427 SHORT STATURE ASSOCIATED WITH TBG EXCESS: IMPROVEMENT WITH T_3 TREATMENT. Nick Alain and William B. Zipf. The Ohio State University, Children's Hospital, Department of Pediatrics, Columbus, Ohio 43205.

Euthyroid hyperthyroxinemia has been described in association with TBG excess. We report a 6 1/2 yr old male with high TBG levels (17 mg/dl) and high T_4 of 24.5 µg/dl, who also has short stature (-3 SD), delayed bone age (BA) of 2 1/2 yr and hyper TSH response to TRH testing (max value 52.2 µIU/ml). Other data: vital signs normal, wt at 5 percentile, T_3=405 µg/dl, FT_4= 4.6 ng/dl, FT_3=768 pg/dl. Thyroid uptake was 23.7%, T_3 RU 21.8% (nl 37.5-47.5%), basal TSH=5.1 µIU/ml. Left Ventricular Ejection Time (LVET) was 0.24 sec (nl). WISC-R I.Q. was nl, sleeping pulse rate was nl. T_3 supplement was started and gradually increased to 30 µg/day. The patient was followed at weekly intervals. No clinical signs of hyperthyroidism occurred.

Serum T_4 decreased from 19 to 6.1 µg/dl, T_3 increased to 640 ng/dl, TRH-TSH test was suppressed (max level 1.8). LVET remained normal at 0.24 sec. Growth velocity (GV) increased from 5 cm/yr to annualized GV of 9 cm/yr after 3 mo of treatment. Both parents of this child had nl thyroid tests. A 4 1/2 yr male sibling is affected also. His TBG=20.6 mg/dl, basal TSH=4 µIU/ml, T_4=31 µg/dl, ht is on the 10 percentile (was in the 50 percentile in the 1st 2 years of life), BA =3 yr.

In summary: 1)these children have TBG excess consistent with X-linked recessive inheritance 2)the abnormal TRH stimulation test, delayed BA, and short stature, improved growth after T_3 supplementation suggest inadequate compensatory mechanisms despite the hyperthyroxinemia 3)there can be variability in expression of mild thyroid insufficiency in conditions of excess TBG.

428 THE ONTOGENY OF THE RESPONSE TO GROWTH HORMONE. Susan A. Berry and Steven Seelig (Sponsored by William Krivit.) University of Minnesota Hospitals, Department of Pediatrics, Minneapolis.

We defined the ontogeny of five hepatic mRNA sequences which are responsive to growth hormone (GH) in juvenile (35 d) hypophysectomized rats by *in vitro* translation of mRNA sequences and two-dimensional gel electrophoresis of the ^{35}[S]-methionine labeled products. Each of the five had a well defined ontogeny which did not parallel the ontogeny of hepatic GH receptors or serum GH. Major periods for transition of this family of mRNA sequences were weaning and puberty. The pattern of ontogeny for two of the products was similar to that observed for GH responsive serum proteins. Induction of relative GH deficiency in rat pups by administration of propylthiouracil resulted in alterations in the mRNA sequences suggestive of GH deficiency; however, in twelve day old animals GH was much less effective in reversing these alterations than in older animals. Augmentation of normal pups with pituitary dependent hormones (thyroxine,corticosterone,and GH) resulted in changes consistent with an overall increase in maturation of the liver. This effect was also observed in non-hormonally responsive products, suggesting the change is not specific to the GH responsive mRNA family. From these observations we conclude that:1). factors other than GH or GH receptor content are of importance in the expression of GH responsive products in the 12 day old animal;2) the ontogeny of GH responsive serum proteins may reflect pretranslational events; 3) GH and the other pituitary dependent hormones modify the cadence of expression of hepatic gene products;4) and that the ability of the liver to respond to GH is an age dependent phenomenon.

429 SPONTANEOUS RESOLUTION UNDER ULTRASONIC OBSERVATION OF OVARIAN CYSTS CAUSING PRECOCIOUS PSEUDOPUBERTY IN YOUNG GIRLS. Patrick G. Brosnan (sponsored by Walter Meyer). University of Texas Medical Branch, Galveston, and Driscoll Foundation Children's Hospital, Corpus Christi.

We report four episodes of unsustained precocious sexual development accompanied by palpable adnexal masses in three preschool aged girls. In each case serial pelvic ultrasound examinations revealed large ovarian cysts which spontaneously disappeared, with rapid regression of precocity, and fall in E2. At presentation, each girl had breast enlargement, labial hypertrophy with leukorrhea, hyperestrogenized vaginal cytology, and markedly elevated estradiol. Two patients had vaginal bleeding. None developed pubic hair.

Pt.	Age	Cyst cms	E2(cyst) ng/dl	E2(Postcyst) ng/dl	LH mIU/ml	FSH mIU/ml	LH(LHRH) mIU/ml	SxCourse
1	2yrs	4	34	< .1	< 1	2.2		6 months
2	3yrs	5	33	2.9	< 1	< 1	--	2 months
2	4yrs	2	7.9	0.5	1.3	< 1	4.2	2 months
3	4yrs	1.5	13.5	0.1	7	5	--	4 months

Patients 2 and 3 had negative cranial CT scans. Patient 2 had laparotomy which confirmed that ovaries had returned to normal. Patient 3 has been followed for 3.5 years without recurrance.

Our data do not comment on whether these follicular cysts are truly autonomous since at least one patient had elevated gonadotrophins, but they do suggest that laparotomy and biopsy are not indicated in this situation when good ultrasonic surveillance is available.

430 IMMUNOLOGIC PROFILE OF GROWTH HORMONE DEFICIENT PATIENTS BEFORE AND AFTER GROWTH HORMONE REPLACEMENT. Sandra Burchett, Dan Marmer, Russell Steele, Richard Jacobs, Joycelyn Elders, Stephen Kemp. Dept. of Ped., Univ. of Arkansas for Med. Sci. Little Rock, AR.

Data has been published showing that in vitro exogenously supplied human growth hormone (HGH) can induce a neoplastic lymphocytic cell line and there is an increase in T suppressor and B lymphocytes. We prospectively analyzed HGH effects on children (2-15 years) with HGH deficiency. Bone age and height were >2 standard deviations below normal in this group. The immunologic profiles of 15 HGH deficient (HGHD) children were analyzed prior to, one week, and one month after beginning HGH treatments. Results were compared to age matched controls (AMC) and to constitutional short stature (CSS) children (HGH > 10 ng/ml. All data are expressed as means.

	n	x age age yrs.	Total lymphs	%B	%T	T /T H S	Blastogenic Index PHA	Con A
HGHD pre	15	10.5	2780	12	68	2.04	73	64
1 wk	9	8.2	2599	11	69	2.23	63	63
1 mo	9	8.5	2333	11	70	2.17	60	47
AMC	5	10.7	2661	13	70	1.86	68	52
CSS	5	10.8	4000	8	65	2.03	74	68

No statistically significant difference is seen between the immunologic profiles of HGHD children prior to and after treatment with HGH or from those of AMC or CSS groups. These data indicate no immune aberrations or neoplastic potentiation in vivo of HGH treatment.

† **431** ELEVATED TESTOSTERONE (T) LEVELS IN A NEWBORN WITH 3-BETA-HYDROXYSTEROID DEHYDROGENASE (3 β-HSD) DEFICIENCY. Jose' F. Cara, Thomas Moshang Jr., Alfred M. Bongiovanni, Barry S. Marx. University of Pennsylvania School of Medicine, The Children's Hospital of Philadelphia, Phila., PA.

The lack of virilization in newborn males with 3β -HSD deficiency has been attributed to their inability to synthesize Δ4 steroids, particularly T. However, no steroidal studies using radioimmunoassay technology have been performed in the newborn with this disorder. A newborn male with pseudovaginal perineoscrotal hypospadias was found to have a serum 17 hydroxyprogesterone (17 OH P) level of 11,000 ng/dl and a T concentration of 1,095 ng/dl. The serum 17-hydroxypregnenolone concentration was 21,200 ng/dl and urine steroid determinations revealed a predominance of 16-alpha- Δ5-hydroxysteroids, with a Δ5 to Δ4 steroid ratio of greater than 1, confirming the presence of 3 β-HSD deficiency. Tetrahydro-E, the major urinary cortisol metabolite, was virtually absent. Although the initial serum T concentration was markedly elevated, HCG stimulation revealed a blunted T response with a stimulated Δ5-androstenediol to T ratio of 5 to 1. The markedly elevated Δ4 steroids, including T, probably resulted from in utero conversion of Δ5 steroids by hepatic 3β -HSD activity. Although hepatic T production resulted in elevated serum T concentrations, the lack of urethral fold fusion in this infant can be explained by the relatively late onset of hepatic enzyme activity when urethral fold fusion can no longer be induced. These findings suggest that Δ4 steroids, particularly T and 17 OH P, are elevated in infants with 3 β-HSD deficiency. Although 17 OH P determinations may serve as a screening test for congenital adrenal hyperplasia, further evaluation is needed to confirm the specific enzyme defect.

432 LOW PLASMA DHEA AND DHEA SULFATE IN PROGERIA. DIMINISHED RESPONSE TO CORTROSYN. S. Castells, W.T. Brown, and M.A. Fusi, SUNY, Downstate Med. Ctr., Dept. of Pediatrics, Brooklyn, N.Y. and I.B.R., S.I., N.Y.

Progeria (Hutchinson-Gilford syndrome) manifests with apparent accelerated aging during youth. We studied a 21 mo. old female with marked growth retardation (Ht. 76cm, <2SD, Wt. 6.5 Kg <2SD), alopecia, small face, micrognathia, pinched nose and sclerodermic like changes of the skin. Osteoporotic changes were measured by the radiographic photodensitometry of Colbert et al, and compared to age and sex norms (25.7 vs 30-40 nl range). Pituitary and thyroid hormones were within normal limits (hGH 1.8 ng/ml; FSH 3.8 and LH 2.6 mIU/ml; Prolactin 8.0 ng/dl; TSH 1µU/ml; T_4 9.1 and T_3 180 ng/dl). Insulin2.0µU/ml, Estrogens 1.7ng/dl. DHEA and DHEA sulfate have been reported to markedly decrease with normal aging. To study them in progeria we stimulated the patient's adrenals with 0.125 mg of cortrosyn I.M.(Organon Labs.) and 3 normal controls (Ages 5-9 yr.). Twenty-four hour urinary 17KS before were 0.4 and after 0.5 mg/24 hr. (controls 0.9 and 3.3); DHEA 0: 35 vs 190±72; 1 hr. 70 vs 256±70; 2 hr 35 vs 279±41 and 12 hr. 35 vs 226±186 ng/dl. DHEA-S 0: undetectable = 0 vs 28±14; 1 hr 0 vs 29±21; 2 hr 0 vs 32±14; 12 hr 0 vs 26±20 mcg/dl. We concluded that there is a marked decrease in basal and post ACTH stimulation of DHEA and DHEA sulfate in our progeria patient. A deficienty of adrenal androgens might explain the growth retardation and osteoporosis seen in progeria. DHEA has been reported to have antiaging effects It's deficiency in progeria might not only be important as a biochemical marked for the disease but might also contribute to the premature aging.