1615 THE RENAL FUNCTIONAL RESPONSE TO AN ACUTE ORAL PROTEIN LOAD (OPL) IN CHILDREN. Kenneth V. Lieberman, Jill S. Stoller (Spon. by A.Y. Sweet). M. Sinai School of Med., Dept. of Ped., NY, NY. GFR is variable. It is effected by dietary protein. We studied the effect on GFR of an OPL in 6 controls and in 14 patients with various nephropathies. After oral hydration, urine and blood samples were obtained for a baseline creat clearance. Subjects then received an acute OPL of 1-1.5 g/kg BW (max. -80g) as cooked red meat. GFRs were determined at 1 hour intervals post meal. Test GFR was taken as the max. post meal GFR- typically at 2 hours. GFR- min/1.73M2 Baseline GFR Test GFR

GFRs-ml/min/1.73H ²	Baseline GFR	Test GFR	
Normals (n=6, 4-17 yrs)	129±29	210±51	
A.C.:reflux nephropathy	105	124	
J.O.:MesProlif GN.no sclerosis	s 137	226	
F.C.:S/P unilat nephx @ 10 mos	. 89	126	
D.F.:SLE with MPGN ^S -Cr 1.5	66	66	
F.D.:CRF.S/P PUV S-Cr 2.3	38	38	
L.C.:3 mós S/P AGN	87	121	
L.C.:14 mos S/P AGN	101	158	
The test GFR defines the filtrat	ion capacity(FC). Although	
normal baseline GFR is similar t	o that report	ed in normal ad	ults
(123±13), the test GFR is greate	er (adults - 1	57±13), indicat:	ing
a greater renal functional reser	ve (RFR:test	GFR-baseline GF	R)
in children - 81 vs 34(in adults	i). F.C., now	14 yrs old, has	a
FC less than normal children, ye	t still great	er than that of	
acutely nephrectomized adults (8	(3±4); possibl	y a measure of	
compensatory remnant kidney hype	rtrophy. Desp	ite normal S-Cr	and
baseline GFR, A.C. has a low FC	correlating w	ith parenchymal	
scarring on IVP. D.F. and F.D. a	show that with	chronic renal	
failure all available function i	s utilized at	baseline with a	no
RFR. Serial OPLs in L.C. show sl	ow return of	RFR following th	he
insult of AGN.		···· · ·······························	
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As the above examples demonstrate, the determination of FC and RFR may be a useful tool in the evaluation of children with renal disease as well as helpful in the understanding of normal functional development and the pathophysiology of renal disease.

B-LYMPHOCYTE DIFFERENTIATION IN NEPHROTIC 1616 SYNDROME (NS) Melinda McVicar, Manju Chandra and Savita Pahwa, Cornell University Medical College–North

Shore University Hospital, Dept. Ped., Manhasset, NY Abnormal T-lymphocyte modulation of B-lymphocyte (B-Ly) response has been suggested as a cause for decreased IgG synthesis in NS. The purpose of our study was to assess B-Ly differentiation and 1g synthesis driven by stimuli which were T-cell independent (Epstein Barr Virus-EBV), T-cell dependent (Pokeweed Mitogen-PWM) and partially T-cell dependent (S.aureus, Cowan I strain-SAC). Twenty determinations were performed in 13 nephrotic children (8 with minimal change NS). Immunoglobulin secreting cells (ISC) generated in the patients' peripheral blood lymphocyte cultures after exposure to EBV, PWM or SAC were quantified in reverse hemolytic plaque assays. The results, expressed as mean \pm SEM number of ISC/10⁶ lymphocytes, demonstrated a marked overall decrease of B-Ly differentiation in nephrotic patients compared to normal controls (p<.005).

	EBV	PWM	SAC
NS	30,520 ± 4,300	53,670 ± 11,050	67,890 ± 16,340
С	53,230 - 7,210	120,670 ± 6,280	139,030 ± 11,550

Three of the children were retested after 2 mos, 3 mos and 14 mos remission. Respective ISC expressed as percent of normal were: EBV 56% 34%, 46%; PWM 31%, 12%, 104%; SAC 46%, 34%, 121%. We conclude: 1) NS is associated with diminished Ig synthesis. 2) Both T-cell independent and T-cell dependent B-Ly differentiation is markedly decreased. 3) These abnormalities may persist after remission.

of glomerular injury. Twenty mice were randomized into saline (0.1 ml/day) and DMSO of glomerular injury. Twenty mice were randomized into saline (0.1 ml/day) and DMSO treatment groups (DMSO 4 mg/gm/day). Significant differences in urine protein excretion between controls and treated groups were evident at 5 months (DMSO: 5.5 ± 0.46 mg/24 hrs; Controls: 7.35 ± 0.59 mg/24 hrs; p <0.05) and at 6.5 months of age (DMSO: 6.7 ± 0.73 mg/24 hrs; Controls: 15 ± 2.15 mg/24 hrs; p <0.01). By 7 and 7.5 months, the protein excretion was not significantly different (DMSO: 18 ± 8.3 mg/24 hrs; Controls: 41 ± 8.7 mg/24 hrs; p >0.05); 7.5 months: DMSO: 20 ± 7.4 mg/24 hrs; Controls: 29 ± 5.7 mg/24 hrs; p >0.05. However, the urine proteincreatinine ratio was significantly reduced in DMSO treated mice compared to controls at 6.5 months (DMSO: 46.7 ± 2.3 ; Controls: $24.4 \pm 4.25 p <0.05$), at 7 months (DMSO: 47.7 ± 1.32 ; Controls: $24.5 \pm 4.25 p <0.05$), at 7 months of age (DMSO: 47.7 ± 1.32 ; Controls: 26.9 ± 7.5 months of age in DMSO treated mice (0.41 ± 0.08 mg/dl) lower at 7.5 months of age in DMSO treated mice (0.41 ± 0.08 mg/dl) lower at 7.5 months of 0.91 ± 0.56 mg/d1; p <0.05). By 7.5 months of age, 5/6 treated mice had relatively normal renal histology on light microscopy, while 6/8 untreated had focal proliferative glomerular obsolescence (p < 0.02). These findings demonstrate that DMSO has a protective effect on the progression of glomerular injury in this model.

the progression of glomerular injury in this model.

1618	CELLULAR MALNUTRITION IN UREMIA.						Jack	
	Metcoff, J	lam e	s Pederson,	Francis	sco Ll	lach, Ji	im Ga	able.
	University	of	Oklahoma,	Health	Scien	ces Ce	enter	and

Veterans Administration Hospital, Oklahoma, Health Sciences Center and Veterans Administration Hospital, Oklahoma City, OK. Some of the cellular abnormalities of severe protein-calorie malnutri-tion in children (PCM), e.g., reduced energy-related enzyme activities, energy and protein synthesis levels and intracellular amino acid deficits, are also thought to occur in chronic uremics. Improvement of these abnormal cell bioactivities, characterizing cellular malnutrition, should stabilize and possibly retard progressive cellular deterioration in uremics. We have used the circulating granulocyte as a cell model to study energy-related enzyme activities (pyruvate kinase (PK), phospho-fructokinase (PFK), adenylate kinase (AK), energy charge (Ech=ATP+0.5ADP/(ATP +ADP+AMP)), protein synthesis (³Heucuine in-corp.) and amino acid pools in 52 adult uremics (9 not dialyzed (ND), 40 hem odialyzed (HD) and 13 peritoneally dialyzed (CAPD) and 61 normal hemodialyzed (HD) and 13 peritoneally dialyzed (CAPD)) and 61 normal control (C) subjects. Gross clinical estimators of chronic malnutrition (Wt/Ht ratio, skinfolds, arm muscle area, plasma albumin and total lymphocyte count) were within normal limits for the dialyzed uremics. In the ND uremics, all clinical and cell measures were abnormal. In the UD uremics with the NC ATD. But we have been sub-In the ND wremics, all clinical and cell measures were abnormal. In the HD wremics, cell PK, AK, ATP, Ech and PS were significantly (p<.05) better than ND but less than C. A significant reduction in branched-chain amino acids (BCAA=valine, leucine, isoleucine) and methionine (MET) were noted in both ND and HD patients. In the CAPD patients, after 18 ± 9 (SD) months of dialysis PK, PS, BCAAs and MET levels were normalized. Ech was 90% of normal and >HD, but ATP and AK were not improved. We conclude that cellular malnutrition occurs in propendity of patients. apparently stabilized adult uremics without clinical signs of mainutri-tion. CAPD seems to improve many cell bioactivities, and therefore, cellular malnutrition in uremics.

EFFECT OF AGE AND SEX ON THE RESPONSE OF GLOMERULI 1619 EFFECT OF AGE AND SEX ON THE RESPONSE OF GLOMERULI TO ANTI-GLOMERULAR BASEMENT MEMBRANE ANTIBODY IN RATS. H. Miyazawa, A. Yared, D.J. Salant and I. Ichikawa. Harvard Med. Sch., Children's Hosp., Dept. of Peds. & Boston U., Boston City Hosp., Dept. of Med., Boston. The incidence and clinical course of immunologically mediated

The incidence and clinical course of immunologically mediated renal injuries are known to vary with age and sex. We studied the effect of these two factors on the in vivo binding of anti-glomerular basement membrane antibody (aGEM) in 6 week old (Y, n=18 rats) and 10 month old (A, n=15 rats) Munich-Wistar rats, both males (M, n=18 rats) and females (F, n=15 rats). Follow-ing intravenous administration of 1251-labelled aGEM in a dose of 3-20 kg/g BW, the degree of aGEM binding by glomeruli was examined. The amount of aGEM bound per single glomerulis (aGEM/ gl) was closely correlated with plasma aGEM level in YM (r=0.95) examined. The amount of aGBM bound per single glomerulus (aGBM/ gl) was closely correlated with plasma aGBM level in YM (r=0.95), AM (r=0.85) and AF (r=0.96). At a comparable plasma aGBM level, aGBM/gl was significantly lower in Y than A (P<0.001 in both M and F). This difference persisted even when aGBM/gl was cor-rected by an index of GBM surface area (P<0.001 in both M and F). Amount of aGBM bound per gram of glomerular protein, how-ever, did not differ significantly between Y and A, due to wide variability in clonerular protein content. Functional response variability in glomerular protein content. Functional response to aGBM binding, as assessed by percent reduction in whole kid-ney GFR at comparable plasma aGBM level, tended to be more pro-nounced in Y than A. Results from M and F were comparable for these parameters. These data indicate that, of the two epi-demiological factors total are between the total sectors. demiological factors tested, age, but not sex, has an important influence on the glomerular response to this type of immunological insult.

EARLY EFFECTS OF STREPTOZOTOCIN DIABETES (SD) ON RAT GLOMERULAR • 1620 FILTRATION RATE (GFR) AND PROSTACIANDIN E₂ SYNTHESIS (PGE₂). <u>Donald I. Moel, Richard A. Cohn, Robert L. Safirstein</u> (spon. by L. Pachman) Northwestern University Medical School, Children's Mem. Hosp., Department of Pediatrics, Chicago, Illinois. In SD the development of moderate hyperglycemia is closely associated with interments of CD the mem her addited by the development of the second se

increases in GER that may be mediated by altered production of or reactivity to vasoactive substances. In the present studies renal cortical and medullary FGE₂ synthesis and whole kidney GER (C_{TN}) were examined 8 days after induction of SD (45 mg/kg i.v.) in young rats (139±1.7 g) treated with either daily aspirin (ASA) 300 mg/kg/day or ASA vehicle. FGE₂ synthesis from ¹⁴C-arachidonic acid was determined in cortical and medullary the latered by the latered by the latered by the latered by the second sec See map regression with venture. For symmetries in the -0-matching of the wave determined in cortical and medullary microsomes by thin layer chromatography. Mean values (\pm 15E) for body weight (BW), blood pressure (bp), plasma glucose (P_{glus} , mg/dl), C_{IM} (ml/min/g KW), and PGE₂ synthesis (ng/mg/30 min) are shown below: *p<0.05, compared to group above; †p<0.05, compared to control

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	<u>n</u>	BW.g	bp, mailing	Pglu	CIN	PGE ₂ Synthesis		
						cortex	medulla	
C	5	176 <u>+</u> 4	114+5	151 <u>+</u> 3	. 85+ . 03	32.9+ 3.0	206+ 8.1	
C/ASA	8	174+5	114+4	137 + 9	.78+.04	20.1+ 2.8†	123+ 9.2+	
SD	6	161 <u>+</u> 3+	122+6	373+19 ⁺	1.23+.10+	52.8+ 4.7+	326+18.3+	
SD/AS#	15	160 <u>+</u> 5†	130+4 +	328+221	.92+.08*	31.6+13.8*	177+17.9*	
Weight	: gain :	in SD and	SD/ASA rat	s was less	than in C and	C/ASA. Aft	er 8 days of	
SD PGE; synthesis and GFR were increased compared to control values. Eight days								
of PG inhibition reduced PGE2 synthesis by 40% and GFR by 25% in SD/ASA compared								
to SD rate. ASA given to control rate reduced PGEs swithesis but had no effect								

on GFR. These data suggest that hyperfiltration observed in moderately hyperglycemic SD rats may be mediated by elevated rates of prostaglandin synthesis. Whether chronic alterations in prostaglandin synthesis influence the onset and progression of glomerular histologic changes remain unknown.