

1086

THE EFFECT OF AGE, SEX AND RACE ON THE INCIDENCE OF ACUTE RENAL FAILURE IN CHILDREN WITH POST STREPTOCOCCAL ACUTE GLOMERULONEPHRITIS. Manop Luengnarumitchai, Eduardo H. Garin, George A. Richard, Robert S. Fennell, Abdollah Iravani and Robert L. Williams. Univ. of Fla. Col. of Med. Dept. of Ped., Gainesville (Intr. by Gerold L. Schiebler)

The clinical data from sixty-three children with post streptococcal acute glomerulonephritis seen from 1969 through 1976 were analyzed. The children were divided into three age groups as well as by sex and race. (See table.)

Criteria of diagnosis was based on gross hematuria or microscopic hematuria, depression of C'3 for less than two months, and an elevated level of antistreptococcal enzymes. Acute renal failure was arbitrarily defined as a BUN of 40 mg% or greater.

	Groups	Patients	BUN > 40 mg%
Age	0-5	22	6 (27.3%)
	6-10	28	5 (17.9%)
	11-18	13	4 (30.8%)
Race	B	32	7 (21.9%)
	W	31	7 (22.6%)
Sex	M	46	12 (26.1%)
	F	17	3 (17.6%)

Statistical analysis of data did not demonstrate an effect of age or race on the incidence of acute renal failure. During the period of follow-up urinalysis returned to normal earlier in children who did not have acute renal failure as compared to those who had acute renal failure.

1089

NEGATIVE-PRESSURE HYDROSTATIC ULTRAFILTRATION (UF) IN CHILDREN. B.J. McMann, L.B. deLeon, L.S. Weiss and E.S. Moore. Dept. of Pediatrics, Pritzker School of Med., University of Chicago at Michael Reese Medical Center, Chicago.

UF, commonly employed during hemodialysis (HD) as a means of removal of excess fluid, often produces hypotension (HN) requiring treatment with additional fluid. Negative pressure ultrafiltration (NPUF) with a partial vacuum (PV) has been used successfully in adults with few side effects. We performed NPUF 11 times in 7 children on maintenance HD. There were 4 males and 3 females, 8 to 19 years of age; mean 14.2. A PV was created by sealing the inlet of a dialyzer and connecting the outlet by tubing a bottle to a vacuum pump. NP was applied to the dialysate compartment which did not contain dialysate fluid. Dialyzers used ranged from 0.5 to 1.5 m² surface area. NPUF was from 65-120 minutes (mean 114) at NP of 400-500 mmHg (mean 465). Blood flows through the dialyzers ranged from 60-280 ml/min. Total fluid removed ranged from 800-3300 ml; mean 2509 ml. Fluid removed/hr/patient was 1356 ml while fluid removed/hr/kg body weight was 31 ml. Mean decrease in patient weight was 2.1 kg. Values for urea nitrogen, creatinine, Ca, phos, Mg and electrolytes were similar in blood and ultrafiltrate. Protein content in the ultrafiltrate was zero. One patient developed HN which was asymptomatic; 2 had transient abdominal cramps. Four patients had therapeutic decrease in blood pressure. These studies demonstrate that NPUF can be safely used to remove excess fluid in children undergoing HD.

1087

A COMPARISON OF THE EFFICACY OF AMPICILLIN, CEPHALEXIN AND SULFAMETHOXAZOLE TRIMETHOPRIM IN THE TREATMENT OF GIRLS WITH RECURRENT BACTERIURIA. Manop Luengnarumitchai, Robert S. Fennell, George A. Richard, Eduardo Garin, Robert L. Williams and Abdollah Iravani. Univ. of Fla. Col. of Med. Dept. of Ped., Gainesville (Intr. by Gerold L. Schiebler)

Eighty-three girls, ages 3 to 16 years, with recurrent urinary tract infections were randomly treated with Sulfamethoxazole-Trimethoprim (ST), Ampicillin (A), and Cephalexin (C) for 10 days. Criteria for inclusion were two consecutive urine cultures of greater than 100,000 colonies/ml and an organism sensitive to the test medication. Repeat urine cultures were obtained at three days, one week, two weeks (4 days post therapy), five weeks, nine weeks and 12 weeks.

Therapeutic success was defined as negative urine culture at the fourth day following completion of treatment. Recurrent bacteriuria was defined as two consecutive positive urine cultures at any time during follow up.

	Sulfamethoxazole-Trimethoprim	Cephalexin	Ampicillin
Therapeutic Success	40/43 (93.0%)	9/15 (60.0%)	12/25 (48.0%)
Recurrent Bacteriuria	21/40 (52.5%)	8/9 (88.9%)	7/12 (58.3%)
Therapeutic success was greater in ST group than C and A group.			
	Abnormal IVP and/or VCU	Normal IVP and VCU	
Therapeutic Success	25/32 (78.1%)	36/51 (70.6%)	
Recurrent Bacteriuria	13/25 (52.0%)	23/36 (63.8%)	

The measure of therapeutic success and recurrent bacteriuria was not affected by the presence of radiologic abnormalities.

1090

BRUSH BORDER ANTIGEN (BBAg) OF AUTOLOGOUS IMMUNE COMPLEX GLOMERULONEPHRITIS OF RATS (AIC) IN THE URINE OF VARIOUS SPECIES. Sudesh P. Makker. Case Western Reserve University School of Medicine, Rainbow Babies and Childrens Hospital, Department of Pediatrics, Cleveland, Ohio.

Urine from 30 normal Sprague-Dawley (SD) rats, 20 SD rats affected with AIC having marked proteinuria (200-250 mg/day), 8 normal white New Zealand rabbits, a normal human, and from a patient with idiopathic membranous glomerulonephropathy (MGN) were examined for the presence of nephritogenic BBAg by the method of repeated immunization of five groups of normal (SD) rats with complete Freund's adjuvant (CFA) mixed with the test urine which had been dialyzed and lyophilized. Three control groups were: normal SD rats injected with normal saline only, CFA only, and CFA mixed with normal SD rat kidney cortex. Production of auto-antibodies to BBAg and the development of granular immune deposits containing rat IgG and C3 along the glomerular capillary walls in the kidneys of the immunized animal indicated the presence of BBAg in the test urine. The nephritogenic antigen was found in the urine of normal human, a patient with MGN, normal rabbit and rats with AIC. Surprisingly, it was absent in the urine of normal SD rats, a species that is highly susceptible to the development of AIC. It is hypothesized that only those species that do not have BBAg in the urine are susceptible to develop AIC or a similar glomerulonephritis.

1088

HYPOMORPHIC VARIANT OF THE FAST C3 ALLELE, GLOMERULONEPHRITIS AND ARTHRITIS. Robert H. McLean, Arthur Weinstein and Naomi Rothfield, University of Connecticut Hlth Ctr., Farmington, Ct., Depts of Pediatrics & Medicine.

Hypomorphism (decreased synthesis) of the common fast allele of C3 was found in 4 members (3 males, 1 female) and three generations of one family consistent with autosomal codominant inheritance. This hypomorphic variant (C3f) of serum was detected by three methods: inspection following prolonged agarose electrophoresis, crossed-gel immunoelectrophoresis and automatic spectrodensitometry of stained typing plates. All affected members have a normal slow (C3S) and a hypomorphic fast (C3f) allele, 3/4 have significantly decreased serum C3 protein concentration (between 54-59% of normal mean C3, normal range + 2 S.D. is 62-138%) and the fourth has borderline low serum C3 (62%). 4/4 have significantly decreased hemolytic serum C3 concentrations but all have normal CH50. The propositus, a 14 year old female, has proteinuria, polyarthritis of large joints and a false positive test for syphilis. An affected sibling has microhematuria and proteinuria. Renal biopsy of the propositus showed intense granular C3 deposits and mild IgG deposits on the glomerular basement membranes by immunofluorescence and discrete subepithelial deposits by electron microscopic study. Only one family with a hypomorphic C3f allele has previously been reported. The significance of hypomorphic variants of C3 is not known, but the detection of an immune complex-type disease in this second family may indicate a susceptibility to certain diseases in such individuals.

1091

POSSIBLE EFFECT OF ANTIBIOTICS ON URINE SPECIFIC GRAVITY (SG) AND OSMOLALITY (Osm) IN THE NEWBORN. Keith H. Marks, Zvi Friedman, M. Jeffrey Maisels. Penn State Univ Coll Med, M. S. Hershey Med Ctr, Dept Ped, Hershey, PA.

Urine SG and Osm are tests commonly used in the evaluation of hydration in newborn infants. Pharmacologic studies in premature and term infants given routine IV doses of the penicillins show the following urine concentrations: Penicillin 25,000 units/kg/dose + 31-3000 µg/ml urine; Ampicillin 25-100 mg/kg/dose + 60-11,000 µg/ml; Methicillin 20 mg/kg/dose + 160-180 µg/ml; Carbenicillin 50-100 mg/kg/dose + 1399-2689 µg/ml. Serial dilutions of these antibiotics in urine were made to determine their effect on SG and Osm which were measured using a refractometer and by freezing point depression. Results [Antibiotic] µg/ml/urine

[Pen]	SG	mOsm/l	[Ampi]	SG	mOsm/l	[Methi]	SG	mOsm/l
Contr	1006	240	Contr	1006	240	Contr	1007	247
31	1006	235	125	1006	240	500	1007	233
310	1006	237	1250	1008	246	1000	1007	252
3100	1007	255	6250	1008	243	10000	1008	241
31000	1026	400	12500	1016	311	100000	1013	310

Similar results were obtained with Carbenicillin. Kanamycin and gentamycin had no effect on urine SG when tested in concentrations found in the urine after the usual IV dose. The results indicate that in infants receiving high doses of the penicillins the finding of an elevated urine SG and Osm should be interpreted with caution to prevent inappropriate fluid therapy.