1087 KENNEL COUGH - A CANINE MODEL FOR VIRAL AIRWAY DISEASE. Jeff Wagener, Linda Minnich, Rich Sobonya, George Ray, Vincent Fulginiti, and Lynn Taussig, Arizona Health Sciences Center, Dept. of Pediatrics, Tucson.

Acute viral respiratory tract illnesses during childhood may be associated with the development of reactive airways and chronic lung diseases in later life. Models to study the sequelae of acute viral airways disease have not been developed. We studied canine "kennel cough" produced by a parainfluenza virus which is antigenically similar to human parainfluenza Type II virus. Animals were infected by aerosolization with 2.5×10^5 $TCID_{50}$ innocula of virus (supplied by Dr. F. Lief, Philadelphia, PA) on two consecutive days. Four antibody negative 3-month old beagle puppies developed spontaneous cough, persisting for three days to six weeks, and had radiographic pulmonary infiltrates. All puppies developed serum neutralizing antibody titers greater than 1:16, and had respiratory changes including increased minute ventilation, decreased compliance, and decreased resistance with increased respiratory rate. Pathologic findings included peribronchiolar polymorphonuclear infiltration, denuding of ciliated epithelium, and diffuse alveolar and interstitial infiltrates. These results suggest that: 1) parainfluenza virus can produce acute airway disease in dogs; 2) pulmonary function and pathologic changes are consistent with acute viral pneumonitis; and 3) kennel cough can be used to study the physiologic, immunologic, and allergic aspects of human viral airway disease. (Supported by an Arizona Lung Association grant and NRSA grant HL07243).

● 1088 HEMOPHILUS INFLUENZAE PNEUMONIA: A PROSPECTIVE STUDY DEMONSTRATING THE UTILITY OF LATEX AGGLUTINATION FOR DIAGNOSIS. Joel I. Ward, Herbert W. Clegg, Richard Wasserman, Gail Rosenberg, George R. Siber, Pediatrics, Harbor-UCLA Medical Center, Torrance, California; Children's Hospital Medical Center, Boston, Massachusetts.

Hemophilus Influenzae type b (HIB) as an etiology of childhood pneumonia has been reported with increased frequency, but culture diagnosis is often difficult. To rapidly diagnose and to better characterize the clinical spectrum of HIB pneumonia, we evaluated a latex particle agglutination test (LPA) to detect HIB antigen in serum, urine and concentrated urine (5fold) from children with pneumonia. In addition to cultures and LPA, acute and convalescent serum were assayed for HIB antibody rises. We evaluated during 5 months, 52 children who presented to our clinic with pneumonia and who were age 1 month to 9 years, had x-ray evidence of infiltrate and had symptoms for $\leq$7 days. Eight (16%) had HIB antigen detected in body fluids at the time of initial visit (Serum-5 patients, urine-5, concentrated urine-8). Four had culture confirmation of HIB (blood-3 patients, sputum-2, pleural fluid-1). HIB antibody rise ($\geq$2fold) was shown in 5 patients with antigen. The others were <18 months of age. All pneumonia patients without HIB antigen had negative HIB cultures and no HIB antibody change. Children with HIB pneumonia were 2 months to 8 years of age (median 2 yrs.). 75% were subsequently hospitalized. The LPA test is a sensitive rapid diagnostic technique for establishing the diagnosis of HIB pneumonia, even when blood cultures are negative. HIB antigen was most readily detected in concentrated urine specimens.

1089 CEREBROSPINAL FLUID LACTIC ACID DEHYDROGENASE LEVELS IN MENINGITIS. Leonard B. Weiner, Julia A. McMillan and Anne E. Dyson. (Spon. by Frank A. Oski). SUNY, Upstate Medical Center, Department of Pediatrics, Syracuse, N.Y.

Cerebrospinal fluid (CSF) lactic acid dehydrogenase (LDH) has been utilized to help distinguish bacterial from non-bacterial meningitis. We reviewed the initial lumbar puncture (LP) results in 45 pediatric patients with documented bacterial meningitis seen between 1977-80. Patients ranged in age from 1 month to 16 years. No CSF specimens contained significant numbers of RBC's. Nine of the 45 patients had received oral antibiotics prior to admission. A CSF LDH value of more than 20 IU/L (40 units/ml) was considered presumptive evidence of bacterial meningitis, although antibiotics were begun in all patients immediately following the initial LP. A total of 9 patients (20%) had CSF LDH values < 20 IU/L: 1 of 4 patients with meningitis due to S. pneumoniae, 3 of 23 with H. influenzae, type b, meningitis, and 5 of 18 patients with N. meningitidis meningitis. There were no clinically distinguishing features of these 9 patients, and they were not among the patients who received oral antibiotics. During the same period of time, 29 patients found to have non-bacterial meningitis had CSF LDH determinations performed on their initial LP's. Of those 29, 13 (45%) had CSF LDH values > 20 IU/L. For this group of 74 patients with meningitis encountered during a 3 year period, initial CSF LDH did not prove helpful in distinguishing bacterial from non-bacterial disease.

● 1090 THE DEVELOPMENT OF RESPIRATORY SYNCYTIAL VIRUS (RSV) SPECIFIC IgE AND THE RELEASE OF HISTAMINE IN NASOPHARYNGEAL SECRETIONS FOLLOWING RSV INFECTION: POSSIBLE ROLE IN THE PATHOGENESIS OF BRONCHOSPASM. Robert Welliver, Elliott Middleton, Martha Sun, Pearay L. Ogra. State University of N.Y. and Children's Hospital, Buffalo, N.Y.

A group of 20 infants and children with acute infection with RSV were tested during the first week of illness for the appearance of RSV specific IgE and the presence of histamine in their nasopharyngeal secretions. The IgE antibody activity was determined by an enzyme linked immunosorbent assay (ELISA), using purified RSV and peroxidase-conjugated monospecific rabbit antisera to human IgE. The histamine concentrations were determined by the fluorometric method. RSV specific IgE was detected in nasopharyngeal secretions of 57% of all infected subjects. 75% of patients with bronchiolitis associated with wheezing and 30% of RSV infected subjects without wheezing possessed RSV specific IgE in the nasopharyngeal secretions. Histamine activity was observed in the nasopharyngeal secretions of all RSV infected subjects Significantly, however, the individual and mean histamine content in the secretions of patients with bronchiolitis or wheezing was higher ($P<0.01$) than in subjects without any clinical bronchospasm. These observations suggest the development of RSV specific IgE and histamine release in the respiratory tract of many RSV infected subjects. It appears that the magnitude of IgE mediated histamine production in the respiratory tract may determine the form of clinical illness and the degree of bronchospasm during acute infection with RSV.

1091 AGE RELATED RESPONSE TO HEMOPHILUS INFLUENZAE TYPE B VACCINES. Peter F. Wright, Deborah M. Burks, Diane J. Pincus, Claudia S. Andrews, Eileen M. Lawrence and Sarah H. Sell. Vanderbilt Univ. Med. Sch. Dept. of Peds., Nashville.

Safety and age related immunogenicity of 2 HIB vaccines, prepared by Lederle Laboratories, polyribosylribitol phosphate (PRP) and PRP-pertussis (PRP-p) were compared in 3 groups of normal children aged 6-7 months, 15-18 months and 3-6 years. Children in the older age groups received a single dose of 1 of the HIB vaccines or DPT. Children aged 6-7 months received either: 1) 2 monthly doses of an HIB vaccine, 2) DPT followed 1 month later by PRP or 3) PRP-p followed by DPT. Reactions were evaluated at 24 hours and RIA antibody (method of Anderson) determined at 1 month after injections. In the 2 older age groups, mild-moderate local and/or systemic reactions were similar for PRP-p (4/10 injections) and DPT (5/10 injections). PRP was without reactions. 6-7 month old children tolerated PRP-p and PRP equally well with 3/31 and 4/31 injections causing reactions. In contrast, 12/22 DPT injections caused reactions. Serologic responses to both HIB vaccines were age dependent. The ratio of post-pre geometric mean titers:

	PRP-p	PRP	DPT	
3-6 years	6.2(5)	3.0(5)	1.0(5)	
15-18 months	3.7(5)	1.2(5)	1.0(5)	( ) = #
6-7 months - 1 dose	1.3(21)	1.3(17)	1.0(19)	of chil-
2 doses	2.4(9)	0.8(8)	-	dren

The addition of pertussis to PRP enhanced antibody response to the HIB polysaccharide antigen and holds promise as an approach to immunization.

1092 INFLUENCE OF ACUTE AND SEROUS OTITIS IN INFANCY ON HEARING TESTING AT 2 YEARS OF AGE. Peter F. Wright, John W. Greene, Claudia S. Andrews, William K. Vaughn, Ann B. Sitton, Kathryn B. McConnell, Sarah H. Sell and Fred H. Bess. Vanderbilt Univ. Sch. of Med., Depts. of Peds and Hearing and Speech, Nashville.

Despite the high level of interest, there is little definitive data concerning hearing outcome in prospectively followed infants with recurrent acute otitis media (AOM). 149 normal children were followed closely during the 1st 24 months of life with special emphasis on middle ear status as judged by pneumatic otoscopy and impedance tympanometry. The incidence of AOM peaked at 7-9 months with 46 visits/100 children with a decrease to 7 visits/100 children by 21-24 months. Type "A" tympanograms correlated with normal ears at each 3 month block between 86-99% of the time. However, type "B" tympanograms were seen 29-59% of the time with ears also judged to be normal by pneumatic otoscopy. At 2 years of age children were tested utilizing sound field audiometry, impedance tympanometry and acoustic reflex thresholds. Sound field testing at 5 frequencies between 250-4000 Hz. showed a hearing loss $\geq$30 decibels at one or more frequencies in 5-10% of children with no AOM, 11-14% with 1-2 episodes of AOM and 15-29% with $\geq$3 episodes of AOM. Acoustic reflex thresholds were $\geq$115 decibels at one or more of 4 frequencies between 500-4000 Hzs. in 3-13% of ears with no AOM, 32-34% with 1-2 episodes of AOM and 44-50% with $\geq$3 episodes of AOM. In children carefully followed and optimally treated for recurrent AOM abnormal middle ear status and hearing loss were frequent sequelae of AOM in infancy.