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Diagnostic Value of Releasing Hormone Tests in Endocrine Disorders in Children

TRH test was performed in 10 normal, 8 hypothyroid and 1 hyperthyroid child. On hand of the results obtained in the hypothyroid children the authors feel that the unresponsiveness of TSH to TRH does not necessarily indicate a pituitary defect. The authors have also analyzed the values of LH and FSH during stimulation with LH-RH in 32 patients with delayed puberty, in 4 children with primary and in 8 children with secondary hypogonadism, as well as in 7 patients with precocious puberty. In 7 patients with precocious puberty maximal LH values were rising over 150 mIU/ml. In these patients blocking the hypothalamic stimulators with neuroleptic drugs, the authors tried to estimate their possible therapeutic value and at the same time to differentiate the idiopathic precocious puberty from that caused by an organic hypothalamic lesion.

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Presence of a large molecular form of vasopressin in the fetal rat.

Vasopressin (VP) and oxytocin (OT) may be synthesized in a common precursor with neurophysins (NP). We postulated that precursors may be more abundant in the neurohypophysis of the immature rat. By RIA, we found :

	-9	-5	-1	+8	days of life
NP	6310	1500	1060	13600	f moles
OT	6.4	17	352	10880	"
VP	20.4	237	10266	54804	"

There was a molar excess of NP early in gestation, and later a molar excess of VP. Bioassay of VP from the fetus correlated with RIA values. By gel filtration a big form of VP was found which varied with the method of extraction. With one system > 85 % of VP from the fetus was in the big form while <15 % of VP from the adult was big. The relationship of big VP to NP is not clear. The developing rat is a good model for the study of precursor hormones.

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Familial glucocorticoid deficiency and Achalasia of the Cardia.

An association between achalasia of the cardia and adrenal insufficiency has been found in pairs of siblings in two different families .Endocrine and post mortem studies indicate that mineralocorticoid function was normal in these four children who appear to have selective cortisol deficiency secondary to degeneration of the z.fasciculata and z.reticularis. Two further families with achalasia and adrenal insufficiency have been found in the literature.The condition appears to be inherited as a recessive disorder but the relationship between the adrenal and oesophageal abnormalities is unknown.

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Hydroxylated sterols and the human fetal adrenal.

The conversion by isolated human fetal adrenal cells (24 wks gestation) of 25-OH-cholesterol (25-OH), 22S-OH-cholesterol(22S), 17,20-diOH-cholesterol(17,20) and 17-OH-pregnenolone(17-OH) into C_{21} and C_{19} steroids was studied.In addition the effects on the levels of free cholesterol (Chol) were determined. Substrates and products were estimated by capillary GC. Intracellular ATP was used as a viability criterion. Results:

	No additions	40µg 17,20	40µg 17-OH	80µg 22S	80µg 25-OH	ACTH 20 mU HCG 200 IU
DHEA	0,31	0,12	3,42	0,63	0,93	1,02
Preg	0,11	0,83	0,43	1,76	3,31	<0,01
17-OH	<0,01	1,16		1,74	1,65	1,39
Chol	10,40	15,69	11,29	4,92	0,32	5,69

Production in µg/7x10^5 cells/2hrs

DHEA=dehydroepiandrosterone; preg=pregnenolone

The results suggest that these sterols not only act as precursors, but are able to stimulate steroid production by altering cellular metabolism.

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Long term endocrine studies in McCune-Albright's syndrome

A 3 year old girl with McCune-Albright's syndrome has been studied since the first vaginal bleeding appeared at 3 months of age. Since no longitudinal endocrine data from such a young patient has been reported, serial determinations of serum FSH (follicle stimulating hormone), LH (luteinizing hormone), ostradiol and progesterone were done while off and on treatment with medroxyprogesterone. Serum LH varied (3-21 mIU/ml) with no correlation to therapy. Serum FSH was unmeasurable at all occasions. Serum ostradiol showed great variations (20-400 pg/ml) with no correlation to LH or to therapy. Serum progesterone was unmeasurable. LHRH (gonadotrophin releasing hormone) 50 ug i.v. revealed only slight increase of LH and FSH in spite of elevated baseline value of LH. Unstimulated serum prolactin was elevated with no influence of therapy.

These studies further suggest an autonomous dysfunction of the ovaries and of the pituitary-hypothalamus whereas they were of no help in guiding the treatment. Even at this early age medroxyprogesterone seems beneficial in controlling the vaginal bleedings in this syndrome.

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P.SAENGER*,E.VOCCIA*,P.GUNCZLER*,W.RAUH*,M.I.NEW, Cornell Univ. Med. Col., N.Y. USA. 6βOH Cortisol (6OHF)as Indicator of Altered Cortisol(F)Metabolism

6OHF is the main unconjugated F metabolite in man. We measured 6OHF,tetrahydrocortisone(THE),tetrahydrocortisol(THF) and free cortisol(FF)excretion by RIAs in 1 ml of urine.Normal 6OHF excretion in children is 0.28±.04 mg/d/m^2(mean±SE).We found no sex difference.The ratios(±SE) of these cortisol metabolites in normals,after ACTH (40x5d) in patients with Cushing's syndrome or disease (CSD) are:

	THE/THF	6OHF/17OH	6OHF/FF
normals (n 30)	1.4±.06	0.09±.01	11±1.4
newborns(n 15)	1.6±.17	0.37±.08	17±2.1
ACTH (n 15)	0.4±.02	0.43±.06	1.1±.01
CSD (n 8)	0.5±.05	0.56±.14	23±9.8

Treatment with spironolactone caused a 6-fold mean increase in 6OHF excretion, phenobarbital changed the 6OHF/17OH ratio to 0.22±0.03, and Dilantin+phenobarbital altered the ratio to 0.45±0.1. Conclusions: 6OHF excretion in relation to 17OH and FF is age dependent. 6OHF increased markedly in CSD and after ACTH. THE/THF ratio decreased after ACTH and in CSD. FF increased more after short-term ACTH than in CSD. Therefore ACTH and hypercortisolemia alter cortisol metabolism measurable by urinary metabolites. Drugs (spironolactone, phenobarbital,Dilantin) cause an increase in 6β-hydroxylation, a microsomal enzyme system.