

1492 TRANSIENT HEMATURIA IN PREMATURE AND SICK NEONATES.

Andrea Cramer, Andrew Steele, Peter Wishnie, Marc Napp, Philip Lipsitz and Bernard Gauthier, Health Sciences Center, SUNY at Stony Brook, NY, and Long Island Jewish-Hillside Medical Center, Department of Pediatrics, New Hyde Park, N.Y.

During a 2-month period, 78 neonates admitted to our Special Care Unit (SCU) were screened for hematuria by dipstick and microscopic examination within 48 hours of admission. 63 healthy full-term neonates were similarly screened. Hematuria was not found in any healthy full-term neonate but was present in 62% of those in the SCU. None with hematuria had enlargement of the kidney by abdominal palpation, abnormal genitalia or progressed to have significant elevation of BP, proteinuria, BUN or serum creatinine. The hematuria cleared within 2 weeks of birth in all patients. Among the babies requiring special care, those with hematuria had lower gestational age (GA), lower birth weight (BW) and lower Apgar scores at 1 and 5 minutes (AS1 and AS5). All babies GA \leq 30 weeks or BW \leq 1500 grams (18% of SCU admissions) had microscopic hematuria. We conclude that transient microscopic hematuria is common among neonates requiring special care, and that it appears to be of no consequence in the absence of other evidence of renal or urologic disease.

SCU BABIES	GA (weeks)	BW (grams)	AS1	AS5
± Hematuria	35 ± 5	2238 ± 947	6 ± 3	8 ± 2
± Hematuria	38 ± 3	3038 ± 832	8 ± 2	9 ± 1
	p < 0.01	p < 0.01	p > 0.05	p < 0.01

1493 COGNITIVE FUNCTIONS(CF) IN CHILDREN ON CHRONIC INTERMITTENT HEMODIALYSIS(H). Herman Davidovitz, John Iacoviello and Melinda McVicar (Spon. by Joseph

Kochen) Cornell Univ. Med. College, New York, N.Y., North Shore Univ. Hosp., Manhasset, N.Y., Depts. of Pediatrics and Neurology

CF have rarely been studied in chronically uremic children. Six children on H were evaluated with 16 neuropsychologic tests pre, 12 and 24 hrs post dialysis. There were 5 boys and 1 girl 11 to 18 yrs old with duration of uremia 6 to 52 months. Mean pre-dialysis creatinine at the time of testing was 9.2mg% and the mean change post dialysis was -6.4 ± 2.1 mg%. Results, utilizing a Friedman two-way analysis of variance, revealed that 6/16 measures changed significantly and the Walsh test showed differences between each of the three time periods. + = improved, 0 = no change

Period	Reaction Time		Visual-Motor	Con-struction	Sustained Attention	Memory
	Visual	Auditory				
pre to 12 hrs	+	+	+	+	0	0
pre to 24	+	+	+	+	+	+
12 to 24	0	0	+	0	0	+

Similar changes were not observed in 6 age and sex matched normal children. The results indicate that uremia adversely affects selective higher cortical brain functions in children. The speed of central processing, particularly when coordination of visual and motor acts is required, is best at 24 hrs and least pre-dialysis. Attention and memory were more compromised at 12 hrs than at 24 hrs, despite increasing uremia, suggesting that rapid volume and/or electrolyte shifts contribute to decreased performance.

1494 UTI IN GIRLS: COMPARISON OF BLADDER WASHOUT LOCALIZATION TECHNIQUE WITH URINARY LDH ACTIVITY. Eileen Duggan, Stanley Hellerstein, Fayzeh Mansour, Eleanor

Welchert, The Children's Mercy Hospital, Department of Pediatrics, Kansas City, MO.

Recent reports suggest that elevated urinary LDH isoenzyme 5 activity is a reliable tool to separate upper from lower urinary tract infection. Total urinary LDH enzyme activity and isoenzyme activity were performed in urine from 52 episodes of urinary tract infection studied with the bladder washout technique. The technique for LDH determination includes dialyzing the urine, concentrating it and electrophoresis on cellulose acetate. Thirty-seven infections were localized by bladder washout to the lower tract and 15 to the upper tract. Urines from 33 girls without urinary infection were also analyzed for LDH. There was a significant difference between the total LDH enzyme activity from the "control" group compared with the groups with urinary infection. However, neither total LDH nor % LDH isoenzyme 5 served to distinguish lower from upper tract infection. The marked variations in the total LDH enzyme activity as well as the % of urinary LDH isoenzyme 5 activity are evident in the large standard deviation of the mean values derived from both control and infected subjects. Urinary LDH enzyme activity and percentage LDH isoenzyme 5 do not appear to separate upper from lower urinary tract infections.

	CONTROL	LOWER UTI	UPPER UTI
	MEAN (SD)	MEAN (SD)	MEAN (SD)
TOTAL LDH	11.05 (± 5.58)	23.72 (± 25.41)	21.93 (± 13.16)
% LDH ISO 5	4.56 (± 7.20)	13.51 (± 12.14)	15.53 (± 12.32)

1495 A PROSPECTIVE COMPARISON OF URINARY TRACT INFECTIONS (UTI) IN PATIENTS TREATED WITH EITHER CLEAN INTERMITTENT CATHETERIZATION OR URINARY DIVERSION, Owen Ehrlich and Andrew S. Brem. Spon. by Leo Stern, Brown University,

Rhode Island Hospital, Dept. of Pediatrics, Providence, RI

Clean intermittent catheterization (CIC) has become the treatment of choice for patients with a neurogenic bladder replacing urinary diversion. However, no well controlled studies are available assessing the efficacy of CIC over ileal loop diversion (ILD) in altering short term morbidity and frequency of UTI's. Consequently, a one year prospective study was carried out comparing patient morbidity, infection rates, and bacterial organisms in 33 children with meningomyelocele. Twenty four of the children, aged 3-12 years, performed CIC while 9 of the children, aged 10-18, had ILD. A minimum of 4 cultures per year were obtained on each patient. All ILD and 21/24 CIC patients were maintained on urinary tract antiseptics. One patient on CIC sustained a transient doubling of serum creatinine with progressive hydronephrosis requiring diversion. However, no patient in either group demonstrated a permanent decrease in renal function. Only 5 of 90 (5.6%) positive cultures from patients with CIC and 1/36 (2.8%) positive cultures from patients with ILD were associated with signs or symptoms. This difference was not statistically significant. Over the study period, 3/24 (13%) children treated by CIC had sterile urine cultures while none of the ILD patients were free from bacteriuria. Otherwise, the frequency of bacteriuria was similar in both groups. The most common cause of bacteriuria was E. coli accounting for approximately 1/3 of infections in both groups. These data suggest that patients treated with CIC are not significantly different from those with ILD with respect to UTI morbidity, frequency, or bacterial organisms. CIC may then be preferable to ILD as surgical morbidity can be avoided.

1496 USEFULNESS OF RENAL FAILURE INDICES IN NEONATAL RENAL FAILURE E. Ellis and W.C. Arnold (Spon. by R.H. Fiser) Dept. of Peds., Univ. of Ark., Little Rock, Ark.

The causes of acute renal insufficiency (ARI) were determined in 45 infants less than 2 months of age with oliguria. Seventeen (38%) infants responded to fluid challenge and were diagnosed as having pre-renal azotemia (PRA). Twenty infants (45%) had ischemic renal damage (ATN). Eight infants (17%) had renal failure from other causes. Though there were no differences in BUN and creat., infants with ATN had higher RFI than those with PRA.

	#pts.	FENa	RF Index
ATN	13	7.45±3.8	10.9±5.9
PRA (NB)	6	1.82±1.6	2.45±2.2
PRA (less 2 mo)	11	1.42±1.9	2.06±2.8
Other	8	14.5 ±1.7	18.9±2.4

Eleven of 20 (55%) infants with ATN died. Only 2 infants with obstructive uropathy developed chronic renal insufficiency. When grouped according to gestational age renal failure indices (RFI) in infants with ATN showed no significant differences.

Gestational Age	#pts.	FENa	RF Index
26-32 wks.	5	4.07±1.9	5.79±3.0
33-37 wks.	3	8.62±4.9	11.55±6.5
38-42 wks.	5	7.99±2.0	13.08±4.0

Conclusions: 1) Since normal infants have elevated FENa, values above 3.0 must be used to differentiate ATN from PRA in neonates with ARI. 2) There is overlap with other causes of ARI. 3) Infants less than 2 months of age with PRA also have elevated FENa. 4) Though RFI increased with gestational age, this increase did not reach significance.

1497 URINARY BETA-2-MICROGLOBULIN (β_2M) AS AN INDEX OF RENAL TUBULAR MATURATION IN HUMAN NEONATES. William D. Engle and Billy S. Arant, Jr.,

University of Texas Southwestern Medical School, Department of Pediatrics (Dallas).

Tubular reabsorption of β_2M was previously reported to increase with conceptual age (CA) and to reflect maturation of renal tubular function. To study this concept further, timed-urine collections and blood samples were obtained on 50 newborn infants (CA 28-42 wks) between 1-12 days of age. Creatinine, sodium and β_2M were measured in urine and plasma; creatinine clearance (C_{CR}) and fractional reabsorption of sodium (T_{Na}) and β_2M (T_{β_2M}) were calculated. Plasma β_2M concentrations (3.63 ± 0.14 mg/liter, mean ± SE) did not vary with CA ($r=0.085$). C_{CR} ($r=0.715$), T_{Na} ($r=0.627$) and T_{β_2M} ($r=0.593$) increased with CA of the infants ($p<0.001$). Moreover, T_{β_2M} varied directly with T_{Na} ($r=0.474$, $p<0.001$) and inversely with fractional urine flow rate (V/C_{CR}) ($r=-0.601$, $p<0.001$). In serial studies of 18 infants 3.64 ± 0.67 (range 1-12) days later, changes in T_{β_2M} in the same infant were observed to vary inversely with changes in V/C_{CR} ($r=-0.470$, $p=0.05$). Although the results of this study confirm previous reports that T_{β_2M} increases with CA of the infant, these data do not support T_{β_2M} as a reliable index of renal tubular maturation in the human neonate.