ENDOCRINOLOGY

271 REDUCTION IN PERINATAL SURVIVAL OF PROGENY OF CAFFEINE TREATED MALE RATS. Lester F. Soyka, Justin M. Joffe, John M. Peterson, Sue M. Smith, Dept. of Pharmacol., Univ. of Vermont, Coll. of Med., Burlington, VT 05401

Twenty male Sprague-Dawley rats were injected s.c. with caffeine in sterile water, 25 mg/kg at 0900 and 1600 hrs for four days. Each was then caged with a proestrus female from 1600 - 0900 hrs following which seventeen had sperm present in vaginal smears. Only 12 delivered, 127 live and 4 dead pups, at 21 days. Live born litter size ranged from 2 - 15, mean 10.6 ± 1.4 (S.E.M.). Sex ratio favored males 1.18. Birth weights were: males 6.20 ± 0.09; females 6.23 ± 0.08 g and weaning weights 47.0 ± 1.2 and 45.8 ± 1.0 respectively. Weights of females were equivalent to controls whereas those of males were decreased. In six large studies birth weights of males have always been significantly greater than that of females. Weaning weights were comparable to controls. Deaths before weaning averaged 37%. Death rates in 2,611 offspring of controls in our laboratory ranged from 2 - 10%, averaging 8%. Three litters had no deaths and an equal number had no survivors. Death rates for males and females were equivalent. Most deaths occurred between 6 - 12 postnatal days. No obvious anomalies were noted to account for the high death rate. These data are analogous to our previous findings with progeny of male rats administered methadone prior to mating and suggest that paternal drug exposure may be a crucial determinant of fetal outcome. Supported by NIDA 01160.

272 THE DISSOCIATION BETWEEN THE DNA MODIFYING AND BILIRUBIN DEGRADING ACTIVITY OF PHOTOTHERAPY. William T. Speck, Howard S. Carr, and Herbert S. Rosenkranz. Rainbow Babies and Children's Hospital, Case Western Reserve University and New York Medical College.

Previous studies in our laboratory, demonstrating the intracellular DNA modifying potential of phototherapy, have generated some concern since many chemical carcinogens, mutagens and/or teratogens derive their activity from a similar ability to modify intracellular DNA. More recent studies have suggested that the wavelength(s) with maximum genetic activity is around 450 nm. Since the absorption maximum for bilirubin, and presumably the wavelength for maximum photodecomposition is near 435 nm, it is conceivable that these two photochemical activities can be dissociated. The present study deals with the use of "sharp cut" glass filters in conjunction with phototherapy lights. It was shown that utilization of selected interference filters could dramatically decrease light-induced DNA modification in prokaryotic and eukaryotic cell lines while causing only a slight (1.5 fold) diminution in the rate of bilirubin decomposition. Since the optimal rate of bilirubin photodecomposition for the treatment of neonatal jaundice is not known, the present study demonstrates the feasibility of dissociating the beneficial therapeutic effects of phototherapy from the potentially detrimental mutagenic, carcinogenic and/or teratogenic effects.

273 CORD BLOOD AMPICILLIN LEVELS. Leonard B. Weiner and David Adamkin (Spon. by Frank A. Oski) Dept. of Peds., SUNY Upstate Medical Center, Syracuse, New York.

Cord blood ampicillin levels were studied in 30 neonates ranging in gestational age from 28 to 44 wks. (988 gms to 3620 gms). Cord specimens were obtained immediately following delivery and frozen at -70°C until tested by the microbiologic disc-diffusion assay. Maternal ampicillin was administered over 15 minutes as a single 2 gms IV dose in 22 patients (1 set of twins), as a single 1 gm dose in 3 pts. and as a multiple dose of 2 gms followed in 4 hrs. by 1 gm in 4 pts. Indications for ampicillin therapy and dosage remained the responsibility of the obstetrical service; 19 mothers received drug for C-section prophylaxis, 6 for PROM and 4 for amnionitis. Interval from last ampicillin dose to delivery cord blood sampling ranged from 11 to 332 minutes (mean 84.4 mins.) and ampicillin levels ranged from 2.9 to 40 ug/ml (mean 18.7 ug/ml). No significant differences existed between levels in the C-section prophylaxis group, PROM group and amnionitis group. The mean level was 18.6 ug/ml for the C-section prophylaxis group. The mean levels at ≤ 30, ≤ 60, ≤ 90, ≤ 120, ≤ 180 and >180 minutes were 22.8 ug/ml, 15.8 ug/ml, 24.8 ug/ml, 20.8 ug/ml, 11.2 ug/ml and 6.2 ug/ml respectively. The cord ampicillin level determinations were well within the minimal inhibitory concentration (MIC) for the usual ampicillin-sensative pathogens of the newborn. No postnatal infections were noted in the 30 neonates studied.

The effect of maternal ampicillin prophylaxis on neonatal outcome must await further controlled study.

274 PRENATAL THYROID ABNORMALITIES IN PREMATURE INFANTS WITH RESPIRATY DISTRESS SYNDROME (RDS). V. Abbassi, J. Adams, and C. Aldige: Georgetown Univ. Sch. of Med., Dept. of Peds., Washington, D.C.

An association between RDS and prenatal thyroid dysfunction has been previously described. To further investigate the abnormalities in thyroid function, cord blood from 49 neonates was obtained for measurements of T_3, T_4 and TSH by RIA. The results in the 5 groups identified according to gestational age and disease are summarized below:

Group, #	Gestational Age	T_3(ng/dl)	T_4(μg/dl)	TSH(μu/ml)
RDS I, (8)	26-29	16.9±4.3	4.3±0.6	10.3±2.5
RDS II, (13)	30-34	16.9±3.3	5.8±0.4	14.1±2.5
Sick non-RDS, (6)	32-34	37.5±5.1	6.8±0.7	12.4±2.4
Control II, (11)	30-34	37.0±4.2	5.9±0.5	9.4±1.0
Full-term, (11)	38-42	54.1±3.9	9.0±0.6	10.5±1.3

In both RDS groups T_3 was comparable and significantly lower than control groups, $P<0.001$. T_4 in RDS II was significantly higher than in RDS I ($P<0.05$) but comparable to control II. TSH was slightly higher in RDS II but there was no significant difference in any group. The data demonstrate: 1. a persistent prenatal abnormality in T_3 of RDS babies, 2. normal increase in T_4 concentration according to gestational age in RDS babies, 3. normal thyroid function in babies who develop non-RDS illness. Since T_3 is primarily derived from extrathyroid sources, the observation of low T_3 and normal T_4 excludes thyroid as the primary sight of T_3 deficiency. T_3 deficiency, however, may adversely effect the maturation of surfactant producing enzyme apparatus.

275 HCG-PERGONAL INDUCED TESTICULAR FUNCTIONS IN A HYPOPITUITARY MAN FOLLOWING A DECADE OF TESTOSTERONE Rx. Thomas Aceto, Jr., Larry E. Patterson, Darlis Dedrickson, and J. Michael McMillin, University of South Dakota.

Testicular functions are compromised in hypopituitarism (H); and during testosterone (T) Rx of the normal male. We've attempted to induce T secretion and sperm (S) formation in a 30 year old with idiopathic H, Rx'd for 10 years with T. Patient recalls being extremely short and sexually infantile until age 20 when T was begun. Subsequently he grew to 160 cm; developed scant secondary sexual characteristics, normal libido and potency but no sperm. His wife wished to conceive. In Jan. '76 FSH, LH and GH were low; TSH, ACTH and ADH function, normal. Response to Rx is shown.

	Rx: T	HCG	Perg.	T.	S. Count	Libido
1966-1975	+			1600 ng%	0/ml	+
1/76-2/76				20		0
3/76		4000 IU				+
4/76		3x/wk.		850		+
10/76				1100	3	+
1/77					61,000	+
5/77			75 IU	2000	80,000	+
10/77			1/wk	1400	670,000	+

Conclusion: Prompt testosterone secretion and spermatogenesis can be induced with gonadotropins in a hypopituitary male, even after a decade of testosterone treatment. Our teenage hypopituitary patients need to know that they may become fertile.

276 IMPAIRED NEONATAL PARATHYROID FUNCTION AND MATERNAL HYPERPARATHYROIDISM. Constantine S. Anast and Thomas W. Burns, Harry S. Truman Memorial Veterans Hospital and Departments of Child Health and Medicine, University of Missouri, Columbia.

Hypocalcemia (serum Ca 6.5 mg/100 ml) and hyperphosphatemia (serum P 9.5 mg/100 ml) were observed in a 10-day-old female infant with increased neuromuscular irritability. Hypocalcemia persisted until the sixth week of life and was resistant to conventional therapy. During this period the serum P remained elevated and the serum Mg was low normal to mildly depressed. In the presence of hypocalcemia, circulating immunoreactive parathyroid hormone (iPTH) levels in the neonate were inappropriately low. In contrast to the newborn infant, the asymptomatic mother was hypercalcemic (serum Ca 11.7-12.3 mg/100 ml), hypophosphatemic (serum P 1.5-2.1 mg/100 ml) and had consistently elevated circulating iPTH levels. Subsequently, an adenoma was removed from the left superior parathyroid gland of the mother and her serum Ca and iPTH levels returned to normal. This study indicates that parathyroid function was depressed in a hypocalcemic infant born of an asymptomatic hyperparathyroid mother. This finding is consistent with the hypothesis that in maternal hyperparathyroidism an increase in maternal circulating Ca and/or parathyroid hormone facilitates Ca transport across the placenta, leading to fetal hypercalcemia which, in turn, suppresses parathyroid activity in the fetus and neonate and thereby promotes the development of hypocalcemia in the newborn period.