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REVERSIBILITY OF PHYSIOLOGICAL GROWTH HORMONE SECRETION IN CHILDREN WITH PSYCHO-SOCIAL DWARFISM. A. Albanese*, G. Hamill*, J. Jones*, D. Skuse*, D. Matthews** and R. Stanhope*. *Medical Unit, Institute of Child Health, London WC1, UK; **Diabetes Research Laboratories, Radcliffe Infirmary, Oxford, UK.

We have studied physiological growth hormone secretion in 11 (6M, 5F) short prepubertal children, age range 2.2 - 13.5 years, with psychosocial dwarfism. All patients were admitted to hospital, as a more favourable environment, as part of their medical assessment with limited parental access. 5 had been sexually abused which was only discovered during their hospital admission. An assessment of physiological growth hormone secretion was commenced within 1 hour of admission. A second assessment was made between 4 and 9 days with a third assessment at the end of the 3 week admission. All growth hormone serum profiles were obtained at 15 minute intervals for 18 hours duration between 1300 and 0700 hours. After stationarisation of the profile data, analysis was by Fourier transformation as a time series analysis to examine the frequency and amplitude of growth hormone pulses. Growth hormone insufficiency was observed during the first day of admission. This was reversible during the 3 weeks in hospital, although there was evidence that reversibility occurred in some children within 18 hours of admission to hospital. The dominant growth hormone secretory periodicity was between 120 and 165 minutes and showed no alteration during the 3 sampling occasions. However absolute spectrum power, which reflects the amplitude of the oscillatory signal, increased from 45 to 70 units. Despite changes in growth hormone pulse amplitude, profiles from an individual child showed characteristic "finger printing" with a reproducible pattern of pulses. Our findings demonstrate some important aspects about the investigation of children with psychosocial dwarfism as well as contributing to our knowledge of the pathophysiology of growth hormone secretory dynamics.

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MAGNETIC RESONANCE IMAGING (MRI) IN PATIENTS WITH MULTIPLE PITUITARY HORMONE DEFICIENCIES (MPHD)

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The aim of this study was to evaluate with magnetic resonance imaging (MRI) the hypothalamic and pituitary structures in patients with idiopathic isolated growth hormone deficiency (GHD) or multiple pituitary hormone deficiencies (MPHD).
MRI was performed in 16 patients with GHD (9 boys and 7 girls, aged 10.9 to 16.9 years) who developped a normal puberty and 15 patients with MPHD (13 boys and 2 girls, aged 11.3 to 25 years) including gonadotrophins deficiency.
In 11/15 MPHD patients an ectopic, but normally active, neurohypophys was detected, while in the remaining 4 cases the high intensity signal of the neurohypophysis was absent. In the 16 patients with GHD, the signal of the neurohypophysis was normal.
Moreover the pituitary height on MRI, ranging from 1 to 5 mm (2.80 ± SEM 0.34 mm) in MPHD was significantly lower (p< 0,0001) than in GHD patients (4.37 ± SEM 0.13 mm),
These results suggest that MRI is useful in the investigation of idiopathic hypopituitarism : the finding of an ectopic or absent neurohypophysis together with a reduced height pituitary gland seem specific of MPHD.

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GONADOTROPINS IN URINE AND THEIR CORRELATION TO SERUM VALUES EXAMINED BY SENSITIVE IMMUNOFLUOROMETRIC ASSAYS
In order to avoid invasive sampling in pediatric patients, we examined the concentrations of LH and FSH in paired serum and urine samples from 43 children (age 0-16 yr) who had no interfering disorders or medication. Highly sensitive time-resolved immunofluorometric assay (IFMA) kits were obtained from Pharmacia-Wallac, Turku, Finland (LH and FSH Delfia®). The intraassay variation was <8%. The detection limit of the assay was 0.015 IU/L for LH and 0.018 IU/L for FSH. These sensitivity levels cover the whole prepubertal range of LH and FSH levels. Urinary gonadotropin levels were aimed to be corrected by the urinary density [concentration x (0,02/density-1)] and urinary creatinine levels (concentration/creatinine). The correlation between serum and urine gonadotropin values was good (see table). Besides good correlation, also the absolute concentrations were close to each other, which is not the case for growth hormone. Correction for urinary excretion did not improve the correlation:

COMPARISON	uncorrected	density corrected	creatinine corrected
U-FSH:S-FSH	r=0.780; p< 0.001	r=0.555; p<0.001	r=0.431; p< 0.05
U-LH:S-LH	r=0.835; p< 0.001	r=0.683; p< 0.001	r=0.234; n.s.

r=correlation coefficient; n.s.: not significant
Therefore sufficiently sensitive measurement of urinary gonadotropins without correction can conveniently be used in the pediatric endocrinologic practice as a non-invasive method. Night urine measurements may be the most informative way to evaluate gonadotropin secretion.

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SPONTANEOUS GH SECRETION IN AN EIGHT YEARS OLD BOY WITH ACTH-PRODUCING PITUITARY TUMOR.
An 8y.old boy(bone age:6y.)developed early onset of pubic hair, testes vol.3ml,height at 25th c.,blood pressure normal.Weight was at 97th c.,but rapid increase was reported(4/88:21.5kg/118cm and 9/89:34.5kg/126cm).Endocrinol.findings:cortisol profile,2mg dexameth test,17OHP were normal.Testosterone(5.0nmol/l) and prolactin(650mU/l were slightly elevated.CT scan of pit.area and adrenals showed no abnormalities.Cyproteronacetate(100mg/d)was given until age 11y. Growth curve followed exactly 25th c.during next 2y.Between age 10y. and 11y.3m.(bone age:11y.)growth decelerated dramatically.Normal spontaneous cortisol were found repeatedly.At age 11y.(8/92)testing by 2mg dexameth.:ACTH:21.2→10.6pmol/l,cortisol:629→451nmol/l,but by 8mg dexameth.:ACTH:22.9→6.2 pmol/l,cortisol:941→72 nmol/l. Testosterone(3.5nmol/l)and prolactin(336mU/l)were normal.MRT showed 20x23x8mm pituit.tumor.Overnight GH secretion was measured before operation.Complete transsphenoidal tumor exstirpation was performed, immunol.investigation visualized ACTH storage.To elucidate the mechanism of impaired growth,overnight GH secretion will be retested 2months after operation.Conclusions:1)Coincidence of early puberty and clinical signs of hypercortisolism must carefully followed even in cases with normal cortisol and CT scan.2)Rapid bone maturation could mask detrimental effects of cortisol on growth.3)Measurement of spontaneous GH secretion may contribute to clarify mechanisms of impaired growth in Cushings disease.

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ARGININE VASOPRESSIN (AVP) RESPONSE TO INSULIN-INDUCED HYPOGLYCEMIA IN CHILDREN. S.Yokoya, M.Hachiya and K.Ito, Department of Pediatrics, Toranomon Hospital, Tokyo, 105, Japan

The AVP response to insulin-induced hypoglycemia was studied in children. They included 36 with non-endocrine short stature (NESS, aged 9.6±2.9y), 6 with isolated GH deficiency (IGHD, 13.2±1.2y), 10 with brain organic disorders affecting one or more anterior pituitary hormones (9 with tumors, 1 with empty sella; 2 accompanying DI ; 11.4±2.4y) and 4 with anorexia nervosa (AN, 15.0±3.0y). AVP in plasma was measured at 0, 30, and 60 min in ordinary ITT. Plasma AVP rose significantly in NESS and IGHD. While 2 patients with DI had non-detectable AVP levels, 8 with brain organic diseases lacking clinical DI and 4 with AN had both low basal levels and blunted responses. The increment of AVP was not correlated either with ΔNa, ΔsOsm, ΔBS, bone age, pubertal stage or degree of obesity. These findings suggest that (1)AVP response is clearly present also in children although the secretion mechanism has not been fully understood, and (2) it can be a sensitive tool in evaluating hypothalamic control of AVP especially in patients who do not present DI.

	n	plasma AVP (pg/ml, mean+SD) 0 min	30min	60min	AVP rise (30min-0min)	
NESS	36	2.32±1.49	5.88±3.70	3.41±2.64	3.52±2.81	p<0.001
IGHD	6	2.51±1.16	6.78±4.20	2.94±1.44	4.28±3.40	p<0.05
Organic,DI-	8	0.91±0.48	1.50±1.51	1.33±1.54	0.59±1.26	NS
Organic,DI+	2	<0.15	<0.15	<0.15	(0)	
AN	4	0.79±0.84	0.74±0.55	0.89±0.62	-.05±0.33	NS

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GROWTH HORMONE DEFICIENCY (GHD) AND GROWTH HORMONE RESISTANCE (GHR) IN INDIAN CHILDREN. M.P.Desai, P. Colaco, C. Choksi, M.Ambadkar, F.E. Vaz, R.Mehta, C. Gupte. B.J.Wadia Hospital for Children and Sir H.N.M. Research Society, Bombay, India.

Pituitary dwarfism was confirmed by clinical, auxologic and two GH provocative tests in 135 children (M=86, F=49, M:F=1.8:1). Pituitary Imaging (MRI) was obtained in 36. These children could be classified into Group I - Idiopathic, 103 cases (76.4%), with 76 (74%) nonfamilial (NFGHD) and 27 (26%) familial (FGHD) from 17 families; Group II - Miscellaneous organic causes, 18 (13.3%); Group III - GHR syndrome - Laron Type, in 14 (10.3%), M:F=8:6, from 5 families, with a mean basal GH 16.26±13.56 ng/ml and mean peak of 52.35±22.84 ng/ml (normal 20.1 ± 1.36 ng%). The mean peak GH in Group I was 1.52 ± 1.36 ng/ml. In FGHD, inheritance was autosomal recessive except in one with dominant transmission, with no difference in consanguinity (21%) in FGHD and NFGHD. The pituitary vertical coronal height on MRI in 10 FGHD (3.01 ± 0.55 mm.) and 20 NFGHD (2.76 ± 0.84) did not differ ($p > 0.05$) but none of the FGHD had stalk section or ectopic neurohypophysis while as both were seen in 8 and 6 cases respectively in NFGHD and H/o abnormal delivery obtained in 6 of these 20. The mean pituitary height in GHR, 4.6 ± 1.6 mm. was significantly larger ($P < 0.001$) with normal morphology. Low IGF-I and GH-BP % RSB (courtesy Prof. Laron) varying from 0 to 100% in 6, suggest defect ranging from receptor to postreceptor levels. This study shows the high incidence of familial GHD and GHR in this country with significant differences in MRI.