1627 ISOLATION OF A STREPTOCOCCAL ANTIGEN AND ITS POSSIBLE ROLE IN THE PATHOGENESIS OF ACUTE POSTSTREPTOCOCCAL GLOMERULONEPHRITIS. Inge Sagel, Nobuyuki Yoshizawa, Gerhard Treser. Westchester County Medical Center, Departments of Pediatrics and Medicine, New York, New York. National Defense Medical College, Department of Medicine, Tokyo, Japan.

We studied the significance of a streptococcal protein (PA-Ag) in the pathogenesis of acute poststreptococcal glomerulonephritis (AGN). Purification of PA-Ag was achieved by chromatography followed by Sephadex isoelectric focusing. A single protein band at pH 4.7 was identified as PA-Ag. The molecular weight was 43000. Rabbit antisera against PA-Ag and sera of patients with AGN showed identical precipitation lines by immunodiffusion. Antibodies to PA-Ag determined by immunodiffusion were found to be present in 30 of 31 patients with AGN, in 1 of 36 patients with uncomplicated group A streptococcal upper respiratory tract infections and in 1 of 36 normal adults. These findings were confirmed by the ELISA technique. Small doses of PA-Ag injected intravenously into rabbits produced glomerular changes similar to AGN with polymorphonuclear infiltration, cellular proliferation and staining for C3 by immunofluorescence. Control rabbits injected with BSA in similar doses did not develop glomerular pathology. Following perfusion of PA-Ag into rabbit kidneys, PA-Ag was found to localize only on the glomerular basement membrane and in the mesangium. Using immunoelectrophoresis it was found that PA-Ag activates the alternate pathway of complement. Any other water soluble streptococcal fraction, used as control, did not activate the complement system. Our findings suggest that PA-Ag seems to be involved in the pathogenesis of AGN.

●1628 CELLULAR GROWTH IN THE MATURING RABBIT KIDNEY CORTICAL COLLECTING TUBULE (CCT). Lisa M. Satlin and George J. Schwartz, Albert Einstein College of Medicine, Dept. of Pediatrics, Div. of Nephrology, Bronx, New York.

Postnatal development of the proximal nephron is characterized by non-linear growth as a function of time (AJP 245:F391, 1983). We were interested in describing maturation of the CCT, a distal segment whose embryological origin differs from that of the proximal tubule. Mid-CCTs from newborn (NB), 1 month old, and adult rabbits (n=4-7 animals per group) were isolated. Tubules (5-15 per animal) were measured for length and diameter, cell number (acridine orange), dry weight (quartz fiber balance) and K^+ content (helium glow photometry). The number of cells/mm tubular length was similar in the NB and adult (534 ± 34 and 551 ± 22). Cell growth was characterized by 50-60% increases ($p < 0.05$) in volume (1105 ± 85 to 1633 ± 82 μm^3/cell), dry weight (169 ± 15 to 260 ± 23 pg/cell), and K^+ content (0.106 ± 0.011 to 0.164 ± 0.011 pmol/cell), with changes apparent only after 1 month of age. Cellular accretion of protein and other solids was estimated to account for at least 90% of the observed weight gain. We calculated K^+ concentration in both the NB and adult to be approximately 115 mEq/L cell water.

Thus, postnatal maturation of the mid-CCT is characterized by surges in cell volume, dry weight, and K^+ content after the first month of life. The rise in K^+/cell reflects primarily enhanced protein binding rather than addition of free cytosolic K^+. The increase in CCT diameter (27.4 ± 0.5 to 33.9 ± 0.4 µm; $p < 0.05$) results from cell hypertrophy. Since there was no change in the number of cells/mm tubular length, axial growth of the CCT (3-fold) must occur by hyperplasia, probably in the superficial cortex. CCT growth may follow the postnatal surge in SNGFR and the opening of newly functioning superficial nephrons.

●1629 PRODUCTION OF THE LYMPHOKINE, SOLUBLE IMMUNE RESPONSE SUPPRESSOR (SIRS) BY PATIENTS WITH NEPHROTIC SYNDROME H. William Schnaper and Thomas M. Aune, (Spon. by Barbara R. Cole) Washington Univ. School of Medicine, Jewish Hospital of St. Louis.

Nephrotic patients often show suppressed immune responsiveness of unknown origin. At the last SPR meeting we reported that patients with active minimal change nephrotic syndrome (MCNS) or membranoproliferative glomerulonephritis (MPGN) excrete SIRS in their urine. This lymphokine, produced in vitro by interferon- or mitogen-activated suppressor T cells, inhibits division by normal and neoplastic cells and antibody secretion by B lymphocytes. SIRS activity disappears from urine after initiation of steroid therapy but before remission of nephrosis. To determine whether increased serum SIRS levels are also associated with these diseases, sera from four patients (3MCNS, 1MPGN) were assayed for SIRS activity. Patient sera, but not control sera, suppressed immunoglobulin production by pokeweed mitogen-activated lymphocytes by 55-70% at a final concentration of 2-10% in culture; suppressive activity was absorbed from serum by monoclonal anti-SIRS antibody. Lymphocytes obtained from two patients (1MCNS, 1MPGN) produced SIRS without requiring activation by exogenous agents. These data suggest that lymphocytes of nephrotic patients with MCNS or MPGN are continuously producing SIRS. This may account for the increased levels of SIRS in sera and urine and may also account for immunosuppression in these patients. Finally, hydrocortisone (10^{-6} to 10^{-7}M) inhibited production of SIRS by activated lymphocytes; this may explain cessation of SIRS excretion after initiation of steroid therapy.

1630 THE NATURAL HISTORY OF AUTOSOMAL DOMINANT POLYCYSTIC KIDNEY DISEASE IN CHILDREN. Aileen B. Sedman, Michael L. Johnson, Robert C. Kelsch, Nancy Butler, Patricia A. Gabow. Univ Colo Health Sci Center, Univ Mich Med Center; Dept Ped and Med; Denver, CO, Ann Arbor, MI.

Polycystic kidney disease in children has often been called "infantile" on the basis of age alone; we sought to identify children <18 years of age with autosomal dominant polycystic kidney disease (APKD) documented by family workup. Twenty-four children were diagnosed by ultrasound as having APKD; 33 were suspicious for APKD (SAPKD) when unilateral, inhomogeneous or <5 cysts were seen. The 24 children with APKD were 9.3±6.4 yr. of age ($\bar{x}$ ± 1 S.D.) with followup of 7.5±6.5 yr. (range 0-29 yr.). Sixty-two percent of APKD children had symptoms at presentation (abdominal pain, headaches, gross hematuria), 25% had hypertension (HTN), 20% had hernias, 12% had boney abnormalities. Forty-two percent had progression during followup (increased cysts, increased HTN, or decreased renal function). Twenty-one percent reached end-stage renal disease (ESRD) in 14.6±10.7 yr. (range 3-29 yr.). Four children had APKD diagnosed <1 year of age with followup 6.6±5.8 yr. Two reached ESRD: one at age 3, another at age 15 yr. The other two are stable at 1.5 and 5 yr. post-diagnosis. Thirty-three children with SAPKD ($\bar{x}$ age 12.7±3.4) had followup of 5.6±3.7 yr. Twenty percent had symptoms compatible with APKD, 77% progressed, 0% reached ESRD. Conclusions: There is wide variation in the onset and progression of APKD in childhood. Children with SAPKD may have prolonged stability but warrant meticulous followup. APKD in childhood is associated with other abnormalities.

1631 GLOMERULAR FILTRATION IN VERY LOW BIRTH WEIGHT (VLBW) INFANTS TREATED WITH NEUROMUSCULAR BLOCKING AGENT. K.C.Sekar, K.L.Harkavy, P.Jose. Dept. Pediatrics, Georgetown Univ., Washington D.C. (Spon. J.W. Scanlon).

Pavulon (Pancuronium Bromide), although has little effect on the circulatory system, not infrequently produces hypotension when administered to sick VLBW. We studied the glomerular filtration (GFR) by Inulin clearance and fractional sodium excretion (FeNa) in VLBW (n=5) in the first 3 days of life receiving Pavulon (0.1 mg/kg/dose) and compared the results with a similar group (n=11) not receiving Pavulon. None were hypotensive or in renal failure. The IV fluid, sodium infusion and thermal environment did not differ between groups. Inulin was given with a bolus of 50 to 100 mg/kg followed by infusion of 0.1 to 0.2 mg/kg/min. Timed urine and serum were collected and clearances calculated in standard fashion. The results (mean + s.d.) are as follows:

			GFR(cc/kg/min) Days			FeNa% Days		
Group	GA (wks)	BW (Gms)	1	2	3	1	2	3
Pavulon (3,3,2)*	29 ±1.8	1060 ±165	0.124 ±0.07	0.369 ±0.16	0.396 ±0.20	1.45 ±0.96	2.49 ±2.8	3.36 ±0.70
Control (8,6,9)*	28 ±2.3	958 ±152	0.329 ±0.25	0.367 ±0.14	0.475 ±0.49	1.37 ±1.4	2.80 ±0.9	3.11 ±1.7

There were no significant differences between groups on each day. Pavulon does not affect GFR or FeNa in sick VLBW infants. As a major portion of Pavulon is eliminated unchanged in urine, repeated administration in infants with renal failure may prolong its effect.
(* indicates number of studies done on days 1,2, and 3.)

1632 THE ROLE OF PROSTAGLANDIN E_2 (PGE_2) IN A CONGENITAL HYPOKALEMIC TUBULAR DISORDER WITH HYPERCALCIURIA AND PREMATURITY. Hannsjörg W. Seyberth, Peter G. Kühl, Horst Schweer, Wolfgang Rascher, Karl Schärer. (Spons. by S.J. Yaffe). Univ. of Heidelberg, Children's Hospital, Heidelberg, Fed. Rep. of Germany.

A congenital subtype of hypokalemic tubular disorders in 5 children (age 8 m to 4 ys) is described with many features resembling Bartter's syndrome. Additional features are: Prenatal onset with polyhydramnios and premature labor; failure to thrive; life threatening crises of fever, diarrhea, renal electrolyte and water wasting (however with normal renal chloride reabsorption); hypercalciuria, nephrocalcinosis and osteopenia. Renal PGE_2 activity was monitored by mass spectrometric determination of urinary PGE_2, and systemic PGE_2 activity by a major urinary metabolite (PGE-M). The pathogenetic role of PGE_2 is supported by withdrawal of PG synthesis inhibitors (PGSI) indomethacin or aspirin.

	PRE	PGSI withdrawal (3d)	POST (2-4m)
K (serum) mmol/l	3.8(3.2-5.1)	2.2(2.1-2.8)*	4.0(3.3-4.1)
Ca (urine) mg/kg/d	6.4(1.9-11.7)	13.0(2.4-14.5)*	7.3(2.3-8.2)
Urine ml/min/1.73m²	1.8(0.8-2.9)	2.8(0.9-3.6)*	1.3(0.7-1.9)
PGE_2 ng/h/1.73m²	6(0-51)	65(25-102)*	7(2-17)
PGE-M µg/h/1.73m²	0.1(0.1-1.9)	1.7(0.8-3.4)*	0.1(0.1-0.2)

median (range) *$p < 0.1$ (n=5). normal PGE_2: 2-16, PGE-M: 0.1-0.7

Prolonged indomethacin treatment significantly improved the affected children's general condition. We conclude that renal as well as systemic PGE_2 hyperactivity ranks high in the pathogenetic chain of events in this complex tubular disorder.