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COMPARISON OF HOMOCYSTEIC ACID (HCA)AND GROWTH HORMONE (GH) IN THE HYPOPHYSECTOMIZED RAT. B.L. Chrzanowska, M. Nitzan, L. Phillips and J.D. Schulman, NICHD, Bethesda & Ctr. Endocrinol., Northwestern Univ., Chicago.

HCA reportedly acts like GH in increasing the thickness of tibial epiphyseal cartilage and increasing serum somatomedin activity in hypophysectomized rats (Science 192, 372, 1976). We hypophysectomized Sprague-Dawley rats at 26 days of age and beginning 12 days later they received HCA, GH or 0.9% NaCl I.P. daily for 4 days. Average rat weight was 62.6 gms. HCA did not increase cartilage thickness, while GH was effective ($p<.001$).

Dose/24 hrs.	Animals	Tibial cartilage, u ± SEM
Saline	71	161.7 ± 3.109
HCA 1 ug	56	159.0 ± 3.888
HCA 25 ug	51	150.5 ± 3.612
HCA 1000 ug	45	148.0 ± 3.309
HCA 10,000 ug	32	157.5 ± 6.647
Human GH, 500 uU	8	235.4 ± 14.108

Liver DNA polymerase activity was also measured (Endocrinol. 92, 194, 1973) on 8-14 animals in each of several groups. Human GH increased polymerase activity 30%, ($p<.01$), but 10,000 ug HCA was ineffective. On this regimen, neither HCA nor GH significantly increased serum somatomedin levels in selected animals (Endocrinol. 99, 304, 1976); this result is not surprising since the method is less sensitive than the tibial thickness bioassay. HCA was not an active GH substitute in our laboratory. Our results contrast sharply with those reported previously by others on a smaller series of animals, and suggest that HCA will not prove valuable in treating human GH deficiency states.

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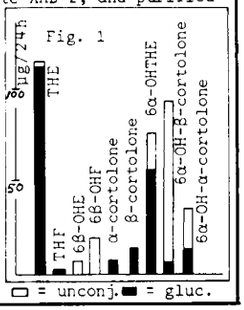
NEW CORTISOL METABOLITES AND CONJUGATES IN THE URINE OF NEWBORN INFANTS. Henk J. Derks and Nick M. Drayer (Spon. by Eleanor Colle), Univ. of Groningen, Univ. Hospital, Dept. Peds., Groningen, The Netherlands.

Conjugation of cortisol metabolites in the urine collected from newborn infants, children and adults was investigated. By ion exchange chromatography it was shown that the conjugation pattern of cortisol metabolites in neonatal urine differed distinctly from those in the urine of children and adults. Evidence was found for the presence of a new as yet unidentified type of steroid conjugate in the urine of newborn infants. The free steroids and those obtained by enzymatic hydrolysis from the glucuronide fraction were extracted by Amberlite XAD-2, and purified by TLC and HPLC. The different fractions obtained by HPLC were analyzed by GC-MS. Three new corticoids viz. 6α-hydroxy-THE, 6α-hydroxy-α-cortolone and 6α-hydroxy-β-cortolone were identified by comparing these compounds to steroids synthesized previously. These new steroids as well as THE, THF, 6β-hydroxy-F, 6β-hydroxy-E and the cortolones were quantified by gas chromatography or mass fragmentography. The average amounts (μg/24 hr) excreted on the second day of life by six fullterm newborn infants are presented in fig. 1.

Fig. 1



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HYPOTHYROXINEMIA IN SICK AND WELL NEWBORN INFANTS Frank B. Diamond, John S. Parks, Jean M. Marino, Alfred Tenore and Alfred M. Bongiovanni. University of Pennsylvania School of Medicine and Children's Hospital of Philadelphia, Division of Endocrinology, Philadelphia, Pennsylvania.

Hypothyroxinemia (HT) has been implicated as a factor in the etiology of respiratory distress syndrome (RDS). To assess the importance of HT, we measured thyroxine (T4) by filter paper spot (FPS) in the first 5 days of life in premature infants (PI) with RDS, PI with illnesses other than RDS, well PI, sick term infants (TI) and well TI. FPT4 estimates, as ug/dl serum, were comparable to simultaneously obtained serum T4 values in each group.

	N	Gest. Age	Birth Wt.	FPT4	S.D.	Range
PI RDS	17	31.4 Wks.	1705 gm	5.2	2.8	2.0-11.0
PI Sick	19	32.9	1891	6.1	2.2	3.0-11.0
PI Well	18	33.4	1968	8.6	2.1	5.2-11.1
TI Sick	12		3028	8.2	2.5	5.4-11.2
TI Well	102			11.2	2.5	7.3-20.2

Mean FPT4 values were similar in PI with RDS and in PI with other illnesses and were lower than in well PI ($p<.001$). The mean FPT4 value for well PI was similar to that for sick TI and both were lower than for well TI ($p<.001$). TSH, measured by FPS, was <10uU/ml in all infants with FPT4 <4ug/dl. Serum creatine phosphokinase levels, which are elevated in hypothyroidism, were lower in PI than in TI and did not correlate with FPT4 levels. HT, without other biochemical signs of hypothyroidism, is a frequent finding in sick newborns and is not limited to RDS.

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HYPERBILIRUBINEMIA AND IDIOPATHIC HYPOPITUITARISM IN THE NEWBORN PERIOD. Stenvert L.S. Drop, Harvey Guyda, and Eleanor Colle, McGill University, Montreal Children's Hospital, Department of Pediatrics, Montreal.

The association between neonatal hypopituitarism and liver dysfunction with prolonged jaundice has been made. We describe two patients who presented with severe neonatal hypoglycemia (HG), hepatomegaly, and hyperbilirubinemia (direct and indirect). There was clinical and laboratory evidence of hypothyroidism, hypo-adrenalism, hypogonadism and growth hormone (GH) deficiency in both. Case 1 (female) had 4 blood exchange transfusions. Liver enzymes were slightly elevated and bilirubin levels returned to normal within 5 months. A liver biopsy showed mild portal inflammation. Growth rate (GR) was 50% of normal during the first 6 mo. in the absence of demonstrable GH release. Somatomedin(SM) levels were 50% of normal childhood levels at 3 mo. but decreased to hypopituitary levels thereafter. SM increased 3.5 fold and GR was 80% of normal after GH treatment was added to T_4 and cortisol replacement therapy. Case 2 (male) had grossly abnormal liver function tests, required 1 blood exchange transfusion and hyperbilirubinemia lasted for 8 mo. A liver biopsy revealed giant cell hepatitis. Despite T_4 and cortisol therapy, hypoglycemic episodes continued until GH treatment was begun at 2½ yrs. Vigorous treatment of HG and early diagnosis of hypothyroidism and hypoadrenalism are crucial for a successful outcome. HG enhances the production of unconjugated bilirubin, but this can only partially explain the observed liver dysfunction in neonatal pan-hypopituitarism where T_4 and GH deficiency likely also play a role.

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PRELIMINARY REPORT ON PSYCHOLOGICAL DEVELOPMENT AT AGE ONE OF TREATED HYPOTHYROID INFANTS DETECTED BY THE QUEBEC SCREENING NETWORK FOR METABOLIC DISEASES. J.H. Dussault, J. Glorieux, J. Letarte, H. Guyda and C. Laberge, Quebec Screening Network for Metabolic Diseases, CHUL, Quebec.

Since April 1974, the Quebec Screening Network for Metabolic Diseases has been screening every infant born in the P.Q. for neonatal hypothyroidism. Since January 1977 every infant detected and treated is tested for its psychological and neuromuscular development at age 12, 18 and 36 months by the Griffith test. Over that period 20 infants age 12 months have been assessed. This assessment comprises 5 different test for locomotor development, social behavior, verbal, fine coordination and performance.

	Treated hypothyroid infants (20) Mean ± S.D.	Normal controls (23)
Locomotor	119 ± 13	116 ± 12
Social	108 ± 11	110 ± 8
Verbal	107 ± 13	110 ± 12
Fine coordination	111 ± 13	114 ± 8
Performance	113 ± 18	118 ± 17
Global:	112 ± 12	114 ± 8

Nine of these infants have been retested at 18 months of age, with similar scores. These results appears to indicate that early treatment of congenital hypothyroidism if effective in preventing neuromuscular and mental retardation in 12 and 18 months infants as assessed by the Griffith test.

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NOREPINEPHRINE (NE) AND EPINEPHRINE (E) LEVELS AT BIRTH AND DURING THE FIRST 48 HOURS OF LIFE IN THE HUMAN. R.J. Eliot, R. Lam, R. Artal, R. Leake, C. Hobel and D.A. Fisher. Fetal-Maternal Research Laboratories, UCLA-Harbor General Hospital, Torrance, CA.

Circulating levels of NE and E were measured in cord artery, cord vein and in mixed venous blood during the first 48 hours of life in vaginally and C-section delivered full-term infants. In addition, maternal catecholamine (CAT) levels were measured immediately prior to delivery. CAT were measured by radioenzymatic assay using 50 μl plasma. Mean results are shown in pg/ml.

	Maternal -5 min.	Cord-Vag Del Artery	Cord-Vag Del Vein	Cord-C-Section Artery	Cord-C-Section Vein	Newborn 15 min.
NE	339	3667	984	4248	1161	732
E	123	568	205	560	73	117

	Newborns: 30 min.	2 hr	3 hr	12 hr	24 hr	48 hr
NE	980	820	774	261	360	283
E	152	116	81	10	15	26

CAT levels were markedly elevated at birth and NE was the predominant CAT. Cord artery CAT significantly exceeded cord venous levels. CAT levels were similar in infants of vaginal and C-section deliveries. Levels of NE and E fell rapidly after birth. Conclusions: 1) Cord blood CAT levels are increased in term infants, the predominant response is NE; 2) the increase is not due to the stress of vaginal delivery; 3) during the first 12 hours of life, newborn CAT levels are only moderately elevated above resting adult levels.