793

EVALUATION OF QUANTITATIVE CULTURES OF SPUTUM FROM CHILDREN WITH CYSTIC FIBROSIS. Grace F. Maguire, Franklin P. Koontz, Roshenara Moore and Martin G.

Myers (Spon. by Kabir Younoszai), University of Iowa Hospitals, Department of Pediatrics, Iowa City.

Eighty-three sputa were obtained from 41 children with cystic fibrosis and maintained on ice until culture within 20 minutes. Quantitative cultures (QNC) were made by inoculating serial 10-fold dilutions of the sputum, homogenized with N-acetyl cysteine, onto blood, chocolate, and eosin methylene blue agar plates. The same sputum samples were then cultured qualitatively (QLC) on the same types of agar. An average of 3.9 bacterial species per sample in a concentration of $> 10^6$ CFU/ml were recovered by QNC. Organisms which might be considered "normal flora" were recovered from 57 QNC and 80 QLC. Potential pathogens were recovered from 80 QNC and from 74 QLC. *S. aureus*, present in QNC in a mean concentration of 3.2×10^7 /ml, was recovered from 31 sputum pairs and additionally from 1 QNC and 2 QLC. *Ps. aeruginosa*, present in QNC in an average concentration of 1.9×10^8 /ml, was recovered by both methods 55 times, 3 additional times each by QNC and QLC. *H. influenzae* was present in QNC in a mean concentration of 3.4×10^8 /ml and was recovered by both culture techniques 9 times. It was recovered 26 additional times by QNC and 2 additional times by QLC. In 24 of 24 instances, the *H. influenzae* recovered by QNC was not typable by counter immunoelectrophoresis. Routine qualitative sputum cultures underestimate the frequency with which *H. influenzae* may be recovered from children with cystic fibrosis.

794

YERSINIA ENTEROCOLITICA GASTROENTERITIS IN CHILDREN. Melvin I. Marks, Chik H. Pai, Lucette Lafleur, Ole Hammerberg, Lynn Lackman and Luc Chicoine. McGill

Univ.-Montreal Children's Hosp. and Univ. de Montréal-Hôpital Ste Justine, Montreal, Quebec, Canada.

Y. enterocolitica (YE) is the second commonest cause of bacterial gastroenteritis (GE) in children in the Montreal area. The purpose of this study is to define prospectively the incidence of YE GE, duration of carriage, serological response, communicability in households, and effect of antimicrobial therapy. Clinical, bacteriologic and serologic surveillance was performed on index cases (IC) and their family members until all members of the family had 3 consecutive negative stools. During the first 6 mo of the study 96 IC were identified from 2531 ill children. In 31 IC whose clinical and epidemiologic data were available, diarrhea (100%), fever (71%) and abdominal pain (61%) were major symptoms with mean duration (D) of 16, 4 and 9 days respectively. D of excretion of YE was 4.5 wks (range 2-9). Paired sera were available from 25 IC; all but 2 (both under age 4.5 mo) showed a serologic response. The geometric mean titer of the 1st serum from those ≥ 1 yr (18) was 635, compared to 100 for those < 1 yr (7). Intrafamilial spread was documented by at least 2 of 3 criteria (clinical, bacteriologic, or serologic) in 7 of 25 families, involving 4 of 13 children and 3 of 53 adult household contacts. It is too early to evaluate the effect of therapy.

Our findings indicate that (1) YE is a frequent cause of GE in children; (2) YE GE is followed by "O" type-specific antibody response in children ≥ 1 yr of age; and (3) intrafamilial spread is often asymptomatic.

795

ECHO 6. A CAUSE OF SHINGLES. Meade, R.H. III, Chang, T.W. (Spon. by Gellis, S.S.). New England

Medical Center Hospital, Tufts University School of Medicine, Boston Floating Hospital, Department of Pediatrics, Boston, Mass

A skin infection resembling bullous Herpes zoster in a boy of 7 years was investigated by tissue culture and neutralizing antibody titration. The unexpected recovery of ECHO 6 is the reason for this report.

Vesiculo-bullous lesions involving 3 adjacent dermatomes on the neck, right shoulder and chest had been present for two days with temperatures of 101°F when he was first seen. Tissue culture using WI-38 cells was done. The lesions were denuded and crusting on a red base after two weeks. After two months vesicles and bullae had healed leaving an irregular red, raised skin eruption where they had been.

ECHO-6 grew on human amnion and kidney cell cultures causing cytopathic changes within 24 hours when subcultured.

Serum obtained 2 weeks after onset neutralized cytopathic effects of 100 TCD inoculum of ECHO 6 at a dilution of 1:32. The neutralizing antibody titer rose to 1:640 after 2 months. No antibody versus Herpes zoster, vaccinia or other enteroviruses was present.

The recovery of ECHO 6 from vesiculo bullous lesions and the demonstration of a 5 fold rise in neutralizing serum antibody support the implication that this enterovirus was responsible for a systemic disease closely resembling Herpes zoster.

796

DEVELOPMENT OF ANTIBODY TO STAPHYLOCOCCAL EPIDERMOLYTIC TOXIN (ET), Marian E. Melish, Margaret Stuckey, Sharon Sprouse. UCSD Dept. of Pediatrics, San Diego,

Skin lesions of the Staphylococcal Scalded Skin Syndrome (SSSS) caused by ET elaborated by staph infection, are either localized (bullous impetigo) or generalized (toxic epidermal necrolysis). The role of specific ET antibody in determining disease susceptibility was investigated in normal people and in SSSS. Antibody to ET, type A, was measured by radioimmunoassay and bioassay:

Disease	Anti ET in Acute Serum	Convalescent Serum
Localized ET A+	5/13	9/9
Generalized ET A+	0/6	3/3

Anti ET was found only > 8 days in generalized SSSS. 5 children with SSSS ≥ 20 to the serologically distinct ET type B were studied. 4 remained anti ET A negative, 1 had high anti ET A levels throughout illness. In 238 normal individuals the % possessing anti ET A increased with age:

Age	Anti ET A	Age	Anti ET A
Birth	90%	10-20 yr.	77%
3 mo-2 yr	25%	20-40 yr	84%
2-5 yr	45%	40-60 yr	91%
5-10 yr	44%		

Anti ET is specific to ET type and develops in response to infection with ET A+staph. Localized SSSS may develop and progress despite antibody while generalized SSSS, due to hematogenous ET dissemination, is prevented by specific anti ET. High prevalence of antibody among persons > 10 yrs. may explain the rarity of generalized SSSS in adults.

797

PROTECTION AGAINST HEMOPHILUS INFLUENZAE (HITB) MENINGITIS RESULTING FROM FEEDING OF E. COLI 075: K100: H5 (E.C. 89). E. Richard Moxon and Porter

Anderson, Departments of Pediatrics, Johns Hopkins Hospital, Baltimore, Md., and University of Rochester School of Medicine, Rochester, New York. (Sponsored by: Walter T. Hughes)

Serum antibody to HITB capsular polysaccharide (ACAB) has been induced by gastrointestinal colonization with genetically unrelated bacteria possessing cross-reactive antigen (CRA). To investigate whether immunization with CRA results in altered susceptibility to HITB meningitis, rats aged 5 days were fed either 10^7 E.C. 89 or saline (controls) on 3 successive days. All rats thrived normally. Stool cultures from 95% of 76 E.C. 89-fed rats yielded bacteria with CRA for ≥ 7 days, and 42% for 35 days; none of 68 controls were thus colonized. When aged 42 days, all rats were inoculated intranasally with 10^7 HITB. After 5 days comparison of blood and CSF cultures showed a significantly ($p < 0.05$) decreased incidence of bacteremia (41% vs. 62%) and meningitis (7% vs. 20%) in E.C. 89-fed rats. Pre-challenge serum levels of ACAB were undetectable (< 20 ng/ml.) in both E.C. 89-fed and control rats. Five days after HITB challenge ≥ 200 ng/ml ACAB was detected in 32/46 E.C. 89-fed rats compared to 19/44 control rats ($p < 0.01$). Levels of ACAB correlated with protection against bacteremia and meningitis; rats with meningitis had ACAB levels < 30 ng/ml. These data are consistent with priming of ACAB following colonization with E.C. 89 and extends previous observations to include protection against meningitis in a model in which the evolution of invasive HITB infection simulates that occurring in humans.

798

DECREASED MORTALITY IN EARLY ONSET GROUP B STREPTOCOCCAL (GBS) SEPSIS: FACTORS THAT RELATE TO SURVIVAL. Mubariq Naqvi, Enrique M. Ostrea, Jr., Dept. of Peds.,

Wayne State University and Hutzel Hospital, Detroit, Michigan

We have observed a low mortality (12.5%) in a total of 16 infants in our nursery with early onset GBS sepsis (positive blood culture during the first days of life). The following factors did not correlate to survival: maturity, birth weight, Apgar score, manner of delivery and duration of rupture of membranes (ROM). The single factor that related to the infant's survival was the onset of treatment with antibiotics. None of the infants treated early (< 12 hours of age) died, whereas 2/6 (33%) of the infants treated late (> 12 hours of age) died. Early treatment was initiated because of one or a combination of the following conditions: 1) respiratory distress soon after birth, 2) PROM (> 12 hours) and/or 3) gastric aspirate positive for gram-positive cocci. The 2 infants who died were premature and had respiratory distress at birth, initially diagnosed as RMD. Antibiotics were not started until 16-24 hours later. Of the 4 infants who received late treatment but survived, 2 were fullterm and 2 were premature. The latter had no respiratory distress but problems of apnea or jaundice on the 3rd or 4th day which prompted a sepsis work-up.

CONCLUSION: Although no significant statistical analysis can be drawn from this small sample, we feel that the following generalizations can be offered: 1) GBS sepsis can occur without PROM. The shortest duration of ROM in our series = 10 minutes, 2) the early treatment of GBS sepsis has been the single most important factor in our increased survival rate. A high index of suspicion is therefore necessary. In general, any infant with respiratory distress soon after birth should have a gastric aspirate smear, and if positive for gram positive cocci, should be treated with antibiotics until culture results become known. Factors such as gestational age, birth weight, Apgar score, PROM and white cell count, should not influence the decision to withhold therapy.