

● **517** **CYTOMEGALOVIRUS (CMV) INFECTION IN PEDIATRIC HOUSE OFFICERS: SUSCEPTIBILITY AND RISK OF PRIMARY INFECTION.** Michael T. Brady, Gail J. Demmler, Donald C. Anderson, Baylor College of Medicine, Texas Children's Hospital, Department of Pediatrics, Houston.

Health-care workers in their child-bearing years are concerned about the risk of acquiring CMV from infected patients. Pediatric house officers are a particularly vulnerable group since their training requires significant contact with large numbers of children who are excreting virus. We studied 213 pediatric house officers (110 male and 103 female) during a 3 year period. The average age was 27.1 years (range 23-40 years). Initial serology (ACIF and ELISA) revealed 144 (69%) to be nonimmune. Race (white 143/196 seronegative vs nonwhite 4/17 seronegative, $p < .001$) and place of birth (U.S. 111/153 seronegative vs non-U.S. 6/15 seronegative, $p = .008$) were significantly associated with susceptibility. Sex, level of training and marital status were not significantly different for those initially seropositive or seronegative. CMV seronegative house officers (122) were followed for 183 person years. Seven individuals seroconverted (3.8% seroconversions per year). Twenty-one seronegative house officers were followed for their entire 3 year residency. Two individuals seroconverted (9.5% seroconversions per residency). Prevalence studies in various areas of our hospital showed that 1% to 15% of hospitalized children were excreting CMV during the study period. Susceptible house officers have a significant risk (9.5% per residency) of acquiring CMV infection, but the source of the infection cannot be determined by our data.

518 **IS PROLAPSE OF UMBILICAL CORD A CAUSE OF NEONATAL HYPOVOLEMIC SHOCK?** Luis A. Cabal, Irma Morales, Peter Patkos, Sze Ya Yeh, Bijan Siassi, Manuel Durand, Joan E. Hodgman. Univ. of So. Calif. Sch. of Med., LAC-USC Medical Ctr., Dept. of Pediatrics, Los Angeles, CA.

Prolapse of the umbilical cord (PUC) has been considered a cause of stillbirth and neonatal hypovolemic shock. Traditional theory held that, during labor, a significant portion of blood volume leaves the fetus between contractions, while placental blood does not reach the fetus because of cord compression. This theory antedated modern management of PUC. The objectives of this study were to determine the impact of current management of PUC with tocolysis, maternal position changes, cord reposition and prompt C-section, on fetal/neonatal mortality and on incidence of neonatal hypovolemic shock. 38,585 deliveries occurring during 2½ yrs. were reviewed, and there were 103 (0.37%) cases of PUC identified. Hypovolemia was evaluated by clinical signs of hypoperfusion, heart rate, blood pressure and Hct changes during the first 5 hours of life. Stillbirth rate in PUC was 8 times that without PUC. Infants born after PUC did not have low Apgar scores. There were no neonates with clinical evidence of hypovolemia or shock. Heart rate, blood pressure, and Hct from those born with PUC were not significantly different from normal. This study shows: a) high incidence of stillbirths associated with PUC, b) virtual absence of cardiovascular and clinical signs of hypovolemia in neonates born after PUC. We conclude that with current perinatal management, PUC is not a cause of neonatal hypovolemic shock; however, further early diagnostic efforts are required if the high incidence of stillbirths associated with PUC is to be reduced.

519 **HYPOTHESIS: CONGENITAL MAGNESIUM (Mg) DEFICIENCY IN THE PATHOGENESIS OF THE RESPIRATORY DISTRESS SYNDROME (RDS).** Joan L. Caddell, HGB, NICHD, NIH, Bethesda;

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A shock lung is the most visible pathology of severe Mg deficiency in the very young mammal; this hypothesis suggests that RDS is a human counterpart. The mean plasma Mg value of 165 premature infants with RDS was 1.51 ± 0.02 mEq/L, with 76% of values between 1.0 and 1.6 mEq/L (mean, 1.42), despite acidosis or hypoxemia, both of which increase plasma Mg. (The Hospital's normal range for Mg is 1.6-2.2 mEq/L). Low income adolescent multipara, who are at highest risk for RDS infants, are also at high risk for Mg deficiency because of Mg-poor diet and high metabolic demand for Mg during adolescent growth and successive pregnancies. RDS incidence is high in premature infants, with highest rates at the lowest birth weights; infants of mothers with diabetes mellitus (DM); and twins. These are at risk for Mg deficiency: Prematurity contributes to Mg deficiency, since the Mg concentration of the 20-week fetus is 62% that of the term infant (Widdowson & Dickerson, 1964); DM is associated with urinary loss of Mg; twins have fetal-fetal competition for Mg. Secondary metabolic effects of Mg deficiency such as hypocalcemia and increased intracellular water and sodium are problems in RDS. Parturition in Mg deficient animals is prolonged and stressed. Stress, plus deficiency in Mg in respect to calcium, favors the release of stored catecholamines and histamine (Douglas, 1968). An exaggerated release of epinephrine and/or histamine leads to acute pulmonary edema, often with hemorrhage. As in anaphylactic shock, the episode is self-limited with a potential for spontaneous resolution or death. Cortisone therapy prior to delivery may be protective.

520 **INCREASED URINARY EXCRETION OF RENAL N-ACETYL-β-D-GLUCOSAMINIDASE IN HYPERCALCAEMIC CHILDREN.** Russell W. Chesney, F Bruder Stapleton, Ann Behrman* and Leslie Miller*. University of Wisconsin, University Hospitals, Madison, WI. and University of Tennessee, Memphis, TN. Dept. of Pediatrics.

In children, idiopathic hypercalcaemia can be associated with urolithiasis and with microscopic or gross hematuria. Since the extent of renal injury arising from hypercalcaemia is unknown, we measured the urinary excretion of the lysosomal enzyme N-acetyl β-D glucosaminidase (NAG) to more clearly define the influence of hypercalcaemia on the renal tubule. Urinary excretion of NAG was measured by a fluorometric assay in 33 children with hypercalcaemia. Urinary NAG excretion in 13 healthy children was 5.84 ± 9.35 nmole/hr/mg creatinine (NAG/Cr) compared to 35.61 ± 42.04 in 23 children with renal hypercalcaemia ($P < 0.01$), and 28.99 ± 13.69 in 10 children with absorptive hypercalcaemia ($P < 0.20$). In children with renal hypercalcaemia, NAG/Cr excretion was not statistically different between children with urolithiasis or hematuria without calculi ($P < 0.3$). In six children with renal hypercalcaemia, no significant change in NAG/Cr excretion occurred after a mean of 25 weeks (range 8-60) of hydrochlorothiazide therapy although urinary calcium excretion (Uca/Ucr) decreased from 0.24 ± 0.11 to 0.16 ± 0.11 .

This study indicates that increased urinary calcium excretion produces renal tubular injury and that the renal injury may not be reversed by short-term alterations in urinary calcium excretion.

521 **U. UREALYTICUM (UU) AND M. HOMINIS (MH) COLONIZATION AMONG SEXUALLY ABUSED (SA) CHILDREN.** Daniel L. Coury, Joseph E. Dohar, George K. Haines and Charles F. Johnson. (Sponsored by D. Powell). Ohio State University, Columbus Children's Hospital, Department of Pediatrics, Columbus, Ohio.

The genital mycoplasmas UU and MH have long been considered as possible pathogens of the genital tract. They are thought to be a major cause of nonspecific urethritis in adult males, and colonization after puberty is closely related to sexual activity. However, their role in pediatric genital infections has not been evaluated. The association of gonorrhoea and chlamydia with sexual abuse in children prompted us to study UU and MH as possible markers for sexual abuse.

40 children presenting for evaluation of suspected sexual abuse were studied. Vaginal or urethral cultures were taken for N. gonorrhoea, chlamydia, UU and MH. 19 patients (48%) were colonized with UU. 5 patients (12%) were colonized with MH. We compared this data with previously reported rates of colonization in "normal" children (Ped. Clin. NA 21:457, 1974) by chi square analysis.

	"normal"	S.A.	χ^2 value	P value
UU	10/66	19/40	13.1	$p < .001$
MH	8/66	5/40	.003	$p > .05$

The significantly increased rate of UU colonization among SA children suggests that UU is often acquired following sexual abuse.

† **522** **NEONATAL AUTOPSY; AN INVESTMENT WITH A HIGH RATE OF RETURN.** William H. Craft, (Spon. by J. Brazy), Duke University Medical Center, Department of Pediatrics, Durham, North Carolina

The value of the autopsy in clinical medicine continues to be debated. While autopsy studies in adults have documented rates of 10-20% for missed or erroneous diagnoses, similar studies in neonates are lacking. In order to understand how frequently the neonatal autopsy provides useful information a study of all deaths in a level III NICU over a three-year period was carried out. Tabulation of confirmed diagnoses and clinically active problems at the time of death was done retrospectively for the first two years and prospectively for the third year. These diagnoses were compared with the final anatomic diagnoses obtained from the autopsy report.

Over the three-year period there were 112 deaths with autopsies performed in 73 cases (65%). A total of 38 significant findings, defined as conditions which were suspected, but unconfirmed (16) unsuspected (18) or erroneous diagnoses, (4) were noted in a total of 29 patients (29/73, 40%). These included: congenital anomalies (13), infections (11), iatrogenic complications (5), and others (9). These findings were not confined to any particular birth weight group nor did age at death (<7 days, 7-28 days, >28 days) influence the likelihood of significant findings. This high rate of return more than justifies a continued high rate of neonatal autopsy.