85 RENAL OSTEODYSTROPHY IN YOUNG CHILDREN: A DOUBLE BLIND TRIAL OF 1 ALPHA-HYDROXYCHOLECALCIFEROL. RIGDEN, S.P.A., JONES, R.W.A., PREECE, M.A., CAMERON, N., BARRATT, T.M. Institute of Child Health, London, England.

Six boys aged 0.69-1.88 years with stable chronic renal failure (GFR 7.2-19ml/min/1.73m^{2}SA) and renal osteodystrophy, previously controlled with 1α-hydroxycholecalciferol, (1α-OHCC 26-48ng/kg/day), were treated for two consecutive four month periods in random order, with their established dose of 1α-OHCC or placebo. During treatment with 1α-OHCC there was a tendency for improvement in Xrays of hand, wrist and knee associated with a fall in alkaline phosphatase (mean change -116 iu/l), whilst during the placebo period the bone Xrays showed deterioration with most marked changes at the knee, and the alkaline phosphatase rose (mean change +124 iu/l, t=2.77, p<0.02). Plasma immunoreactive parathormone concentration increased during both periods (mean change +258 ng/l on 1α-OHCC, +391 ng/l on placebo). Plasma calcium concentration fell during placebo therapy (mean change -0.17 mmol/l), but remained unchanged during the 1α-OHCC period. Renal function was unaffected: estimated GFR showed a mean change of +2.7% during treatment with 1α-OHCC and -0.6% with placebo. There were no changes in body fluid composition or linear growth which could be attributed to 1α-OHCC. We conclude that 1α-OHCC is a moderately effective and safe treatment of renal osteodystrophy in young children with renal failure.

86 HORMONAL AND BIOCHEMICAL INDICES OF RENAL OSTEODYSTROPHY IN CHILDREN. Perfumo F., Oleggini R., Gusmano R.; G.Gaslini Institute, Genoa, Italy.

Osteodystrophy is a severe and troublesome complication of renal failure. It is important to detect and to treat early to prevent deformities and growth failure. We have studied in 21 uremic children (1-12 yrs of age) on conservative treatment and in 16 children (3-15yrs) on dialysis (HD) hormonal (iPTH, iCT and levels of 25-hydroxyvitamin D), biochemical (calcium, magnesium, phosphorus, alkaline phosphatase) and radiological signs of renal bone disease.

The results can be synthesized as follows:

- all HD patients show marked alterations in hormones profiling and biochemical indices;
- pts. on CT have hormonal alterations also with minor reduction of GFR, with a correlation between GFR and serum phosphorus, plasma PTH and ionized calcium;
- radiological signs of rickets were better correlated with biochemical alterations, while Rx signs of hyperparathyroidism appear later and did not show a relation with serum indices.

87 TREATMENT OF DIALYSIS BONE DISEASE BY 1-25 OH D3

Dumas R.E. Meunier J.P.

Five adolescents and three children were treated for 48 weeks with 1-25 OH D3 at the dose of 2 or 3 μg weekly. Biological controls, hand roentgenograms and bone biopsies were performed before and after treatment. Treatment did not modify growth velocity. Radiologic healing of osteodystrophy was observed. Serum calcium significantly increased, while alcaline phosphatase decreased and iPTH varied from 7556 ± 366 pg/ml to 3657 ± 763 pg/ml ($p < 0{,}001$, normal 250 ± 134 pg/ml). Serum phosphorus significantly decreased from the fourth to the sixteenth week and then progressively increased. Prior to treatment all cases presented with classical histomorphometric signs of hyperparathyroidism. During therapy these patients showed a decrease in the number of osteoclasts per mm^2 and trabecular osteoclastic resorption surface (T.O.R.S.). Following treatment, normal trabecular osteoid volume (T.O.V.) and elevated trabecular osteoid surface (T.O.S.) values were observed.

Therefore 1-25 OH D3 corrected both biological and histological signs of hyperparathyroidism in only two patients. However the remaining cases showed regression of these signs.

88 SKELETAL MANIFESTATIONS OF RENAL OSTEODYSTROPHY IN CHILDREN

Mehls,O., Gilli,G., Ritz,E., Oppermann,H.C. University Children's Hospital, Heidelberg, F.R.G.

The nature of skeletal lesions in renal osteodystrophy(RO) is still controversial. Our experience is based on sequential X-ray studies of 211 children with chronic renal failure(CRF)with or without haemodialysis (HD) and iliac crest histology of 98 children. 1. Histology: Abnormal bone histology(increased osteoid, endosteal fibrosis, Howship's lacunae)is encountered even in incipient RF(SCr 2.5 mg/dl)together with an increase of PTH. HD fails to normalize the bony changes. In terminal RF, growth cartilage mineralization is preserved and osteitis fibrosa is present in the metaphysis(primary and secondary spongiosa). These lesions are distinct from classical rickets. 2. Radiology: Cortical lesions(subperiostal resorption, periostal neostosis, cortical striation)are more frequent than in adults and obligatorily accompanied by changes in the growth zone: in contrast to distinct histology radiolucent zones are indistinguishable from rickets. 3 important biochemical consequences are observed: a) metaphyseal deformities of tubular bones, b) epiphyseal slipping and c) metaphyseal fractures. Advanced RO is always accompanied by retardation of growth and bone maturation. In agreement with the high rate of bone turnover in children lesions may appear rapidly and disappear likewise rapidly in response to therapy.

TRANSPLANTATION

89 TEN YEARS OF PEDIATRIC RENAL TRANSPLANTATION

Selden,R.V., Friedman, J., Stubenbord, W., Kaplan, M.R. New York Hospital-Cornell Univ.Med.Coll., N.Y., N.Y.USA

We wish to report a 10 year experience with renal transplantation in children, aged 1-19 years, comparing consecutive 5 year intervals. Seventy six patients received 98 allografts during the period 1970-1980 with little substantive change in medical management. Thirty eight children received grafts from living related donors (LRD); and 60 cadaveric transplants(C) were done. Life table analyses were applied for statistical evaluation. During the period 1970-1974,5 year graft survival in the LRD group (n=21) was 43% and improved to 65% (n=17) during the subsequent 5 year period. From 1970-1974, 5 year survival in the C group (n=21) was 33% and increased to 47% (n=39) between 1975 and 1979. Ten year graft survival in the LRD group (n=38) is 53% compared with 43% graft survival in the C group (n=60). Most grafts that were lost ceased functioning early. Twenty nine percent (11/38) of LRD grafts and 35% (21/60) of C grafts were lost in the initial 3 months post-transplant. No LRD grafts were lost after 2 years except in one patient who had recurrence of focal segmental glomerulosclerosis 3.5 years post-transplant. Only one C graft was lost after 3 years. Patient survival was 95% (72/76). Results of our 10 year experience confirm that renal transplantation is a viable therapeutic modality in children. Our experience suggests if improvement in graft survival is to occur, factors in the perioperative period such as tissue typing, immunosupression, and the role of blood transfusions need further evaluation.

90 RENAL TRANSPLANTATION IN INFANCY. Moel, D.I. and Butt, K.M.H., State University of New York, Downstate Medical Center, Brooklyn, New York, U.S.A.

Renal transplantation is an established therapeutic modality for end-stage renal failure in adults and older children. However, there have been few reports of success in infancy. We report our experience of renal transplantation in 8 infants grafted at ages 1-21 months, weighing 2.3 to 7.0 Kg. and followed for 6 months to 3½ years. Kidneys were obtained from cadaver donors: 2 anencephalic newborns, 6 others aged 2-21 years. Four of eight recipients had well functioning grafts (serum creatinine ≤1.5mg/dl) 1 year posttransplantation. Four children are still alive, 2 with well functioning grafts, 2 on chronic peritoneal dialysis awaiting a second transplant. Two recipients died in the immediate postoperative period; one of cardiopulmonary arrest and the other of sepsis. One patient survived 3½ years with excellent renal function and growth, but died suddenly of hypertensive encephalopathy secondary to chronic rejection. The remaining recipient died 1 year after transplantation of an hepatoblastoma; allograft was still functioning. Immunosuppression consisted of prednisone (0.2-0.4 mg/Kg/day), azathioprine (2 mg/Kg/day), and anti-thymocyte globulin (Upjohn) (20-30 mg/Kg/day) with added doses of methylprednisolone sodium succinate to ≥ 20 mg/Kg. twice daily for 3-5 days for rejection. Growth resumed in the 3 children with good renal function but none demonstrated catch-up growth. We believe renal transplantation in infancy is technically feasible and resumption of growth can be anticipated in recipients with sustained renal function.