1003 OUTBREAK OF ECHOVIRUS 11 MENINGITIS. Margaret C. Fisher, C. Murry Thompson, Sarah S. Long, and Adamadia Deforest, (Spon. by Angelo M. DiGeorge). Temple University School of Medicine, St. Christopher's Hospital for Children, Department of Pediatrics, Philadelphia, Pa.

Sporadic cases of Echovirus 11 (E) illness have been described. During an epidemic in Phila. (4/80-10/80), E was recovered from 22/419 cerebrospinal fluids (CSF) submitted for culture. Features of these 22 cases follow: ages were 2 wk. to 9 yr. with 80%<2yr. and 45%≤2 mo.; presenting complaints were fever 22, irritability 17, poor feeding 8, vomiting 7, upper respiratory 9; history of illness was brief (median 1 day); physical findings were fever ≥ 101°F 19, irritability 12, meningismus 4, URI 5, rash 2. Indications for CSF examination were fever in a child <2 mo. old, irritability, or meningismus. CSF white blood cell counts ranged from 0-2250 with 3>500 and 4<10. Polymorphonuclear (P) predominance occurred in 11/22; in 9/22 P exceeded 80%. Duration of symptoms correlated with CSF differential: 8/15 pts. with symptoms ≤1 day had P>80% vs. only 1/7 with symptoms >1 day. CSF glucose was >40 mg/dl in all pts.; CSF protein was >40mg/dl in 9/21. 20/22 pts. were hospitalized and 19 received antibiotic therapy. Symptoms resolved within 2 days in 18/21 pts. 15/20 were discharged within 5 days. There were no complications and no sequelae at the time of discharge.

E was recovered from non-CSF sources in 8 pts.: respiratory in 4 with E+CSF, stool in 1 with presumed viral meningitis, WBC's in 1 with Stevens-Johnson Syndrome, respiratory in 1 with cystic fibrosis. Primary monkey kidney cells proved most sensitive for recovery of E. Cytopathogenic effect was noted in 2-9 days.

1004 VACCINATION OF PEDIATRIC NURSES WITH TOWNE STRAIN CYTOMEGALOVIRUS (CMV). Gary Fleisher, Stuart Starr, Harvey Friedman, Stanley Plotkin. University of Pennsylvania School of Medicine, Children's Hospital of Philadelphia, Department of Pediatrics, Philadelphia, PA.

A trial of live, attenuated Towne strain CMV vaccine was undertaken in 21-34 yr. old healthy female nurses seronegative by complement fixation (CF) and anticomplement immunofluorescence (ACIF). Thus far, 10 nurses have been vaccinated with $10^{3.5}$ pfu subcutaneously and followed for 6 mos (3) to 1 yr (7). After vaccination, they had serial exams, CBCs and chemistry profiles, and viral cultures of the throat, urine, cervix, and blood. They were tested for CF, ACIF, and neutralizing antibodies (NT) and for cell mediated immunity (CMI) by the lymphocyte proliferation assay. Although 9 nurses developed erythema and/or edema at the vaccination site, none had temperature >38.5°C, systemic illness, or persistent laboratory abnormalities. Antibodies (CF, ACIF, NT) appeared in 2-4 wks and peaked by 8 wks. Peak geometric mean titers were 1:39 CF, 1:97 ACIF, and 1:34 NT. Two patterns were observed in the 9 nurses followed for CMI. Eight nurses had an early (2-4 wks) and, in most cases, a late (26-39 wks) peak; 1 nurse had only a late peak. None of the women excreted CMV from any site. Towne strain CMV vaccine appears safe and immunogenic in preliminary trials among healthy women of child bearing age who may be at increased risk of exposure. (Supported by a grant from Merck, Sharp and Dohme and the Hassel Foundation.)

1005 A NON X-LINKED SYNDROME WITH SEVERE EPSTEIN-BARR VIRUS (EBV) INFECTION. Gary Fleisher, Stuart Starr, Norman Koven, Stephen Douglas. Department of Pediatrics, University of Pennsylvania School of Medicine, Children's Hospital of Philadelphia, Philadelphia, PA.

We report a family with: i) males and females with severe or fatal EBV infection; ii) chronic pulmonary infections; iii) an appropriate antibody response to EBV; iv) complete recovery in survivors; and v) decreased natural killer (NK) cell activity. Antibodies (Ab) to EBV antigens were measured by immunofluorescence. NK activity was measured by chromium release from K562 cells after a 4 hr incubation with test lymphocytes. Other humoral and cellular immunologic studies including T and B cell enumeration and nonspecific mitogen response were tested by standard techniques. A normal Ab response to EBV was found in the parents, 1 sib with mild EBV, and the 3 with severe EBV. EBV serology in 1 affected male is shown in the table.

Days post onset	IgM anti-VCA	IgG anti-VCA	Anti-EA	Anti-EBNA
-38	<10	< 10	<10	<2
2	160	1280	10D	<2
9	160	1280	20D	<2
26	80	1280	20D	2
75	<10	640	<10	20

NK activity (% cytotoxicity) was 40-50% in the parents and controls, 5% in the male and 4% in the female with severe EBV, and 55% in the unaffected male. One male had elevated immunoglobulins but other immunologic studies were normal in all members. This family is unique in that both males and females had severe EBV infections with an appropriate antibody response.

1006 INFLUENZA B IN FAMILIES. Arthur L. Frank, Larry H. Taber and W.P. Glezen. Baylor College of Medicine, Influenza Research Center, Departments of Microbiology and Pediatrics, Houston.

Characteristics of influenza B were studied in 37 families with 163 members through two outbreaks. By microneutralization, ≥90% of virus positive persons seroconverted if late followup sera were included. Infection rates for B/HK virus in 1977 and B/Singapore in 1980 were highest in school age children (50%, 38%), substantial in 0-4 yr olds (24%, 26%) and lowest in adults (13%, 13%). The rates were about double in each age group in the 14 families infected in 1977 and the 13 infected in 1980.

Of 14 families with 1977 infection, only 3(21%) were infected in 1980 compared to 10(43%) of 23 families not infected in 1977. Infection rates for individuals, by age group, were also about double for those not infected in 1977. No infections were observed either year in the 25 persons with preexisting titers >16; the highest infection rate was 36% in those with titers ≤2.

Most people with isolates had febrile URI/flu-like illness (69%), 15% had other significant illnesses, and 15% afebrile URI. Most seroconverters had afebrile URI (27%) or were well (39%). Only 1 reinfected child (age 12) shed virus and she had a febrile URI. Up to 4 others (ages 4-8 in 1980) had serological indications of reinfection, without culture verification, and no illness beyond afebrile URI was reported during the 1980 season.

Thus, two variants of influenza B gave similar outbreaks in 1977 and 1980 but largely in different families and individuals. This suggests that B/HK infection in 1977 protected against B/Singapore in 1980.

1007 SAFETY AND EFFICACY OF INTRAVENTRICULAR GENTAMYCIN IN CENTRAL NERVOUS SYSTEM INFECTIONS, Lawrence D. Frenkel, Karyn Patno, Mark Rayport, Kytja K.S. Voeller, (Spon. by M.G. Robinson), Medical College of Ohio. Toledo, Ohio 43699

Eleven cases of ventriculitis in 10 patients, ranging in age from 1 day to 28 years, were treated with intraventricular gentamycin administered via an external ventricular drainage system. Six of the episodes were associated with Staphylococcal infection 2 with Enterobacter and 1 each with Klebsiella, E. Coli, and Serratia. In each case, a systemic antibiotic to which the organism was sensitive was administered along with the intraventricular gentamycin. Ten of the 11 cases were associated with intraventricular shunt infections and 1 was secondary to S. epidermitis infection in a neonate after meningomyelocoel repair. In all 11 cases, successful sterilization of the CSF was achieved within 16 days (avg. 8.4 days) the average course of gentamycin administration being 15 days (range 5-24 days). Two of the patients subsequently became infected by a different organism which was gentamycin resistant and a third patient was reinfected with S. aureus and was successfully treated with a second course of intraventricular gentamycin. No infants died of their CNS infections. There was no evidence of renal or audiologic toxicity and in 7 patients available for follow-up, there was return of neurologic function consistent with the pre-ventriculitis status. Although recent data question the role of intraventricular gentamycin in the treatment of neonatal gram-negative meningitis, the data presented above suggest that intraventricular gentamycin administered via ventricular tubing is safe and efficacious.

● **1008** SUBCLINICAL ZOSTER: IDENTIFICATION BY SERUM IgM TO VARICELLA-ZOSTER (VZ) VIRUS. A.Gershon, S.Steinberg, W. Borkowsky, D. Lennette, E. Lennette, N.Y.U. Med. Ctr., Hahneman Med. College, and Children's Hosp. of Philadelphia, Depts. of Pediatrics.

It has been postulated that reactivation of VZ virus occurs if immunity to VZ wanes, from aging or disease. However, our studies with fluorescent antibody to VZ membrane antigen (FAMA) indicate that antibody does not decrease with age. Of 100 persons, geometric mean titers of VZ antibody were: 1:15 between ages 41-60, 1:19 between 61-70, and 1:27 above age 71. In an attempt to detect subclinical zoster in older persons, we measured VZ- IgM by FAMA and immune adherence on IgM fractions from sucrose density gradients. VZ-IgM was detected in 8/16 zoster patients (50%), and in the following persons without zoster: 5/10 immunocompromised (50%), 6/28 over age 60 (21%), and 4/18 young adults (20%). Rheumatoid factor was present in 14% of VZ-IgM positive sera. A leukemic child had 3 episodes of clinical zoster. VZ-IgM was present 2/2 times tested, and at 3 other times when the child had no zoster. One infant with intrauterine varicella had a VZ-IgM titer of 1:32 at 9 mos. These data show the instability of latent VZ virus in man, and suggest that subclinical zoster occurs. VZ-IgM may be a marker for latent VZ infection.