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Abstract withdrawn

350 THE ADRENARCHE: PROLACTIN, GONADOTROPINS, ADRENAL ANDROGENS AND CORTISOL. Lawrence N. Parker, Joseph Sack, Delbert A. Fisher, and William D. Odell. UCLA-Harbor General Hospital, Torrance, California.

Serum concentrations of prolactin, FSH, LH, androstenedione (A) 11-β-hydroxyandrostenedione (11βA), dehydroepiandrostenedione (DHA), dehydroepiandrostenedione sulfate (DHAS), and cortisol (F) were quantified in blood from 106 children from 2 to 12 years of age, and in adults. Prolactin (Prl), cortisol, and 11-β-hydroxy-androstenedione showed no significant changes during these years. Androstenedione was present in relatively high concentrations at the youngest ages and increased gradually, while FSH and LH rose peripubertally in years 11 and 12. In contrast, dehydroepiandrosterone and its sulfate showed a progressive increase with age in boys and girls and a 2-phase increase in girls. The greatest relative change in the DHAS concentrations occurred between ages 2 and 5 in girls.

These data indicate that significant changes in adrenal androgen (DHA) secretion occur well before the gonadal changes of puberty in both sexes. Furthermore, since the Δ^4 steroids (A and 11-β-OH A) were high at ages 2-5, and constant with approaching puberty, whereas the Δ^5 steroids (DHA and DHAS) increased with age beginning with relatively low values, the Δ^4/Δ^5 ratio decreased with age. This suggests early prominence of 3-β-ol isomerase dehydrogenase activity. We also conclude that children ages 2 through 12 have normal adult Prl levels, and these concentrations do not change in parallel with adrenal androgen development.

351 ROLE OF HYPOKALEMIA IN VASCULAR RESISTANCE TO ANGIOTENSIN II (AII). N.Radfar, J.R.Gill,Jr., A.A.Taylor, F.C. Bartter (Sponsored by A.L.Drash) NIH, Bethesda,MD.

Hypokalemia in Bartter's syndrome or when experimentally induced is associated with an increase in synthesis of prostaglandin E_2 which is a vasodilator. If hypokalemia mediates the vascular resistance to AII in Bartter's syndrome, then resistance to AII should also be present in other hypokalemic states. To examine this possibility, seven patients with Bartter's syndrome (3 children, 9-17yrs old and 4 adults) and six patients with other hypokalemic states were studied under similar conditions. Serum K(SK), supine PRA and the blood pressure response to AII were determined, before and during treatment with indomethacin, in patients with Bartter's syndrome, and before and after correction of hypokalemia in other patients. In Bartter's syndrome treatment with indomethacin did not change mean BP(104/69 mmHg), but increased mean SK from 2.3 ± 0.1 (SE) to 3.1 ± 0.2 meq/l, decreased mean supine PRA from 29.4 ± 10 to 3.1 ± 1.1 ng/ml/hr, and decreased mean pressor dose of AII (a dose capable of increasing basal diastolic BP by 20 mmHg) from 26 ± 5.4 to 9.6 ± 2.3 ng/Kg/min. In other hypokalemic states, correction of hypokalemia did not change mean BP(92/50), but increased mean SK from 2.3 ± 0.3 to 3.5 ± 0.2 meq/l, decreased mean supine PRA from 27.6 ± 9.8 to 2.4 ± 0.4 ng/ml/hr and decreased mean pressor dose of AII from 102 ± 34 to 12 ± 2.5 ng/Kg/min. These data suggest: 1.Hypokalemia may be responsible for the vascular resistance to AII in hypokalemic states. 2.The effect of hypokalemia on vascular resistance to AII may be mediated by prostaglandin E_2.

352 EFFECT OF DEXAMETHASONE(DEX) ON NOCTURNAL SECRETION OF GROWTH HORMONE(GH), PROLACTIN(PRL), GONADATROPINS (GN), 17OH PROGESTERONE(17OHP) AND GH RESPONSE TO L-DOPA IN PATIENTS WITH CONGENITAL ADRENAL HYPERPLASIA(CAH). N. Radfar, K.Trangle, W.Mendelson, F.C.Bartter, (Sponsored by A.L. Drash) NIH, Bethesda, MD. Short stature and virilization due to excessive adrenal androgens are problems in the management of CAH. DEX would improve management over short-acting drugs, only if it does not suppress GH secretion. Nocturnal secretion of GH, PRL, GN and 17OHP (blood was drawn every 30 min. between 11PM and 7AM while sleep was monitored by EEG) and GH response to L-dopa were studied in 4 salt-losers (13-17yr) and 2 non-salt-losers (23 and 28yr) during 2 periods in which they received DEX, 0.5mg either at 7AM or 11PM. Both schedules produced adequate suppression of urinary 17-KS. The mean area under the curve for GH was slightly greater with AM than with PM DEX (1737 vs 666 ng min) during the first 2 hr of sleep. It was slightly lower during the 2nd and 3rd two hrs of sleep (1041 vs 1347 and 453 vs 1216, respectively). GN revealed periodic release throughout the sampling on both schedules with no difference between their mean concentrations (LH, 16 vs 15.4; FSH 7.2 vs 7.6 MIU/ml with AM and PM DEX respectively). Mean PRL and 17OHP concentrations were only slightly higher with AM than with PM DEX (PRL, 45 vs 35 ng/ml; 17OHP, 2.3 vs 0.7 ng/ml). All patients showed normal GH response to L-dopa. These studies suggest: 1.Physiologic doses of DEX suppress the adrenals adequately for many hours. 2.DEX does not suppress nocturnal GH or GH response to L-dopa regardless of the time of administration; therefore, DEX used in this way is safe in children.

353 HYPOPITUITARISM FOLLOWING TUBERCULOUS MENINGITIS (TBM). Robert Rapaport & Cyril A.L. Abrams, Spon. by Philip Lanzkowsky. Sch. of Med., Health Sciences Ctr., State Univ. of N.Y. at Stony Brook and Long Island Jewish-Hillside Med. Ctr., Dept. of Pediatrics, New Hyde Park, N.Y.

Endocrine disorders are uncommon complications of TBM. They usually occur late and present as sexual precocity or diabetes insipidus. This study concerns a 3 yr old boy with unsuspected anterior pituitary deficiencies 8 months after the onset of TBM. The patient had a history of normal growth and development. At 2 yrs 4 mths of age he was treated for TBM and within months hydrocephalus, visual failure and optic atrophy developed. At 2 yrs 9 mths of age exploration of the optic chiasm revealed adhesive arachnoiditis and at 3 yrs of age he developed hypoglycemia and investigations revealed the following: Height and bone age consistent with chronological age. X-ray skull normal. Prolonged fast and oral glucose tolerance test: normal blood glucose & insulin values. T4 by column & RIA subnormal (2.1 & 3.9 mcg%). T3 resin uptake subnormal (22%). Free T4 borderline subnormal (1.0mcg%). TSH normal (7.3mU/ml). Urinary 17KS & 17 KGS normal. Metyrapone test (midnight dose): no rise in 8AM serum 11-deoxycortisol. Adrenal response to ACTH stimulation normal. Insulin-induced hypoglycemia: no rise in serum cortisol or growth hormone. Posterior pituitary function intact. These data are diagnostic of TSH, ACTH & growth hormone deficiencies. Our finding of occult hypopituitarism 8 months after the onset of TBM emphasizes the need for careful monitoring of endocrine function early in the recovery phase of this disease.

354 GROWTH HORMONE TESTING: Concordance and Validity. E. Rappaport; L. Deeb; D. Fife; and R. Ulstrom. University of Minnesota, Department of Pediatrics, Minneapolis. Growth hormone stimulation tests in 25 children were reviewed to determine concordance among 3 tests, oral L-dopa, arginine infusion and insulin induced hypoglycemia. The validity of test results was examined using current growth velocity and response to hGH therapy. Patients were classified as to their ability to attain an hGH level of ≥ 6ng/ml on any of the 3 tests and then similarly on the basis of only 2 tests, L-dopa and arginine. Data from 25 patients with short stature who received all provocative tests were analysed. Eighteen of the 25 received DES prior to the tests. After an overnight fast, the 3 tests were done sequentially. Using all 3 tests for classification as to ability to produce an hGH level of ≥ 6ng/ml, 11 of 25 were classified nonresponders. Using only L-dopa and arginine results, 12 were nonresponders; 1 child had an hGH level ≥ 6ng/ml only in response to insulin. Eliminating insulin from our testing would have led to misclassifying 1 normal responder as abnormal, an error rate of 4%. Of the 11 classified as nonresponders, 3 had normal growth velocity. The 3 tests together yield an incidence of false abnormal results of 12%. Eliminating the insulin test raises the number of false abnormal tests to 16%. Using growth velocity to assess the validity of these tests, the 3 tests together were 88% accurate, and L-dopa and arginine only were 84% accurate. Insulin induced hypoglycemia added little information in the population reviewed. We propose it be eliminated from routine testing in favor of sequential oral L-dopa and arginine infusion tests with prior DES preparation.