

CEPHALEXIN THERAPY IN THE STAGES OF BACTERIURIA IN CHILDREN. Robert S. Fennell III, R. Dixon Walker and George A. Richard. Univ. of Florida Col. of Med., Dept. of Ped., Gainesville (Intr. by Martin L. Schulkind).

Children were divided by radiologic and clinical criteria into uncomplicated bacteriuria: first infection and recurrent infection, and complicated bacteriuria: pyelonephritis, obstructive abnormalities (primarily neurogenic bladders) and simple reflux. All patients were treated for 2 weeks at 50 mg/kg/day followed by 4 weeks at half this dose. Successful therapy was defined as eradication of the initial organism with maintenance of sterile urine for 6 weeks. Ninety-three patients were treated for 136 episodes of bacteriuria with the most common organisms being *E. coli* (60%), *Proteus* (19%) and *Klebsiella* (14%). There were only 4 failures to eradicate the original organism (2.9%) and 38 recurrences with a resistant organism (27.8%). *Pseudomonas* was the most common organism to recur (19/38). Successful therapy included first infection (100%), recurrent uncomplicated (75.5%), simple reflux (69.2%), pyelonephritis (58.6%) and obstructive lesions (51.9%). Difference for success in therapy for complicated (58.9%) and uncomplicated bacteriuria (81%) was statistically significant (<.01), as were the differences between the first infection, recurrent uncomplicated and complicated bacteriuria. The differences between complicated groups were not significant. In summary, the staging of bacteriuria appears very important for predicting recurrence rate. Cephalixin was effective in eliminating sensitive organisms in any stage of bacteriuria.

CLINICOPATHOLOGICAL CORRELATIONS IN LUPUS NEPHRITIS. Eduardo H. Garin, Robert S. Fennell, William H. Donnelly, R. Dixon Walker, George A. Richard. Univ. of Fla. Col. of Med., Dept. of Ped., Gainesville (Intr. by Martin L. Schulkind).

In the past 6 years 28/31 children with SLE have had lupus nephritis. Biopsy showed diffuse proliferative glomerulonephritis (DPGN) in 17, focal glomerulonephritis (FGN) in 5 and membranous glomerulonephritis (MGN) in 6.

At the time of diagnosis of nephritis, children with DPGN had evidence of associated extrarenal disease (22/22) and 5/17 with DPGN had the nephrotic syndrome. MGN presented with nephrotic syndrome (4/6). Renal function was depressed in DPGN (5/17), FGN (0/4), and MGN (1/6). Active disease was associated with +ANA and +C'4, followed by +C'3, and + split products of fibrin. Serological changes occurred prior to onset of clinical symptoms. Prednisone (2 mg/kg) and Azathioprine (2 mg/kg) produced complete or partial remission in DPGN (14/17), MGN (5/6) and FGN (1/1). Maintenance therapy consisted of Prednisone (20 mg q.o.d.) and Azathioprine (2 mg/kg q.d.). Repeat biopsy in DPGN showed moderate progression 6/9, MGN change 1/9, and improvement 2/9. Progressive biopsy change was noted in MGN (1/1). Increased frequency and prolonged duration of recurrences were associated with progressive biopsy changes of DPGN. Renal function remained or returned to normal or baseline in all patients, including those with progressive biopsy changes. During follow-up the nephrotic syndrome has developed in DPGN (10/17), FGN (0/5) and MGN (6/6). Death has occurred in patients with DPGN (4) and FGN (1).

RESPONSE OF PUPPIES TO SALINE LOADING. David I. Goldsmith, Alfred Drukker, Beth Hacker, Adrian Spitzer, M. Donald Blafox, and Chester M. Edelmann, Jr. Albert Einstein Col. Med., Bronx, N.Y.

The intrarenal patterns of blood flow and glomerular filtration change rapidly in young animals, reflecting differential rates of maturation of the inner and outer cortex. The present studies were undertaken to relate these phenomena to the limited response of immature animals to salt loading. Isotonic saline, equal to 10% BW, was given i.v. in 30 min to 9 puppies divided by age into three groups: I, 4-6; II, 11-15; and III, 20-22 days. Measurements of glomerular filtration rate (GFR) and fractional excretion of sodium (FENa) were performed for 45 min preceding and for 90 to 120 min following the infusion of saline. GFR increased slightly in I, doubled in II and tripled in III during infusion but returned promptly to baseline thereafter. Associated with this was significant natriuresis, with FENa of 4-6% in I and III, and 10-15% in II. FENa decreased after the saline infusion despite the fact that more than 90% of the load was not yet excreted. Xenon wash-out studies in 15 animals revealed expected age-related differences in mean and distributional flow. No change in the intrarenal distribution of blood flow occurred as a result of salt loading. It is concluded that the limited response of the young animal to saline loading is the effect of the low GFR and immaturity of the control mechanisms. Natriuresis is not mediated by changes in intrarenal distribution of blood flow.

EXPERIENCE WITH 110 DETERMINATIONS OF RENAL BLOOD FLOW (RBF) IN CHILDREN USING ¹³³Xe. A.B. Gruskin, V.H. Auerbach, I.F.S. Black, H.J. Baluarte, M.L. Cote, L. Hiner, D. Sapire, V. Shashikumar and L. Somers. Dept. Ped. Temple Univ. Sch. Med., St. Christopher's Hospital for Children, Phila., Pa.

Renal blood flow has been measured in children of age 1½ to 16 years, by injecting ¹³³Xe into the renal artery at the time of aortography or surgery. The rate of washout of radioactivity was monitored on magnetic tape and the resultant data analyzed by graphic analysis using a semi-automatic method of plotting and computing the rates and fraction of blood flow perfusing the outer and inner cortical regions of the kidney. The number, type, and results of the studies follows: 1) In 8 normal kidneys, RBF's were similar to adult values. 2) In 53 studies of RBF in children with congenital heart disease, RBF's were reduced in both cyanotic and acyanotic heart disease, were further reduced when heart failure was present (8 patients) and fell after angiography (19 patients). 3) Following renal biopsy drops in RBF may occur in intact kidneys, but not in the transplanted kidney (4 patients). 4) In chronic renal disease outer cortical blood flow is diminished. 5) 31 measurements of RBF in donor kidneys upon insertion and/or following transplantation suggest that this technique may have some value in predicting both the immediate and subsequent function of the graft. 6) In 5 patients with renal vascular hypertension, ¹³³Xe measurements of RBF were helpful in determining secretory rates of renin in both kidneys.

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PARATHYROID HORMONE REGULATION IN CHILDREN WITH CHRONIC RENAL DISEASE. Alan B. Gruskin, Allen W. Root, Gregory E. Duckett and H. Jorge Baluarte. Dept. Ped. Temple Univ. Sch. Med. St. Christopher's Hosp. Child. and Albert Einstein Norther Division. Phila., Pa.

The regulation of immunoreactive parathyroid hormone (IPTH) levels has been examined in three groups of children. I. In 5 children with renal insufficiency, 4 had renal osteodystrophy. Calcium infusions of 4 mg/kg/hour for 4 hours reduced IPTH to less than 40% of the elevated baseline levels. Following glucagon administration, which lowered serum calcium in 4 of 5 children, IPTH levels in 3 increased transiently by 20%. These changes indicated that these children had suppressible parathyroid function (non-autonomous). II. In 4 children being hemodialyzed against a bath with Ca⁺⁺ concentration ranging from 7-8 mg/dl, the (Ca⁺⁺) of the venous line progressively rose. It also always exceeded that of the arterial line, indicating net calcium absorption by the body. IPTH levels fell as serum (Ca⁺⁺) increased. These changes indicate that the use of a high (Ca⁺⁺) in the dialysis bath is useful in suppressing parathyroid hyperactivity. III. Changes in (Ca⁺⁺), (PO₄) and IPTH were determined following 5 episodes in 4 children of acute transplant rejection being treated by 15 mg/kg of IV prednisolone. (Ca⁺⁺) fell in all 5. Changes in IPTH levels were not consistent and failed to parallel changes in (Ca⁺⁺). These changes suggest that high doses of steroids may acutely affect serum (Ca⁺⁺), independently of their effect on the parathyroid glands.

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NITROGEN-SPARING EFFECT OF ESSENTIAL AMINO ACIDS (EAA) IN ANEPHRIC RATS. Pierre Quesry and Malcolm Holliday, Dept. Pediat. Univ. California San Francisco.

This study undertook to determine the nutritional factors influencing urea nitrogen production (UrP) and net protein synthesis (PrS) in protein-depleted anephric rats. Young growing rats were protein-depleted from 3-14 days by providing them a protein-free diet. They were then binephrectomized and an infusion begun. UrP was measured as gain in body urea pool derived from BUN and body water over the succeeding 24 hrs. PrS was either positive or negative, depending upon whether nitrogen intake exceeded or was less than UrP. All animals received 7 ml fluid/100 g BW/24 hrs IV in .07M NaCl to avoid hyponatremia, and insulin when appropriate to avoid hyperglycemia. Solutions were compared and expressed per 100 g BW/day:

Group No.	Solution	Kcal	N mg	UrP	PrS
1	8 2% glu	0.4	0	70±26	-70±26
2	8 50% glu	10	0	41±15	-41±15
3	8 50% glu+ala or gly	10	50	77±13	-27±15
4	8 50% glu+EAA	10	27	21±16	+6±17

By analysis of variance the differences between each group were significant at 5% for UrP; for PrS the differences were not significant except between group 3 and 2. These data suggest that UrP is curtailed by glucose administration and more by adding EAA. Adding non-EAA increased UrP but did not affect PrS compared with glucose alone.