331 CONGENITAL HYPOPITUITARISM (CH) IN FEMALE INFANTS: PRESENTATION WITH HYPOGLYCEMIA AND HYPOTHYROIDISM.

A. Kauschansky and M. Genel, Dept. of Ped., Yale Univ. Sch. of Med., New Haven, Ct (Spon. by Howard A. Pearson).

CH, usually accompanied by hypoadrenalism, often by hypogenitalism and hypothyroidism, is a neonatal emergency, presenting with apnea, cyanosis and intractable hypoglycemia (HG). In two female infants, simultaneous occurrence of congenital hypothyroidism with intractable HG permitted clinical diagnosis.

One infant, B.D. 8/12/70, presented with glucose 17mg% and PBI 2.5mcg%. The HG was then ascribed to hyperinsulinism and it was not until after diazoxide therapy and subtotal pancreatectomy were unsuccessful that CH was documented with absent HGH response to L-DOPA and characteristic findings of adrenal insufficiency. Therapy with T4 and cortisol was successful until she succumbed at age 3 to an intercurrent illness with features of adrenal crisis. In the second, B.D. 5/22/73, the diagnosis was established on the 2nd day of life after similar presentation with glucose 25mg% and T4 of 1 4mcg%. Despite appropriate therapy, this infant succumbed on day 11. Autopsies revealed absent pituitary and sella turcica with hypoplastic adrenals, thyroid and ovaries in the first; and pituitary aplasia with absent thyroid and right adrenal plus hypoplastic left adrenal in the other infant.

CH is a potentially treatable disorder despite the fatal outcome in our cases. Although HG and microphallus in males have been emphasized as distinctive presenting signs, the diagnosis should also be suspected and vigorous therapy instituted in any infant, regardless of sex, with coexistent HG and hypothyroidism.

332 SODIUM WASTING WITH NORMAL PLASMA ALDOSTERONE (ALDO) CONCENTRATIONS IN SALT LOSING CONGENITAL ADRENAL HYPERPLASIA (SL-CAH).

Bruce S. Keenan, Rebecca T. Kirkland, George W. Clayton. Department of Pediatrics, Baylor College of Medicine, Houston.

Subjects (8) with SL-CAH, 21-hydroxylase deficiency, on glucocorticoid therapy were studied after mineralocorticoid therapy was discontinued. They had similar neonatal salt wasting. On constant sodium (Na) intake, all demonstrated negative Na balance with increasing plasma renin. Although plasma Aldo was often in normal range, it was low considering the degree of renin elevation, indicating a biosynthetic defect. They may be divided into 3 groups: I-normal Aldo concentrations and relatively effective Na conservation, near normal urinary pregnanetriol (P'triol); II-high Aldo, elevated renin with significant Na loss and high P'triol; and III-low Aldo and Na loss despite high renin. These data indicate that while the most severe salt-losing defects are associated with very low Aldo, clinically significant salt loss on a normal Na intake may result from relative Aldo insensitivity possibly due to steroid antagonists of adrenal origin.

Group (N)	Diet-Na meq/da	Na Balance meq/da*	Na-Serum Final	P'triol mg/m^2/da	Renin t ng/ml/hr	Aldo t ng/dl
I (2)	75-150	+2	139	0.76	8.2±2.1	12.1±2.0
	25-37	-20	135	0.09	10.1±1.6	18.5±3.3
II (4)(4)	100-200	-79	135	3.2	36.7±7.7	32.2±9.7
(2)	50-100	-58	132	0.72	40.5±5.3	38.2±3.2
III (2)	125-150	-58	129	0.3	52.9±10.5	<2

*mean; t-mean±SEM

333 EFFECT OF CYPROHEPTADINE (CPH), A SEROTONIN ANTAGONIST, ON ADRENOCORTICAL FUNCTION IN HYPOPITUITARY CHILDREN.

Alan G. Kenien, Daniel L. Zeidner, Dorothy J. Becker, Songja Pang, James P. Gutai, and Thomas P. Foley,Jr., University of Pittsburgh, Sch. of Med., Pittsburgh, Pa.

We have previously demonstrated a significantly increased rate of growth in hypopituitary children treated chronically with CPH and growth hormone (GH) compared to those treated with GH alone. To determine the effect of chronic CPH in adrenocortical function, the cortisol (F) response to insulin hypoglycemia was determined in 10 hypopituitary children (8 idiopathic, 2 organic) treated for at least 4 months with GH and CPH (12-16 mg/day). All had previously normal oral metyrapone tests. While receiving CPH, five of the ten patients had a normal peak F response ($>$ 15 µg/dl) to insulin hypoglycemia while five of the ten had subnormal peak F concentrations (6.4 $\pm$ 2.7 µg/dl). All patients were retested two or more months after cessation of CPH therapy. The five patients with a normal peak F response during CPH therapy did not have an increased peak response after cessation of CPH. Four of the 5 patients with an abnormal response subsequently had a normal peak F response significantly greater than that while receiving CPH (16.3 $\pm$ 1.3 µg/dl; $p < .01$). The patient who had persistent subnormal peak F response to hypoglycemia had received radiation therapy for craniopharyngioma. None of the ten patients experienced any symptoms of glucocorticoid insufficiency. We conclude that in some cases, long-term administration of CPH to hypopituitary children may be associated with decreased F response to insulin hypoglycemia.

334 THYROID RESPONSE TO PARTURITION: RELATIONSHIP TO GESTATIONAL AGE (GA) AND THE RESPIRATORY DISTRESS SYNDROME (RDS).

A.H. Klein, B. Foley, R.S. Ho, F.M. Kenny and D.A. Fisher, UCLA-Harbor Gen. Hosp., Dept. of Peds., Torrance, CA, and University of Pittsburgh, Pittsburgh, PA.

Thyroxine (T4, µg/dl), triiodothyronine (T3, ng/dl), reverse triiodothyronine (rT3, ng/dl) and TSH (µU/ml) were measured in cord blood and at 2, 12, 24 and 72 hrs of age in 18 well infants (GA 32 to 41 wks) and in 5 infants with RDS (GA 31-33 wks).

	Cord			2 hrs			72 hrs		
	T4	T3	rT3	T4	T3	rT3	T4	T3	rT3
Term	11.9	34	258	22.1	217	197	22.0	146	344
35 wks	9.5	29	340	16.0	163	271	14.3	124	287
32-34 wks	7.8	15	296	9.8	154	195	8.5	65	229
RDS	6.4	13	257	7.7	115	149	5.8	23	132

Both T4 and T3 increased after birth. rT3 decreased transiently at 2 hrs and then increased. The increase in T3/rT3 and decrease in T4/T3 ratios at 2 hrs suggests that the initial T3 surge is due, in part, to an increase in peripheral conversion of T4 to T3. In RDS infants TSH was low at 2 hrs and the T4 increase was minimal T3 and T3/rT3 increased while T4/T3 decreased at 2 hrs: at 12 hrs T4/T3 increased and T3/rT3 decreased, suggesting that T4 to T3 conversion occurs at birth but is subsequently inhibited. Conclusions: a) newborn thyroid adaptation matures with increasing GA; b) the initial TSH and T4 surges are reduced in the RDS infant; and c) the RDS infant manifests decreased T4 to T3 conversion after 2 hrs.

335 SERUM ANDROGENS AS A CONTINUING INDEX OF ADEQUACY OF TREATMENT OF CONGENITAL ADRENAL HYPERPLASIA.

S.Korth-Schutz, R. Virdis, P. Saenger, L.S. Levine and M. I. New, Cornell University Medical College, New York.

Longitudinal studies in 19 girls and 17 boys with congenital adrenal hyperplasia (CAH) were carried out to correlate the degree of control with serum concentrations of testosterone (T), Δ^4 androstenedione (Δ^4) and dehydroepiandrosterone (DHEA). All serum values were compared to those of normal children in the same pubertal stage. Good or poor control was judged by growth rate, bone age advancement, signs of virilization and urinary 17-KS excretion. DHEA was suppressed in all treated patients whether in good or poor control. Serum T and Δ^4 were within the normal range for boys in good control. Serum T and Δ^4 were within normal limits for pubertal girls in good control but were below normal for prepubertal girls. Serum T and Δ^4 in girls in poor control were elevated in all pubertal stages. In prepubertal boys in poor control, serum T was elevated. However, in pubertal and postpubertal boys in poor control serum T was in the lower range of normal. Δ^4 was the single androgen elevated in all boys in poor control. Therefore, an elevated testosterone concentration was indicative of poor control in all girls but in boys only before puberty. In pubertal boys serum T was normal and did not discriminate between good and poor control. However, elevated Δ^4 concentration indicated poor control in both boys and girls at all stages of puberty. In conclusion, we have studied the serum androgen in children with CAH as a means of evaluating treatment. The single androgen that best reflected control was Δ^4.

336 NEONATAL HYPOTHYROIDISM DETECTED BY THE OREGON REGIONAL SCREENING PROGRAM.

Stephen H. LaFranchi, William H. Murphey, Neil R.M. Buist, P. Reed Larsen, and Thomas P. Foley, Jr., Univ. of Oregon Sch. of Med., Dept. Ped., Portland, Public Health Lab., Portland, Harvard Med. Sch., Dept. Med., Boston, Children's Hosp., Pittsburgh, Dept. Ped., Pittsburgh.

During the period from 5/75 to 12/76, 74,050 newborns were screened in the States of Oregon, Montana, and Alaska for neonatal hypothyroidism. Filter paper blood specimens were analyzed for T_4 in the newborn period and in a follow-up sample at 6 weeks of age. The lowest 3% of daily T_4 assays (<6.5 ug/dl) were then analyzed for TSH. The screening program detected 18 infants with neonatal hypothyroidism for an incidence of 1:4,100. Each T_4 screen cost $0.50. In the 18 infants detected, the mean T_4 declined from 3.4 ug/dl in the newborn sample to 2.8 ug/dl in the 6 week sample. Maternal history, maternal thyroid function, and pregnancy were unremarkable; neonatal symptoms were generally absent, and only 1 infant was clinically suspected of being hypothyroid prior to detection. On exam at diagnosis, hypotonia (40%), mottling (33%), umbilical hernia (33%), macroglossia (27%), and large fontanelles and wide sutures (25%) were the most prominent findings; no goiters were seen. Tc^{99m} pertechnetate scans performed in 10 infants showed no gland in 4, an ectopic gland in 3, decreased uptake in 2 and a normal gland in 1. Thyroid antibodies were demonstrated in 3 of 7 infants tested; 2 of these 3 had no uptake on scan and none of their mothers had antibodies. With treatment with L-thyroxine 0.050 mg a day, follow-up TSH measurements in 9 patients showed that TSH tended to reach normal 14-28 days after treatment was started, although one infant still had an elevated TSH at 28 days.