1164 GAMMA GLUTAMYL TRANSPEPTIDASE (GGTP) IN CHRONIC EXPERIMENTAL UREMIA. Carolyn Abitbol, Jila Sharif, Michael Freundlich, Gaston Zilleruelo and Jose Strauss. From Departments of Pediatrics, University of Miami, Miami, Florida and SUNY at Stony Brook, New York.

GGTP is a membrane enzyme facilitating amino acid transport into cells. We have studied the specific activity of the enzyme in young, growing rats rendered uremic by 7/8 nephrectomy. Results were compared to control animals fed either isocaloric diets (PC) or ad libitum diets (AC). Tissues were assayed for GGTP activity after 21 days of controlled feeding. Tissues included kidney, liver, intestinal mucosa and leukocytes. The following table summarizes the results (mean ± S.D.):

	GGTP Activity (nM/min/mg Protein)			
	Kidney	Liver	Intestine	WBC
Uremic (11)	194±80*	.91±.2	4.5±1.7	7.6±4*
PC (10)	138±53	.81±.3	4.3±1.1	27.7±9
AC (10)	100±26	.65±.3	3.1±1.4	34.8±10

* $p<.05$ Different from control group.

The results demonstrate abnormally low GGTP in leukocytes of uremic rats. Kidney GGTP was higher than control values possibly on the basis of renal tubular injury. Malnutrition does not appear to significantly influence GGTP activity.

●1165 A SIMPLE ASSAY FOR MEDIUM CHAIN ACYL-COA DEHYDROGENASE (MCADH) ACTIVITY IN DICARBOXYLIC ACIDURIA (DCA) FIBROBLASTS. B. A. Amendt and W. J. Rhead (Spon. by J. Robillard), University of Iowa, Department of Pediatrics, Iowa City, Iowa 52242.

DCA, an inborn error of β-oxidation, is due to MCADH deficiency, since we found MCADH activity in DCA fibroblast mitochondrial sonic supernatants (MS) to be 5% of control with a dye reduction assay. With a ^3H-release assay that measures the ^3H_2O formed by the dehydrogenation of [2,3-^3H]acyl-CoA's, short chain ADH, MCADH and isovaleryl-CoA DH (IVDH) activities were assayed with 100μM [2,3-^3H]butyryl-, octanoyl- and isovaleryl-CoA's, respectively. Without the electron acceptor phenazine methosulfate (PMS), MCADH activity in DCA MS was 32% of control. PMS addition raised control ADH activities ten-fold and yielded DCA MCADH and SCADH activities of 5% ($p<0.01$) and 73% of control, respectively. DCA MCADH activity also remained 5.5% of control after FAD addition (20μM); neither PMS nor FAD correct MCADH deficiency in DCA. In DCA fibroblast sonic supernatants (CS), assayed with FAD and PMS, MCADH, SCADH and IVDH activities were 23% ($p<0.05$), 118% and 121% of control, respectively. After correcting ADH activities for the formation of ^3H-species (i.e. ^3H-acyl-carnitines), not routinely separated from ^3H_2O in our assay, we obtained SCADH, MCADH and IVDH activities that were 113%, 8% ($p<0.01$; N=6) and 87% of control, respectively, in DCA CS. Since CS are easily obtained, the ^3H-release assay can demonstrate MCADH deficiency in DCA fibroblasts simply, rapidly and accurately. This method is applicable to MCADH assay in leukocyte pellets and tissue biopsies.

●1166 SEROTONIN AND ANOREXIA IN A PATIENT WITH ARGININOSUCCINASE (AL) DEFICIENCY. Mark L. Batshaw, Susan Hyman, James C. Parke, William Jankel, and Joseph Coyle. Johns Hopkins Med. Inst., Balto. MD 21205 and Charlotte Memorial Hosp., Charlotte, NC 28232.

We studied a 6 y.o. girl with AL deficiency who required NG feedings since 18 m.o. because of complete refusal to eat. NG Feedings contained 1g/kg protein (25g), including .75 g tryptophan (trp) and 1600 cal/d supplemented with arginine 4 mmol/kd/d. Weight was 10% and plasma ammonium was 40-60 uM (normal < 35). CSF 5-hydroxy-indolacetic acid (HIAA) was 91 ng/ml, normal< 35 and homovanillic acid (HVA) was 84 ng/ml, normal< 110. Behavior modification (BM) therapy led to a mean oral protein intake of 12 g/d throughout the study. However she ate no food during a 5 min. spontaneous intake (SI) period preceeding each BM meal. We reduced trp, the precursor of serotonin, from the NG feedings to .15 g/d; 5 days later, she began to eat during the SI period (2-18g prot/d). CSF HIAA level fell to 29 ng/ml, HVA was unchanged at 74 ng/ml. Trp was then increased to .55 g/d, and patient stopped SI eating in 2 days. Cyproheptadine (8 mg/d), a serotonin antagonist, did not affect HIAA level (102 ng/ml) or cause SI. REM sleep was markedly decreased (3% of total sleep) during high CSF HIAA and increased towards normal (11%) when trp-intake was decreased and HIAA fell. These results indicate a hyperserotonergic state in an anorectic child with AL deficiency. SI appeared when trp intake was decreased. This finding may have implications in other disorders associated with anorexia or hyperphagia.

1167 INSULIN-LIKE GROWTH FACTORS I AND II IN SYSTEMIC ONSET JUVENILE ARTHRITIS. AE Bennett, ED Silverman, JJ Miller III, RL Hintz, Stanford University, Department of Pediatrics, Stanford, CA.

Systemic onset juvenile arthritis (SJA) has been associated with growth failure in children treated with or without steroids. Growth hormone secretion in SJA is reported to be normal; however, insulin-like growth factor (IGF) has not been examined. To assess the possible role of IGF's in growth failure in SJA, we measured concentrations of IGF-I and II at different stages of activity in patients receiving either steroid or non-steroid therapy. IGF-I and II concentrations were determined in 2 samples from 10 patients who had not received steroids for at least 6 months and 5 patients receiving prednisone. Mean IGF-I and II concentrations in patients receiving steroids were 53% and 61% of normal mean for age. In patients receiving non-steroid therapy; mean IGF-I and II concentrations were 46% and 64% of normal mean for age. Growth failure during periods of active disease was observed in both groups as only 3/11 pre-pubertal patients had growth ≥ 4.5 cm/year. Erythrocyte sedimentation rate (ESR) was compared with concentrations of IGF-I and II in both groups. A statistically significant correlation of IGF-I and II with ESR was observed in those patients receiving non-steroid therapy Rs= .56 and .59 ($p=.02, \leq .01$). In the group of patients receiving prednisone at greater than 5 mg/m^2/day, ESR showed a statistically significant correlation with IGF-I (Rs=.68, $p<.05$) but not IGF-II. Thus, low concentrations of IGF-I and II may contribute to growth failure in children with SJA whether or not they receive steroids.

†1168 EFFECT OF GLYCINE THERAPY ON DEVELOPMENTAL OUTCOME IN ISOVALERIC ACIDEMIA. G. BERRY, M. YUDKOFF AND S. SEGAL. U. of PA School of Med., Children's Hosp. of Philadelphia, Department of Pediatrics, Phila., PA 19104

Isovaleric acidemia secondary to isovaleryl-CoA dehydrogenase deficiency is a rare disorder of organic acid metabolism occuring in <1/200,000 live births. Since 1977, we have treated 7 patients with a low-protein diet and glycine, 250 mg/kg/day P.O., to enhance conversion of isovaleric acid to the readily-excreted conjugate, isovalerylglycine, and thereby reduce the burden of the toxic isovaleric acid. The long-term results of this glycine treatment on the frequency of ketoacidotic episodes (KA) and the developmental outcome are shown in the following table:

Pt.	Present Age	Disease Onset	Age Glycine Started	#KA Since Rx	Dev. Outcome
A.G.	6 9/12	2 d.	9 d.	1	Normal
B.M.	6 2/12	11 d.	11 d.	0	Normal
A.M.	10 4/12	2 6/12	3 7/12	1	Normal
A.B.	5 3/12	2/12	1 11/12	2	Abnormal
K.B.	3 9/12	4/12	4/12	1	Normal
R.B.	5 6/12	14 d.	3 10/12	2	Abnormal
C.B.	1 1/12	2 d.	6 d.	1	Borderline N1 (DQ-77)

Although plasma glycine was markedly elevated in all, no ill effects secondary to glycine Rx were noted in any of the patients. Glycine Rx did not eliminate ketoacidotic episodes, but all acute toxic states were easily controlled with fluid, alkali and by increasing the dosage of glycine. Most importantly, none of the patients with neonatal or infantile-onset disease treated by 4 months of age were developmentally delayed or mentally retarded.

1169 CHOLESTATIC RESPONSE TO PHOTOSENSITIZED TRYPTOPHAN IN NEONATAL GERBILS. Jatinder Bhatia and David K. Rassin, University of Texas Medical Branch, Department of Pediatrics, Galveston, Texas.

Riboflavin (R), a photosensitizer, enhances photooxidation of amino acids and some of the resulting photoproducts may be cholestatic. We tested the hypothesis that photosensitized oxidation of tryptophan (T) leads to cholestasis. Solutions of T (48μmol/ml) containing R (0.01 mg/ml) were either exposed to light (L) (425-475μW/cm^2/nm wave band) or protected from L for 12 hours. Two week old suckling gerbils were given daily 1 ml intraperitoneal injections of T+R+L, T+R-L or saline (control) for 4 consecutive days. On day 5, the animals were killed and the following determined: body, liver and brain weight; serum γ-glutamyl transpeptidase; and liver and brain tryptophan concentrations.

Group	N	Mean Tryptophan Conc. (nmol/ml±SD) Serum γ-GT	Brain	Liver	Gain in wt g/5d
T+R+L	9	2.67±1.26	4.21±1.46	4.42±1.80	1.07±0.94
T+R-L	9	1.48±0.57	3.92±1.13	4.54±1.93	0.67±0.96
Control	5	0.55±0.38	4.88±1.54	8.02±3.90	1.96±0.87

Animals receiving T+R+L had significantly higher concentrations of γ-GT compared to T+R-L or control. Liver T concentrations were significantly lower in both experimental groups compared to control. Gain in body weight was significantly greater in control animals than the other groups, whereas liver weight was significantly greater in T+R+L than in T+R-L. Brain weights were not significantly different in the three groups. We conclude that products of photosensitized oxidation of T may induce cholestasis in neonatal gerbils.