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A CYTOMEGALOVIRUS VACCINE TRIAL IN RENAL TRANSPLANT CANDIDATES. John P. Glazer, Harvey Friedman, Robert Grossman, Clyde Barker, Stuart E. Starr, and Stanley A. Plotkin. Univ. of Penn. Sch. of Med., Children's and University Hospitals, Depts. of Pediatrics and Medicine, Philadelphia.

Cytomegalovirus (CMV) infection is an established cause of morbidity and mortality in renal transplant recipients. CMV-seronegative (SN) recipients of allografts from seropositive donors appear to be particularly vulnerable to clinically apparent post-transplant CMV disease. Since CMV seropositivity increases with age, pediatric transplant candidates are a logical population in whom to consider establishment of pre-transplant immunity through vaccination. Results of a preliminary vaccine trial in 5 SN adult transplant candidates immunized with CMV Towne 125, an attenuated strain, are reported here. Antibody to CMV was detected by IFA 2-4 weeks after vaccination in all patients. No CMV was recovered from any patient, despite later immunosuppression. No vaccine-attributable clinical or laboratory abnormalities have occurred. Current status of vaccinees is as follows:

Pt	Wk Post Vac/Transplt	Donor serology	Seroconv	CMV Excretion
1000	48 13	NEG	3 Wk	NONE
1001	36 Nephrect Wk 5	NEG	2 "	NONE
1002	Expired 5 Wk>Vac	NONE	3 "	NONE
1003	24 7	POS	4 "	NONE
1004	12 Pending	PENDING	3 "	NONE

Vaccination may offer a safe means of production of CMV antibody in renal transplant candidates at risk for CMV infection.

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PATHOGENESIS OF RESPIRATORY SYNCYTIAL (RS) VIRUS BRONCHIOLITIS IN INFANTS. W. Paul Glezen, Abel Paredes and Larry H. Taber. Baylor Col. Of Med., Influenza Research Center, Houston.

RS virus produces yearly epidemics of life-threatening bronchiolitis in infants under 6 months of age. Other workers have theorized that immunopathologic processes involving maternal antibody or sensitization may enhance the severity of these infections. Prospective studies of infants in Houston have not supported these theories; in fact, a postive correllation ($p<.05$) has been found between the level of maternal antibody and the age of infants at the time of infection suggesting a relative protection of infants by high levels of maternal antibody. Furthermore, the mean maternal antibody titer of 37 infants with infection was significantly lower than that of over 200 random cord sera.

Of 70 infants followed from birth, only 14 (20%) were infected with RS virus during the first 6 months of life, but 4 had lower respiratory infections and 2 were hospitalized. The infection rate increased sharply after 6 months of age and almost all were infected by age 2 years. Reinfections, which were mild or inapparent, accounted for 15 of 70 total RS virus infections.

Our studies do not support any of the hypotheses of immunopathology for RS virus disease; in fact, the previously impugned maternal factors appear to be relatively protective. Enhancement of these maternal factors that may be transferred to infants may prove to be the safest method for protecting infants during the first months of life.

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COMPARATIVE IMMUNOGENICITY OF GROUP C NEISSERIA MENINGITIDIS VARIANTS AND ESCHERICHIA COLI K92 CAPSULAR POLYSACCHARIDES IN ADULT VOLUNTEERS. Mary P. Glode, Edward Lewin, C.T. Le, Ann Sutton, Emil C. Gotschlich, and John B. Robbins, Division of Bacterial Products, Bureau of Biologics, FDA, Department of Pediatrics, University of Rochester School of Medicine, Rochester, New York, and the Rockefeller University, New York.

We studied three structurally and antigenically similar capsular polysaccharides: Group C Neisseria meningitidis O-acetyl positive (OAc^+) and negative (OAc^-) variants, and the cross-reacting E. coli K92 for their ability to induce Group C meningococcal antibodies in adults. All three polysaccharides elicited specific serum antibodies. The OAc^- variant was the most immunogenic. Geometric mean pre-immunization anticapsular antibody levels were 1.4 µgm/ml, 0.8 µgm/ml, and 1.2 µgm/ml for groups receiving OAc^-, OAc^+ and E. coli K92 respectively. Geometric mean antibody titers 3 weeks and 2 months post immunization were 41.7 µgm/ml for OAc^-, 22.8 µgm/ml for OAc^+, and 7.0 µgm/ml for E. coli K92 ($p = 0.001$ for OAc^- and OAc^+ versus K92). No Group C meningococci or cross-reacting organisms were isolated from repeated NP cultures, but one individual demonstrated persistant rectal carriage of E. coli K92. Antibodies elicited by either Group C polysaccharide were bactericidal for OAc^+ and OAc^- organisms. Absorption of OAc^+ antisera with OAc^- polysaccharide did not remove all bactericidal antibody. The superior immunogenicity and distinct biochemical characteristics of the OAc^- variant support further study in children and infants.

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NATURAL IMMUNITY TO PYOGENIC BACTERIA: Ronald Gold, Martin Randolph, Martha L. Lepow and Irving Goldschneider, University of Connecticut School of Medicine, Depts of Pediatrics & Pathology, Farmington, Ct.

Acquisition of bacteria possessing antigens cross-reactive with groups A, B, C meningococci (Mgc) and H.influenzae Type B (HIB) was examined in 99 infants. Pharyngeal and rectal swabs were obtained at every visit to the pediatrician (MR) during the first year of life and cultured aerobically on TSB agar containing specific antibody to groups A, B, C Mgc and HIB. Bacteria around which antigen-antibody haloes formed were identified by standard methods. Sera were obtained at 12-15 months of age and tested for bactericidal antibody. Forty-four % of 68 infants who were cultured 4 or more times carried bacteria in the rectal culture cross-reactive with group B Mgc and 38% acquired pharyngeal organisms which cross-reacted with group C Mgc. Less than 2% of infants had bacteria cross-reactive with group A Mgc or HIB. Bacteria associated with cross-reactions included: Group A Mgc (Staph. aureus and Staph. epidermidis), Group B Mgc (E.coli, Streptococcus viridans), Group C Mgc (Streptococcus viridans), and HIB (E.coli). Bactericidal antibody against group B Mgc was present at 1 year of age in 84% of carriers of cross-reactive E.coli but was not found against group C Mgc in carriers of cross-reactive Streptococci.

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MENINGITIS OUTBREAK - LABORATORY DIFFERENTIATION OF ETIOLOGY. Frederick Goldberg and Leonard B. Weiner (spon. by Frank A. Oski). Dept. of Peds., SUNY, Upstate Medical Center, Syracuse, New York.

This study considered which initial laboratory (lab.) tests are useful in differentiating bacterial from aseptic meningitis. Between July and October, 1977, 44 children (11 days to 17 yrs. of age) with meningitis were seen. Lab. data obtained included: absolute band count (ABC), absolute polymorphonuclear count (APC), CSF glucose/blood glucose (G/BG) ratio, CSF white blood count (WBC) and differential, and CSF lactic acid dehydrogenase (LDH). Group I (7 pts., 1 pretreated) had bacteria cultured from CSF. Group II (37 pts., 0 pretreated) had sterile CSF and improved clinically without any antibiotic therapy or with only 48 hrs. of therapy pending culture reports. There was no significant difference between the APCs of the 2 groups. Group I had a higher mean ABC ($p<.05$), lower mean CSF G/BG ratio ($p<.001$), higher mean CSF WBC ($p<.001$), and higher mean percentage of polymorphonuclear (PMN) cells in CSF ($p<.001$). The overlap of ranges between the 2 groups for all these parameters limited their predictive value for individual cases. Four pts. in Group II had antibiotics withheld and repeat lumbar puncture within 6 to 32 hrs. showed an increase in CSF WBC with persistent PMN predominance. The mean CSF LDH was higher in Group I ($p<.001$). The CSF LDH was >60 in all Group I pts. and <60 in all Group II pts. In this outbreak of aseptic meningitis the measurement of LDH in CSF proved to be the only single test that reliably distinguished bacterial from aseptic disease.

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HUMORAL IMMUNE RESPONSE FOLLOWING VARICELLA-ZOSTER VIRUS INFECTION, Charles Grose and Philip A. Brunell, Dept. of Pediatrics, Univ. of Texas Health Science Center, San Antonio, TX.

Previous investigations of the humoral immune response to varicella-zoster virus (VZV) infection were hampered by the insensitivity of the complement-fixing antibody test. Development of the indirect fluorescent method for detecting antibody to VZV-membrane antigen provided a means of separating immune from susceptible individuals and confirmed the ability of zoster immune globulin (ZIG) to attenuate disease if given to susceptible children shortly after exposure. Because of the important role of antibody in modifying clinical disease, we have evaluated the neutralizing antibody response in neonates and older children with VZV infection. Utilizing a newly developed 'semi-micro' plaque reduction assay we found (i) that the titer of neutralizing antibody was enhanced 2-4 fold by the addition of complement and (ii) that complement-dependent neutralizing antibody occasionally was detectable when anti-membrane antibody was negative (<1:2). These results suggest that neutralizing antibody titers may be required to fully assess the VZV immune status of exposed newborn and immunosuppressed children. In addition, this test may define the role of humoral immunity in modulating VZV reactivation.