

Movat's (1961) method, these humps can be visualized using both optical and electron microscopical methods. They can also be demonstrated on renal biopsy material prepared for light microscopy using minor modifications of a chromotrop-silver methenamine method (T. Ehrenreich and T. Espinosa, 1967, personal communication). These appearances were observed in renal biopsy specimens from 6 out of 7 children diagnosed as having acute post-streptococcal glomerulonephritis, but with atypical clinical features, and in one child who had had the initial streptococcal infection 17 months before biopsy. Humps were also identified in renal biopsy and necropsy material from a child with rapidly progressive glomerulonephritis, a condition in which they have not previously been described.

REFERENCE

Movat, H. Z. (1961). Silver impregnation methods for electromicroscopy. *American Journal of Clinical Pathology*, **35**, 528.

Water Excretion in Infants and Children with Obstructive Uropathy. C. Chantler and T. M. Barratt (*Institute of Child Health, London W.C.1*). Dilatation of the urinary tract may be due either to anatomical obstruction or to dysplasia; it is sometimes difficult to distinguish between these by radiological techniques and to decide whether significant obstruction requiring surgery is present. The ideal pre-operative assessment would predict the improvement in renal function to be obtained from surgical intervention.

Studies of experimental unilateral hydronephrosis in dogs (Suki *et al.*, 1966) indicate that a smaller fraction of filtered water (V/GFR : V = urine flow rate, GFR = glomerular filtration rate) is excreted during water diuresis by an acutely obstructed kidney than by its control kidney. In contrast, V/GFR is increased in chronic obstruction. It might be expected that those kidneys with the functional characteristics of the acutely obstructed model would show the greatest increase in GFR after relief of obstruction.

GFR was estimated from the plasma disappearance of ^{51}Cr -EDTA (Chantler *et al.*, 1969) before and after surgery in children with presumed obstructive uropathy. Fractional water excretion during pre-operative water diuresis was measured as the plasma/urine creatinine ratio (P_c/U_c):

$$V/GFR = V \div \frac{U_c V}{P_c} = P_c/U_c$$

Fourteen children have been satisfactorily examined to date: the largest fractional increases in GFR after surgery have been seen in the three children who had values of P_c/U_c during water diuresis lower than healthy adults. The other 11 had values higher than those of healthy adults.

REFERENCES

- Chantler, C., Garnett, E. S., Parsons, V., and Veall, N. (1969). Glomerular filtration rate measurement in man by the single injection method using ^{51}Cr -EDTA. *Clinical Science*, **37**, 169.
Suki, W., Eknayan, G., Rector, F. C., Jr., and Seldin, D. W. (1966). Patterns of nephron perfusion in acute and chronic hydro-nephrosis. *Journal of Clinical Investigation*, **45**, 122-131.

Adrenocortical Atrophy and Diffuse Cerebral Sclerosis: Biochemical Studies. Constance C. Forsyth (*Department of Child Health, University of Dundee*). A boy, diagnosed as having Addison's disease due to idiopathic atrophy of the adrenal glands at the age of 7 years, developed the first evidence of what was originally thought to be Schilder's disease at 8 years and 10 months. He died at 9 years and 11 months. There are 12 fully documented reports in the literature of boys with the combination of adrenocortical atrophy and diffuse cerebral sclerosis. The studies of adrenal function during life and of the biochemistry of the brain at necropsy were discussed in relation to theories of causation and the likely mode of inheritance of the condition.

Enzyme Studies of the Testis in Myotonic Dystrophy. William Hamilton and R. G. Mitchell (*Department of Child Health, University of Aberdeen*). Myotonic muscular dystrophy is characterized by familial incidence, inheritance as a dominant trait with variable penetrance, myopathy mainly involving the distal musculature of the extremities and the cranial muscles, cataracts, bony lesions, and endocrine defects such as a low BMR, progressive testicular atrophy, and low urinary 17-oxosteroids.

The testes show tubular degeneration with sclerosis and hyalinization, but Leydig cells may be increased. Testicular biopsies from two affected brothers have been studied. The specimens were incubated as described by Hamilton, Grant, and Wilson (1970). These authors observed that fetal testis synthesized testosterone preferentially from dehydroepiandrosterone before the 12th week of gestation but after that time, preferentially from androstenedione. Undescended testes behaved *in vitro* like the later fetal testes.

The corresponding enzymic activity of testes from these two boys is set out in the Table:

TABLE
Conversion to Testosterone (dpm) as % of Substrate Used

	From Androstenedione	From Dehydroepiandrosterone
Elder 13 years	3123 dpm (0.06%)	15,558 (0.23%)
Younger 11 years	17,549 dpm (0.94%)	5951 (0.10%)

Since the conversion of androstenedione to testosterone is by 17β -reductase, the findings might indicate that as the disease progresses there is progressive failure of 17β -reductase. Also dehydroepiandrosterone was utilized more by the older testis than by the younger testis. The enzyme in this reaction is 3β -hydroxysteroid dehydrogenase which is also the more active enzyme in the early fetal testis. Its persistence then as the

disease progresses could represent regression of testicular androgen synthesis to the fetal type.

REFERENCES

Hamilton, W., Grant, J. C., and Wilson, R. R. (1970). In vitro enzymic activity of human undescended testes. In *7th Annual Symposium of the Society for the Study of Inborn Errors of Metabolism*. Livingstone, Edinburgh.

Congenital Malformations and Neoplasia. Jean Keeling (introduced by Colin Berry). Published in full—Berry, C. L., Keeling, J., and Hilton, C. (1970). *Archives of Disease in Childhood*, **45**, 229. Coincidence of congenital malformation and embryonic tumours of childhood.

Diminished Activity of Platelet Monoamine Oxidase in Down's Syndrome. Philip F. Benson and Jennifer Southgate (*Paediatric Research Unit, Guy's Hospital, London S.E.1*). Subjects with primary trisomic Down's syndrome have low concentrations of blood serotonin (5-hydroxytryptamine) (5-HT). The reason for this is unknown. In Down's syndrome the binding of 5-HT to platelets has been found to be normal. In theory low blood 5-HT may be due either to a diminished rate of synthesis or to an accelerated breakdown.

We report a study on platelet monoamine oxidase (MAO) activities in subjects with Down's syndrome and in controls. While the plasma enzyme is practically inactive with 5-HT, platelet MAO appears to be very similar to the liver mitochondrial enzyme which is the main reservoir of MAO in the body.

Platelet MAO activity (measured fluorimetrically using kynuramine as substrate and expressed as μg . 4-hydroxyquinoline/mg. protein/30 minutes) was significantly lower in children with Down's syndrome (22 subjects, mean 0.81 SD 0.38) than in controls matched for age, sex, and domicile (22 subjects, mean 1.24, SD 0.70) $p = 0.01 - 0.02$. This does not support the view that low concentration of blood 5-HT is due to an accelerated rate of 5-HT breakdown. Moreover, a decrease in MAO activity is compatible with the observation that urinary excretion of 5-hydroxyindoleacetic acid (5-HIAA) is lower in subjects with Down's syndrome than in controls. If accelerated degradation of 5-HT cannot be incriminated as the cause of low blood 5-HT in Down's syndrome, it is reasonable to suggest that there may be a diminished rate of 5-HT synthesis. This might be due to inefficient intestinal absorption of tryptophan or to diminished activity of enzymes involved in 5-HT synthesis. Theoretically the trisomic chromosome 21 might carry a regulatory gene for MAO, leading to increased synthesis of repressor and therefore to a decreased rate of MAO synthesis.

Effect of Cytotoxic Drugs on Immature Rat's Gonads and Subsequent Reproductive Performance. Colin Berry (*Institute of Child Health, London W.C.1*). (To be published in full elsewhere.)

Comparison of Effect of Isoprenaline and Salbutamol Aerosols on Airways Obstruction and Pulse Rate of Children with Asthma. G. Hambleton (introduced by Malcolm Segall) (*Department of Paediatrics, St. Thomas's Hospital S.E.1*). (To be published in full in this journal.)

Total Faecal Bile Acid Excretion in Children. Clive Leyland (introduced by June Lloyd) (*Institute of Child Health, London W.C.1*). Few studies have been made on total faecal bile acid excretion and no data are available for children.

Using gas-liquid chromatography (Grundy, Ahrens, and Miettinen, 1965) faecal bile acids have been estimated on pooled 3-day stool collections. In 16 children (aged 2 months to 14 years) without evidence of fat malabsorption, the mean daily excretion varied between 10 and 85 mg. and appeared to correlate with body weight.

Very low amounts (< 3 mg./day) were found in 5 children who had biliary atresia. Increased excretion was found in a child with familial hypercholesterolaemia receiving cholestyramine and in 2 children with resection of the terminal ileum.

Raised excretion was found in 2 children with cystic fibrosis who had steatorrhoea, whereas in 2 other children with cystic fibrosis, in whom steatorrhoea was controlled by a low fat diet, faecal bile acid excretion was normal.

In 5 children with other diseases causing fat malabsorption steatorrhoea had been controlled by dietary fat reduction. 4 had also received supplementary medium-chain triglyceride. In all these children faecal bile acid excretion was normal.

REFERENCE

Grundy, S. M., Ahrens, E. H., Jr., and Miettinen, T. A. (1965). Quantitative isolation and gas-liquid chromatographic analysis of total fecal bile acids. *Journal of Lipid Research*, **6**, 379.

Sugar Absorption in Rats with Intestinal Blind Loops. Michael Gracey, Valerie Burke, and Ademole Oshin (introduced by Graham Chance) (*Institute of Child Health, University of Birmingham*). Temporary monosaccharide malabsorption in young babies may be associated with abnormal small intestinal flora and deconjugated bile salts (Gracey, Burke, and Anderson, 1969). To investigate this association we have studied the uptake of an actively transported, non-metabolized analogue of glucose (Arbutin) in rats with intestinal blind loops.

Blind loops, 8–10 cm. in length, were constructed in the jejunum of adult Wistar rats. One to two months after operation, 5-day stool collections demonstrated steatorrhoea in all operated animals. In 6 animals, using a recently described *in vitro* technique (Semenza, 1969), and using randomized segments of intestine, we have shown inhibition of Arbutin uptake in the blind loops and in the intestine adjacent to the loops, both proximally and distally. Inhibition was most obvious in the blind loops and was least severe in the proximal segments. In 3 animals the degree of inhibition was