1345 RISK OF RESPIRATORY DISTRESS SYNDROME (RDS) FROM VERY LATEST SAMPLING FOR LUNG PHOSPHOLIPID PROFILE (LPP) BEFORE OR AT BIRTH AMONG INFANTS WITH MATERNAL PROM.

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The very latest amniotic fluid (AF) samples obtained from mothers whose pregnancies were complicated by PROM (67 samples) and gastric aspirates (GA) samples obtained from premature infants admitted to NICU for possible treatment of RDS (166 samples) when indicated were analyzed for surface active phospholipids using two zone, thin-layer liquid chromotography following separation of disaturated phospholipids from saturated, acetone soluble phospholipids, to obtain LPPs. Results were obtained during the period 9/79 to 6/84 and compared with clinical and xray evidence of RDS among 233 premature infants studied. The following results indicate the risk of RDS vs LPP results to date

COMBINED SAMPLES	IMMATURE	PREMATURE	TRANSITIONAL	MATURE(C)*	MATURE
(avg.GA(wk))	(28.1)	(30.8)	(32.5)	(32.6)	(35.0)
+ RDS (%)	5 (100)	25 (96.2)	30 (77)	6 (8.3)	0 (0)
- RDS	0	1	9	66	91
TOTALS	5	26	39	72	91

LUNG PHOSPHOLIPID PROFILE

*signifies L/S > 2.0; %PI > 15%; but 0% PG.

Within these results, it should be noted that transitional LPPs from AF samples indicated only a 57.1% risk (8/14) while LPPs from GA indicated an 88% risk (22/25)($p < .05$ by 2-way ANOVA) suggesting that the closer the profile is performed to birth, the more accurate. Both AF & GA LPPs showed a linear correlation with maturation and gestational age. The more mature the profile the greater the GA with the exception of 6 infants with mature(c) LPPs who developed RDS. Of the 6, none were class A IDMs.

Conclusion: Infants who demonstrate LPPs which are transitional or less mature have a > 85% risk of developing RDS. LPP provides a valuable tool in guiding obstetric and neonatal care of infants at risk for respiratory distress syndrome.

1346 EFFICACY OF DEXAMETHASONE (DXM) IN MANAGEMENT OF PROGRESSIVE BRONCHOPULMONARY DYSPLASIA (BPD).

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During the period 1/80 to 9/84, 217 infants have required mechanical ventilation (MV) for respiratory insufficiency of diverse etiology. 17 (7.8%) ventilator-dependent infants with clinical and xray evidence of Northway stage II BPD received a rapidly tapered course of DXM (.5 mg/kg IV x 3 days, .3 mg/kg x 2 days, then tapering by 20% doses for total of 10 days). 13/17 (76.5%) "responded"; i.e., required MV < 3 days (mean) and supplemental O_2 < 7 days (mean) compared to "non-responders" who required MV > 19 days (mean)($p < .001$, 2-way ANOVA) and supplemental O_2 > 26 days (mean)($p < .001$), summarized in table below:

PARAMETER	DXM "responders"	DXM non-responders	p-value
#	13	4	
GA	36.6 ± 4.1	33.5 ± 5.7	NS
BW	2631.2 ± 999.1	1955.0 ± 1226.4	NS
(PreDXM) hrs MV / hrs O_2	222.7/237.0	241.3/241.3	NS/NS
(DXM Rx) hrs MV / hrs O_2	69.5/156.8	461.0/635.5	<.001/<.001
(Total) hrs MV / hrs O_2	292.2/393.8	702.3/876.8	<.0001/<.001
Survival (%)	13/13 (100)	2/4 (50)	<.005

9/11 infants (82%) with persistent pulmonary hypertension (PPHN) responded while 4/6 (67%) infants with RDS responded. Among the non-responders, 2 (50% died)($p < .005$). Both infants had RDS complicated by PIE and BPD. Only 1 infant among 15 survivors still requires home oxygen therapy. All 15 infants appear to be developing normally to date.

Conclusion: DXM, if administered just prior to clinical and radiographic evidence of Northway stage III BPD, appears to significantly reduce ventilator dependence and improve prognosis in progressive bronchopulmonary dysplasia of the neonate.

1347 CONTINUOUS VERSUS INTERMITTENT HEPARINIZATION OF UMBILICAL ARTERY CATHETERS.

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Previous studies have compared the rate of occlusion of umbilical artery catheters with and without heparin (Rajani, 1979; David, 1981). However, the difference between continuous infusion versus intermittent flushing with heparin has not been studied. We therefore designed a randomized controlled trial of continuous infusion vs. intermittent flushing in 47 infants who required umbilical artery catheters. Twenty-nine received cont. infusion with heparin (1 U/ml) and 18 received intermittent flushing with heparinized saline (1 U/ml). Ten infants weighed ≤1000 g, 19 weighed 1001-1800 g, and 18 weighed >1800 g. We recorded duration of patency, reason for removal, the number and severity of complications (blanching and cyanosis of legs), and clinical history.

	N	Birth Weight	Occluded	Complic.	Patent
Cont. Heparin	18	1912 195	0	6	12
Intermit. Heparin	29	1568 156	8†	4	17

X±SE, †$p < 0.02$ vs continuous

There were no significant differences in severity of disease, birth wt., birth wt. distribution, number or severity of complications, PT/PTT, size of catheter, glucose concentration, rate of infusion, or drugs. Seventy-six percent of patent catheters remained in place for more than 24 hours (range 8-167 hrs). All of the occlusions occurred in infants who weighed 1800 g. Our findings indicate that continuous heparin infusion is a better way of maintaining patency of an umbilical artery catheter.

† 1348 CAVITARY PERIVENTRICULAR LEUKOMALACIA (PVL): INCIDENCE AND SEQUELAE.

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Recent real-time ultrasonographic studies have shown that the diagnosis of cavitary PVL can be made in vivo. From 1-31-82 to 6-30-84 all infants weighing ≤ 1200 g were screened for intracranial hemorrhage (ICH) using real-time ultrasonography at 1,2, and 4 weeks postnatal age and at least monthly through term corrected age. PVL was diagnosed in 6/119 survivors. ICH was seen in 45/119 including 4 of 6 infants with PVL. Cavitary lesions of PVL were first diagnosed at 4-6 weeks postnatal age in all. Some lesions were undetectable by 10-12 weeks. Follow-up data is presented below.

Patient	ICH	Bayley MDI	Bayley PDI	Age*	Sequelae
1	IVH	< 50	< 50	21	spastic diplegia
2	-	87	50	25	spastic diplegia
3	-	-	-	-	died, 4 mos.
4	IVH	< 50	< 50	8	spastic quadriplegia
5	GMH	< 50	< 50	8	spastic diplegia
6	IVH	-	-	0.5	hypertonicity L > R

Poor visual attention at term was noted on the Brazelton Neonatal Assessment Scale in all patients.

*Age corrected for prematurity in months.

Conclusion: PVL is a marker for cerebral palsy and may occur in the absence of ICH. Careful longitudinal scanning, past the usual time of ICH is mandatory for diagnosis.

1349 IN VITRO EFFECT OF BILIRUBIN ON DOPAMINE SYNTHESIS IN ADULT RAT BRAIN SYNAPTOSOMES.

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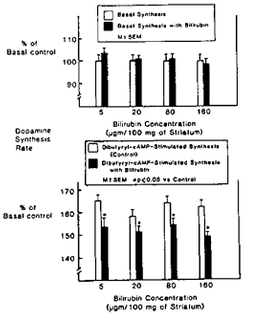
Bilirubin (BR) can inhibit cyclic AMP-dependent protein kinase activity. To investigate the mechanism of BR neurotoxicity, we studied the effect of BR on production of dopamine, a neurotransmitter whose synthesis is stimulated by cyclic AMP (c-AMP). We used a synaptosome (SYN) preparation to study dopamine synthesis rate (DSR); in vitro. SYNs, the biochemically functional units of synapses, were isolated by differential centrifugation from the corpus striatum of adult male Sprague-Dawley rats. DSR was quantitated by $^{14}CO_2$ produced after addition of the labeled precursor, L-(1-^{14}C) tyrosine. The effect of BR was assessed at 4 different BR concentrations under 2 experimental conditions: basal DSR and 2mM dibutyryl c-AMP (db c-AMP) stimulated DSR. Results as noted in figures, were expressed as % of basal DSR and compared against matched controls. We conclude that while BR has no effect on basal DSR, it does dampen the db c-AMP stimulated synthesis of dopamine in vitro. The data provide evidence for an inhibitory effect of BR on protein kinase-mediated neurotransmitter synthesis activation.



1350 THE EFFECT OF BILIRUBIN (BR) ON CEREBRAL CORTEX (CE) O_2 AND GLUCOSE METABOLISM IN PIGLETS (P)

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BR inhibits in vitro oxidative phosphorylation and glycolysis. This study investigated the in vivo effect of BR on O_2 consumption ($\dot{V}O_2$), O_2 extraction (O_2Ex), glucose consumption ($\dot{V}Glu$), and glucose extraction (GluEx) in the CE. Sixteen 2-4 day old P were studied in 3 groups: 1) control (C) 2) control with sulfisoxazole (CS) and 3) experimental (E). CS and E received sulfisoxazole. E was infused with BR for 4 hrs to maintain the serum BR of 13.2±1.8 mg% (M±SEM). CE BR in E was 6.7±.8 μg/gm of CE (M±SEM). CE blood flow (microsphere method) and aorta-superior sagittal sinus differences in O_2 content and glucose were measured to calculate $\dot{V}O_2$, O_2Ex, $\dot{V}Glu$, and GluEx. No changes were noted in $\dot{V}O_2$ or O_2Ex. $\dot{V}Glu$ was increased in CS, but not in E. The mean reduction in arterial glucose of 53.3 mg/dl in all groups ($p < 0.05$), over the four hours of study, was associated with increased GluEx in CS and C, but not in E. We speculate that BR may alter GluEx, but has no major effect on $\dot{V}O_2$ or O_2Ex.