313 EFFECTS OF MAZINDOL ON GROWTH AND GROWTH HORMONE. Collipp, P.J., Gupta, K.B., Amin, S., Maddaiah, V.T. Chen, S. Y. Nassau County Medical Center, Dept. of Ped., East Meadow, New York 11554.

17 children between 5 and 15 years of age received mazindol for one year (2 mg daily). Their height was carefully evaluated by 2 physicians at 6 month intervals, and they were observed for the following year without any therapy. In each case, the growth rate slowed during mazindol administration (0.6 in/yr) compared to the previous year (1.5 in/yr). Assays of growth hormone during mazindol administration demonstrated reduced responses to insulin hypoglycemia and arginine (2 patients) and exercise (3 patients).

Human Growth Hormone Assays Before (1) and After (2) Mazindol

	TIME	GLUCOSE		HGH	
		1	2	1	2
	0	94	100	6.0	0
#1	20	58	40	7.5	12.0
	40	77	68	16.5	6.0
	70	111	94	17.5	6.0
	0	104	91	18.0	8.0
#2	20	84	52	8.0	4.0
	40	62	54	15.0	8.0
	70	113	91	8.0	8.0

It seems likely that mazindol reduces growth by increasing norepinephrine in the ventromedial nucleus of the hypothalamus,and it is interesting that increasing dopamine in that nucleus stimulates growth hormone release.

314 TESTICULAR NODULES IN CONGENITAL ADRENAL HYPERPLASIA (CAH). Gertrude Costin, Thomas F. Roe, Maurice D. Kogut. USC Sch. of Med., Childrens Hospital of Los Angeles, Dept. of Pediat., Los Angeles, Calif.

Three postpubertal males 17-19 yrs old, 2 with 21-OH and one with 11-OH deficiency (def) had testicular nodules. In the patients with 21-OH def, 17 KS were 51 and 21, pregnantriol (p-triol) 41 and 16 mg/24 hr and plasma progesterone (P) 1400 and 1363 ng/dl indicating non-compliance; plasma testosterone (T) were 973 and 1245 ng/dl and LH and FSH < 3.6 and 1.5 mIU/ml. One patient examined had azoospermia. After 5 days of dexamethasone (Dex) urinary 17 KS and p-triol were suppressed, plasma P fell to 58 and 60 and T fell to 468 and 358 ng/dl. Plasma LH and FSH rose to adult levels. The sperm count rose to 20 mil. In the patient with 11-OH def urinary 17 KS and comp "S" were 9.0 and 2.8 mg/24 hr and plasma LH, FSH and T were 8.3, 5.4 and 749 respectively. After Dex urinary 17 KS, comp "S" and plasma LH, FSH, and T were 7.8, < 1.0 and 11, 5 and 520. The sperm count was 56 mil before and 25 mil after Dex. Nodules size did not change after Dex. Biopsies of the nodules revealed interstitial cell hyperplasia, and that of the adjacent testis maturation arrest with decreased number of spermatozoa in the 21-OH def patients and mild germ cell def in the 11-OH def patient.

The data suggest that in CAH: 1) Continuous stimulation by ACTH can produce adenomatous hyperplasia of Leydig cells 2) LH-FSH suppression results from elevated adrenal T and 3) germ cell hypoplasia and decreased spermatogenesis could result from diminished LH-FSH and subnormal intratesticular T level.

315 LOW THYROID ACTIVITY IN PREMATURES WITH RDS. Raul A. Cuestas and Rolf R. Engel. Dept. of Pediatrics, University of Minnesota, Minneapolis.

Thyroid function was compared in prematures with RDS (PRDS) and healthy prematures (controls) with EGA from 30 to 37 weeks, to determine how long the reported differences in cord blood persist. Compared to controls, PRDS had lower serum T4, T3 and free T4 index (FT4I) during the first 20 days. Sick prematures without RDS had intermediate values.

	Age:	< 72 hr	72 hr-20 days	21-90 days
T3	RDS	34±5***(8)	70±7**(21)	146±13 (36)
ng%	Control	103±12 (5)	148±27 (6)	175±10 (13)
T4	RDS	6.3±0.5***(22)	5.8±0.3***(47)	7.7±0.5*(41)
µg%	Control	12.7±0.8 (21)	10.2±0.4 (40)	9.0±0.3 (29)
FT4I	RDS	8.5±0.7***(12)	6.6±0.6***(17)	9.1±1.0 (10)
	Control	15.3±0.9 (16)	10.7±0.4 (20)	9.7±0.5 (15)

Mean ±SEM, (n)=number of infants, *p<.05, **p<.01, ***p<.001

TSH at 1 to 3 hrs was lower in 6 PRDS (22.1 ±4.1 µU/ml)** than in 9 controls (53.6 ±6.4 µU/ml). TSH and FT4I were lowest in PRDS with birth asphyxia, suggesting that early stress depresses these hormones. Injection of TRH increased TSH in 4 PRDS, ruling out pituitary unresponsiveness. It is important to determine whether early depression of thyroid function has adverse consequences, since 4 prematures with low T4 and T3 had symptomatic improvement (less apnea, better intestinal motility and weight gain) in association with temporary T4 or T3 administration.

316 IMPAIRED SURFACTANT PRODUCTION IN CRETIN LAMBS. M.D. Cunningham, D.R. Hollingsworth, and R.P. Belin. (Spon. by C.C. Mabry) U. Kentucky, Dept. of Ped., Lexington.

Mid-gestation fetal thyroidectomy was performed to study the effect of congenital hypothyroidism on the availability and composition of pulmonary phospholipids (PPL) in 8 fetal lambs and 8 sham operated lambs. Amniotic fluid (AF) was collected for baseline thyroxine, thyrotropin, and 3,3'5' tri-iodothyronine. Mean preterm AF lecithin to sphingomyelin (L/S) ratios were 1.15; non-acidic and acidic PPL were 43% and 57% of total. Delivery at term by hysterotomy yielded 2 cretin and 8 normal lambs. Newborn serum studies confirmed hypothyroidism. At term mean normal AF L/S ratios were 1.89 with AF cortisol levels of 1.60 µg/dl. Term cretin AF L/S ratios were 1.56 with AF cortisol levels of 1.3 µg/dl. Lambs breathed for 10 to 30 min., then pharyngeal, tracheal, and gastric contents were aspirated for L/S ratios and PPL assays. Mean normal lamb L/S ratios were 6.66 vs 1.52 for cretins (p<.03). Non-acidic to acidic PPL separation reversed in normal lambs to 63% and 37%; cretins increased the acidic to 69%. Percent postnatal phosphatides in total aspirate PPL were:

	Sph	Lec	PDME	PE	PI	PS	PG	CL
Normals	7.8	31.8	12.2	11.0	6.2	17.6	8.0	5.8
Cretins	3.5	6.5	7.0	13.0	11.5	46.0	13.0	0
P	NS	<.01	NS	NS	<.10	<.01	<.05	<.05

Cretin lambs died at 2 hr. of age of profound respiratory failure.

We conclude that congenital hypothyroidism results in the formation of surfactant with an abnormal phosphatide composition and the release of predominantly acidic PPL with poor surface activity.

317 NEONATAL ISLET CELL ADENOMA. Larry C. Deeb, and Robert A. Ulstrom. University of Minnesota, Department of Pediatrics, Minneapolis. In each of 8 cases of neonatal islet cell adenoma, pregnancy labor, delivery and birth weight were normal. Seizures began at 5 hours in 1 case, 24-48 hours in 4 cases and 6 and 7 weeks in 2 cases; in late onset cases, fasting symptoms were overlooked for weeks. Fasting insulin/glucose ratios utilizing the formula Insulin µU/ml x 100 ÷ glucose mg% - 20 were >200 in all cases (normal ≤50). Glucose infusion (20+ mg/kg/min) relieved persistent hypoglycemia (in one case briefly) but glucose plus steroids and diazoxide (given to toxicity as manifested by edema and vomiting) were ultimately ineffective. In addition, susphrine or ephedrine was tried in 3 cases, glucagon in 2 and growth hormone in 1 unsuccessfully. 75% pancreatectomy was done in 6 cases, but 3 required 95% removal to relieve hyperinsulinism. All had single adenomas. Five of 8 were in the head of the pancreas. Only 2 were identified during 10 surgical procedures. Hyperglycemia requiring insulin therapy rapidly appeared after removal of the tumor. Two required insulin for >48 hours; 1 continues to have glycosuria with illness. 75% pancreatectomy resulted in no exocrine or endocrine dysfunction, whereas 95% pancreatectomy caused minor exocrine deficiency in all, and minimal endocrine deficiency in 1 of 4. Only 1 patient (now age 1 year) is free of nonhypoglycemic seizures. Up to 3 years have elapsed before onset of these seizures. Two of 7 are normal in development. If medical therapy fails, prompt 90% pancreatectomy in the absence of an identifiable tumor is recommended because the tumor is difficult to localize at surgery or is in the head of the pancreas.

318 HYPERCALCITONEMIA AND NEONATAL HYPOCALCEMIA. Hans C. Dirksen and Constantine S. Anast, Harry S. Truman Memorial Veterans Hospital and Dept. of Child Health, University of Missouri, Columbia.

Serum immunoreactive calcitonin (iCT) was measured in 160 full-term and premature normocalcemic and hypocalcemic infants during the first 96 hours of life. The mean ± S.E. of serum iCT in cord blood of normal full-term infants was 150 ± 26 (normal in older subjects <150 pg/ml). After birth the mean serum iCT increased sharply and reached a peak of over 600 pg/ml between 13 and 24 hours of age during the period of decline of serum Ca from relatively high cord values. After 36 hours of age there was a progressive decrease in mean serum iCT to 178 pg/ml at 73-96 hours of age. Though somewhat higher in premature infants, the serum iCT was, in general, inversely related to serum Ca in infants of all gestational ages. The mean serum iCT during the first 96 hours of life (excluding cord blood) in hypocalcemic infants of all gestational ages was approximately twice the mean value of normocalcemic infants (1055 pg/ml vs. 510 pg/ml, p<.01). The incidence of serum iCT greater than 800 pg/ml was 19% in serum samples from normocalcemic infants, as compared to 74% in hypocalcemic infants. On the other hand, serum iCT less than 300 pg/ml were found in 43% of samples from normocalcemic infants, as compared to less than 6% in hypocalcemic infants. The elevated iCT found in the newborn is consistent with the report of increased C-cells and calcitonin concentration in the human neonatal thyroid. The accumulated evidence indicates that hypercalcitonemia warrants serious consideration as a factor in the pathogenesis of neonatal hypocalcemia.