNS) were found in 7 of 20 control and 16 of 20 suspect infants. Positive blood cultures were obtained in 1 of 20 control and 14 of 20 infants suspect for pneumonia. Tracheal isolates included Group B streptococci (11), Hemophilus influenzae (2), Escherichia coli (2), Listeria monocytogenes (2), alpha hemolytic streptococci (2), and Staphylococcus aureus (1) in the suspect neonates, and Group B streptococcus from the single control infant. At the time of tracheal aspiration, no statistical differences could be ascertained between the groups regarding pulse, respirations, blood pressure, rectal temperature, pH and base deficit, and corrected absolute numbers of segmented and immature PMNS. The presence of bacteria on histologic analysis of sputum obtained by tracheal aspirate, and the subsequent isolation of a similar bacterium in blood and sputum, provides a valuable tool in the diagnosis of congenital pneumonia when compared to other clinical variables.