235 GROWTH IN CHILDREN WITH CHRONIC RENAL FAILURE (CRF). Rizzoni G., Basso T. Pediatric Clinic of the University of Padova, Padova, Italy.

The study was performed to evaluate the growth in children with CRF and to see whether growth velocity is correlated with the degree of CRF or not. Thirty-three children, 10 F, 23 M, aged 6m to 15y, with GFR < 75 ml/m²/1.73m² and regular assessment of the stature and the bone age were studied. The average follow-up was 3.7y (I-9.2); the average GFR was 37ml/m²/1.73m² (9-73) at the beginning and 26 ml (4-73) at the end of the follow-up. Height and growth velocity centiles were plotted on Tanner's charts; bone age was always assessed by the same person (TW2 method) and its reproducibility was $\pm 0.2y$. Growth results are reported in the table and are arbitrarily expressed as variations of ± 0.5 SD and ± 1 SD. No correlation was found between growth velocity and the degree of CRF. Eight of the 9 children who reached the puberty showed a normal pubertal spurt. Conclusions: the majority of children with CRF can grow normally and have a normal pubertal spurt; an abnormal growth velocity does not seem to be justified by the degree of the CRF per se.

	unchanged	improved	worsened
± 0.5 SD	52%	33%	15%
± 1 SD	82%	15%	3%

236 THE EFFECTS OF KETOACID ANALOGUES ON GROWTH, BODY COMPOSITION AND METABOLISM IN CHILDREN WITH ADVANCED CHRONIC RENAL FAILURE.

Jones, R.W., Dalton, N., Haycock, G.B., and Chantler, C. Guy's Hospital, London, England.

A 10 year old girl with advanced chronic renal failure (GFR 11ml/min/1.73m²) and subnormal growth was treated with a protein restricted diet supplemented with oral essential amino acids and the ketoacid analogues (KAA) of valine, leucine, isoleucine, phenylalanine and methionine. Blood urea fell from 20 to 6 mmol/l and nitrogen balance improved from +1.5 to +2.1 GN/day. Growth velocity during 0.8 yrs treatment increased from 4.6 to 10.5cm/year, growth velocity standard deviation score for bone age from -0.79 to +4.36, height standard deviation score for bone age from -1.56 to -0.57. Skinfold thickness increased from the 10th to 75th percentile, weight for height from 84 to 99%. The diet was well tolerated and no complications except mild hypercalcaemia were seen. These results suggest that the anabolic effect of KAA may be beneficial to growth in uraemic children. Eight further children are currently on treatment. The effects of KAA on their growth, body composition, plasma amino and ketoacid levels, and hormonal and metabolic status, will be presented.

237 BODY COMPOSITION IN INFANTS AND CHILDREN WITH CHRONIC RENAL FAILURE. Jones, R.W., El-Bishti, M., Rigden, S.P., Haycock, G.B., and Chantler, C. Guy's Hospital, London, England.

Intracellular water (ICW=tritium minus corrected sodium bromide space) was measured as an estimate of body cell mass in 40 uraemic children. Group I: 13 infants 0.3-3.0yrs on conservative treatment, GFR 3-19 ml/min/1.73m², Group II: 8 children 7-17yrs on conservative treatment, GFR 5-19, Group III: 19 children on regular haemodialysis. ICW was expressed as a fraction of the value predicted for height (O/P) (Cheek et al, Am J Clin Nutr, 1977, 30, 851 and 1978, 31, 1328). In Group I values were markedly reduced (mean O/P 0.61, range 0.48-0.97) and were correlated negatively with height deficit ($p < 0.05$) and positively with chronological age ($p = 0.05$). In Group II mean O/P was 0.91 (range 0.8-1.0) and did not correlate with height deficit or age. In Group III O/P was reduced compared to normal in prepubertal (mean O/P 0.77, range 0.66-0.98) but not pubertal (mean O/P 0.98, range 0.63-1.52) children. These changes suggest that depleted protein reserves are common in uraemic children, particularly infants. Normalisation of body cell mass at puberty may be the result of increased androgen production. Estimation of ICW is useful as an index of nutritional status in uraemic children.

238 ELECTROPHYSIOLOGIC ASSESSMENT OF PERIPHERAL NEUROPATHY IN CHILDREN WITH CHRONIC RENAL FAILURE (CRF). Reitter, B., Johannsen, S., Schärer, K. University Children's Hospital, Heidelberg, F.R.G.

Peripheral nerve function is frequently altered in CRF although clinical manifestations in children are rare. For assessment of uremic neuropathy the measurement of motor nerve conduction velocity (MNCV) has widely been used. In an earlier study we failed to find a correlation between MNCV and severity of CRF. In the present study a more sensitive neurographic parameter has been applied: the relative refractory period as estimated by neuromuscular reaction to paired stimuli (NMRPS). This method was tested in 24 children with CRF on conservative treatment (CT), 11 pts immediately before and after a haemodialysis (HD) session and 13 pts after transplantation (TP). In CT a correlation was found between some parameters of NMRPS and serum creatinine (SCR). The changes of NMRPS correlated even better with those of SCR during a HD session. After TP a significant improvement of MNCV was observed whereas NMRPS was unchanged. These data suggest that 1) NMRPS is a sensitive parameter of uremic neuropathy which might be used to control adequacy of therapy, 2) short term improvement of neuroaxonal function occurs by HD, 3) long-term improvement of myelin sheath function is induced after TP.

239 IN VITRO CYTOTOXIC PROPERTIES OF PLASMA FROM UREMIC CHILDREN. Delaporte C., INSERM U.192, Hôpital des Enfants-Malades, Paris, France.

This study was designed to compare the effects of control and uremic plasma on growth of cultured cells. Cell multiplication was measured by ³H-Thymidine incorporation during one population doubling time of mouse 3T3 fibroblasts. Uremic plasma was taken from severe uremic children (plasma creat. > 45 mmol/l) and from hemodialysed (HD) patients: Plasma from HD patients were obtained at the beginning and end of a dialysis session. The ³H-Thymidine incorporation in the presence of uremic plasma was decreased (3520 ± 160 cpm, n = 13) as compared to the control incorporation (8500 ± 520 cpm, n = 14) ($p < 0.01$). Dose-response experiments showed a regular decrease in the rate of ³H-Thymidine incorporation in the presence of increasing amounts of uremic plasma. The comparison between the pre and post-dialysis incorporation values (3902 ± 664 cpm vs 9430 ± 1540 cpm, n = 8) showed an improvement in the ³H-Thymidine incorporation with postdialysis plasma (paired t test: $p < 0.01$). To obtain information on the properties of the cytotoxic material, incubations were made with ultrafiltrate (UF) of plasma and UF fractions obtained by G-15 Sephadex filtration. Uremic UF and fractions displayed no cytotoxic properties when added alone in the culture medium. The preincubation of uremic UF and fraction peak 7 ("middle molecules") with control plasma restored a cytotoxic effect which was not different from that observed with uremic plasma. Conclusion: uremic plasma displays cytotoxic properties related to ultrafiltrable molecules which are not cytotoxic themselves but when mixed with plasma macromolecules.

240 FLUID AND CALORIC INTAKE IN INFANTS WITH ACUTE RENAL FAILURE. Ellis, D. and Knappenberger, W., Children's Hosp. of Pittsburgh, Univ. of Pittsburgh School of Medicine, Pittsburgh, PA, U.S.A.

Despite lack of any quantitative fluid and dietary data, it is widely claimed that patients with oliguric acute renal failure (ARF) are in a catabolic state because they receive inadequate calories, given the fluid constraints imposed by therapy of this condition. We studied this problem by carefully analyzing fluid and calorie balance in 10 consecutive infants with ARF (urine output < 20 cc/kg/day) secondary to major surgical procedures. Each patient received parenteral hyperalimentation from the onset of oliguria. A specially constructed fluid balance sheet was used to aid in the fluid calculation, and the caloric content of wound and chest tube drainage was estimated by analysis of protein content. The caloric value of blood given or lost, and of various protein infusates was also estimated. Serum and urinary albumin, transferrin, and IgG levels were serially measured during the first 3 days of oliguria.

The mean net volume of fluid received was 45 ± 14 cc/kg/day. The mean weight gain during the period of oliguria (median time 7 days) was 13% above preoperative weight. There was a large variation in the net number of calories received with the mean value being 34 ± 17 cal/kg/day. Significant reductions in serum levels of albumin occurred in 7, transferrin in 6, and IgG in 2 patients despite minimal absolute urinary protein loss.

These data suggest that a catabolic state is present in ARF that can be largely explained by inadequate calorie intake.