408 DECREASED PROLACTIN SECRETION IN CHILDHOOD OBESITY(CO). Theodore W.AvRuskin, Shashi Pillai, Christina Juan and David L.Kleinberg Downstate Med.Ctr,SUNY,Brookdale Hosp.Med.Ctr.,Dept.of Ped.,Brooklyn and New York Univ.Sch.Med.,Dept of Med., NY,NY.

Reports in adults suggest impaired hypothalamic control of prolactin(PRL)secretion in massive obesity. We investigated 12 obese(O)pts(8females,4males;12±1.3 yrs,M±SE, all 100% above IBW and 7 control(C)subjects (4females,3males;13±1.1yrs; all had weight ages ≤ height ages)with IV Insulin(IVIT)and IV TRH(IVTT)tests Serial PRL,growth hormone(IRGH),insulin(IRI),blood sugar(BS),cortisol(F),glucagon(IRG),TSH,T_4 T_3,by RIA were obtained. O showed no differences from C in the basal and BS nadir, basal and peak IRG, F,and thyroid responses to both tests. Basal IRI levels were higher, 36±9.4 vs 10±2.3uU/ml, $p<0.05$;peak IRGH responses after IVIT were lower than in C, 6.1±1.1 vs 12.7±3.7ng/ml, $p<0.05$. Whereas all C subjects had PRL responses to both tests,4/12 O pts had no response to IVIT.O had lower PRL at 30mins after IVIT,5.4±0.7 vs 12.9±3.7ng/ml, $p<0.05$,and lower PRL at 60min.after IVTT,9.9±1.7 vs 20.4±5.9ng/ml, $p<0.05$. Max PRL after IVTT was lower in O pts,9.9±2.0 vs 28.8±10.9, $p<0.05$.MaxPRLafterIVIT was lower in O pts,6.2±4.1 vs 28.9±18.3. No sex difference in PRL was noted with either test in both groups. Thus, blunted PRL secretion in CO suggests impaired hypothalamic function.

411 EFFECT OF EXERCISE ON URINARY N-ACETYL-BETA-D-GLUCOSAMINIDASE AND ALBUMIN EXCRETION IN DIABETIC CHILDREN. Ben H. Brouhard, Karen Allen,* David Sapire,* Lavenia LaGrone.* The University of Texas Medical Branch, Department of Pediatrics, Galveston, Texas.

Urinary N-acetyl-beta-D-glucosaminidase(U_{NAG}), a proximal tubular lysosomal enzyme, has been positively correlated with albumin excretion(U_{alb}). Since increased U_{alb} after exercise has been suggested to be an early indicator of nephropathy, U_{NAG} and U_{alb} were measured before and 10 mins after treadmill exercise in 19 insulin dependent diabetic children and 21 age-matched controls. Patients exercised until exhaustion; HR, BP and EKG tracings were monitored at 3-min intervals. U_{NAG} was measured using a spectrophometric assay with p-nitrophenol as the measured end-product. U_{alb} was measured by nephelometry; both were expressed per mgm/dl creatinine. HR and BP did not differ between the two groups before or after exercise.

	$U_{NAG}:U_{cr}$(U)		$U_{alb}:U_{cr}$(mgm/mgm)	
	Pre	Post	Pre	Post
Controls (X±SEM)	3.8±0.8	3.8±1.0	.022±.004	.042±.011
Diabetics	7.3±0.7	*9.5±1.5	.038±.019	.032±.010

We conclude $U_{NAG}:U_{cr}$ may be more sensitive than $U_{alb}:U_{cr}$ in detecting early nephropathy but this effect is not accentuated by exercise in children.

*$p<0.01$ (C vs D)

† 409 USE OF AN LHRH AGONIST ($LHRH_a$) IN THE TREATMENT OF MALES WITH CENTRAL PRECOCIOUS PUBERTY (CPP). D. Beardsworth, M. Wierman, J. Mansfield, J. Crawford, J. Crigler, H. Bode, D. Kushner and W. Crowley, Dept Gyn, Med and Ped, Vincent Labs, Mass. General Hosp, Children's Hosp, Boston, MA

$LHRH_a$ suppresses gonadarche in girls with CPP, but little information is available regarding the response of males to this therapy. Four boys with CPP received $LHRH_a$ for 12 consecutive months. Prior to therapy, the patients had Tanner stage II-IV pubertal development, a mean testicular volume of 16±3 (SE) ml, a chronologic age of 7.7±0.6 years and a bone age of 12.9±0.4 years. Following therapy, 3/4 boys demonstrated regression of secondary sex characteristics and all had a marked decrease in testicular size to 7±1 ml. Bone age advanced 4.5±0.5 months during 12 months of exposure to $LHRH_a$. The pretreatment pubertal growth velocity of 13.5±2.7 cm/yr fell significantly to 5.5±.13 cm/yr over the year of therapy. Predicted height was increased to 3.84±2.24 cm. Endocrinologic parameters are summarized below:

	T^1	LH^2	ΔLH^3	FSH^2	ΔFSH^3
Pre-Rx	503±103	1.61±.07	5.04±.49	3.32±14	2.00±.58
Post 1 year	19±4	1.06±.02	0.05±.07	1.29±.06	0.22±.12
Significance	$p<.001$	$p<.01$	$p<.001$	$p<.05$	$p<.01$

1=plasma testosterone (ng%) in a PM pool; 2=mean of 8h pulsation study (mIU/ml LER 907); 3=ΔFSH or ΔLH after LHRH (2.5 mcg/kg sc).

In boys with CPP, $LHRH_a$ is capable of: 1) reversing the clinical features of precocity, 2) abolishing the pulsatile release of gonadotropins with subsequent suppression of testosterone production, and 3) retarding skeletal maturation, slowing growth velocity, and improving predicted adult stature.

† 412 LH RIA DOSE-RESPONSE CHARACTERISTICS CHANGE DURING PUBERTY. Stephen Burstein, Eva Schaff-Blass and Robert L. Rosenfield, Univ. of Chicago, Wyler Child. Hosp., Depts. of Peds. and Med., Chicago, IL

We have shown that the ratio of bioactive to immunoreactive LH increases during puberty. To test whether this change is in the immuno- or biopotency of LH, we tested dose-response characteristics in both assays. Results: 1) In the bioassay (RICT), the dose-response characteristics of basal and GnRH-stimulated plasma samples from pubertal (PUB) and adult subjects and the LER-907 and I-1 standards were parallel; prePUB basal and GnRH-stimulated samples were less steep (-0.75 v. -1.00, $p<0.05$). Turner syndrome samples had slopes 8% greater. 2) Using an RIA with a bioactive ^{125}I-hLH and NIADDK antiserum we found that the dose-response relationship of plasma I-LH changes through puberty. The logit-log transformed dose-response curve for LER-907 was less steep than I-1 (-0.73 v. -1.05, $p<0.05$); potency estimates at the extremes of the standard curves differed by a factor of 1.7. There was no difference in slopes before and after GnRH infusion, but 7/14 prePUB samples, 3/14 PUB and 0/15 adult were parallel to LER-907, while 1/14 prePUB, 6/14 PUB and 12/15 adult were parallel to I-1. Turner syndrome samples had slopes similar to prePUB samples (-0.74 v. -0.79, NS).

Changing LH RIA dose-response characteristics is the principal factor in the changing ratio of bioactivity to immunoreactivity during puberty. This may reflect the structural heterogeneity of LH.

410 ULTRASEPTAN URINARY GONADOTROPIN RHYTHMS IN PERIPUBERTAL BOYS. Barry B. Bercu, James W. Hansen, Daniel W. Denman III, Howard J. Hoffman and Bessie E. Spiliotis. Pregnancy Research and Biometry Branches, NICHD, NIH, Bethesda, MD 20205.

Previously we have used time series analysis techniques to determine the ultradian pulsatile secretory rhythms of plasma gonadotropin (and testosterone) secretion in male monkeys during sexual development (JCEM 56:1214 & 1227, 1983) as well as monthly urinary gonadotropin rhythms in premenarchal girls (Science 190: 161, 1975). Here we utilized this methodology to determine whether prepubertal and pubertal boys have gonadotropin cycles greater than one day duration. Ten healthy boys (4 prepubertal and 6 pubertal), ages 10 4/12 to 15 2/12, volunteered to collect timed nocturnal and first morning urine specimens for at least 2 months (consecutive series of daily urine collections varied from 62 to 78 days). The urinary gonadotropins were precipitated with acetone after pH adjustment with acetic acid. Precipitates, containing both LH and FSH, were dissolved in buffer and measured by specific radioimmunoassay. Mean LH secretion was 1.16 ± 0.32 IU/h (range 0.47-2.01) for Tanner Stage I boys and 2.46 ± 0.20 (range 1.76-3.22) for Tanner Stage II-V males ($P < 0.005$, prepubertal vs. pubertal). Mean FSH concentration was 0.36 ± 0.09 (range 0.11-0.54) in Stage I boys and 0.76 ± 0.26 (range 0.13-1.84) in stage II-V males (P=NS). Time series analysis suggested the presence of a gonadotropin urinary frequency cycle of approximately 2-3 days both in prepubertal and pubertal males. Further studies are necessary to determine the significance of these rhythms.

●413 THE IMPACT OF AMBIENT STEROID CONCENTRATIONS UPON THE RELATIVE ACTIVITIES OF ADRENAL MICROSOMAL 3β-HYDROXYSTEROID DEHYDROGENASE AND 17,20-DESMOLASE. G. C. Byrne*, Y. S. Perry* and J.S.D. Winter, Department of Pediatrics, University of Manitoba, Winnipeg, Manitoba.

We found that intra-adrenal concentrations of most steroids are 2-10 times higher in adults than in infants, and reach levels (10^{-7}-10^{-5} M) which might influence steroidogenic efficiency. Since 3β-HSD and 17,20-desmolase act on 17OH-pregnenolone to determine relative DHA and cortisol production during human development, we studied their kinetics in adrenal microsomes from 6 kidney donors (12-40 yr) and the effect of varying steroid concentrations on their activities. There was no age-related change in K_m for 3β-HSD (0.1-0.5 μM) or desmolase (0.2-1.7 μM). At all ages V_{max} for 3β-HSD (3-8 nmol/mg/min) exceeded that for desmolase (0.3-1.4 nmol/mg/min). Physiological intra-adrenal concentrations (10^{-6} M) of progesterone, 17OH-prog., 11-desoxycortisol, corticosterone, androstenedione and testosterone caused >20% inhibition of 3β-HSD, with no effect on desmolase. Estradiol and estrone caused >95% inhibition of 3β-HSD with only minimal impact on desmolase. Kinetic analysis showed competitive and non-competitive inhibition with K_i values of 10^{-7}-10^{-5} M. These data demonstrate that ambient steroids can render 3β-HSD rate-limiting and permit desmolase to compete for 17OH-pregnenolone substrate. This phenomenon provides a rational explanation both for the relative 3β-HSD deficiency of the human fetus and the increased C-19 steroid production during adrenarche.