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MECONIUM STAINED (MS) AMNIOTIC FLUID - A USEFUL ANTENATAL INDEX OF FETAL MATURITY AND RISK TO HMD. Enrique M. Ostrea, Jr., Mubariz Naqvi, Dept. of Pediatrics, Wayne State University & Hutzel Hospital, Detroit, MI

A negative implication is commonly associated with MS amniotic fluid. Most frequently, it is indicative of fetal distress or asphyxia. We report that the finding of MS amniotic fluid has a positive, clinical usefulness. It is a highly accurate antenatal index of fetal maturity and the risk of the infant to HMD.

From 1973-1976, we reviewed the maturity and incidence of HMD among 1165 MS infants. Gestational age in LBW infants was assessed by the Dubowitz score. Of the total 1165 infants, 909 (78%) were mature; 170 (15%) were postmature and 77 (7%) were premature. Among the premature infants, 82% were ≥35 wks; 10% were 34 wks; 7% were 32-33 wks and 1% was <32 wks. Since asphyxia is a potent stimulus to the fetal passage of meconium, we determined the incidence of MS amniotic fluid in a group of infants with 1 minute Apgar ≤6 (N=555). Of the 555 infants, 36.3% of the full-term and 68.2% of the postmature passed meconium, as compared to only 2.6% of the prematures ($p<0.01$). The exception was noted in infants of drug dependent mothers (IDDM). Out of 56 premature IDDM with low Apgar, 20% had MS amniotic fluid.

The incidence of HMD among MS infants was very low (0.5%). Thus, the finding of MS fluid surpasses the predictability of many antenatal tests of fetal lung maturity including the L/S ratio. The incidence of HMD among premature MS infants was 8% as compared to 17% in our general premature population ($p<0.05$). This difference is related to the large percentage (82%) of premature MS infants being ≥35 wks gestation.

CONCLUSION: MS amniotic fluid correlates highly to fetal maturity. Only in 7% will the infants be premature and most (82%) will be ≥35 wks. The only exception is with the IDDM, because of the association of MS with fetal drug withdrawal. The incidence of HMD among MS infants is 0.5%. Thus MS amniotic fluid can be an accurate indicator of fetal lung maturity.

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A CONTOLLED DOUBLE-BLIND STUDY OF ANTENATAL BETAMETHASONE. Apostolos N. Papageorgiou, Marie-Françoise Desgranges, Michel Masson, Eleanor Colle, Richard Shatz, Morrie M. Gelfand, McGill University, Jewish General Hospital, Perinatal Unit, Montreal, Canada.

146 patients were enrolled in a double blind study to assess the effectiveness and side effects of antenatal administration of Betamethasone in the prevention of R.D.S. 12 mg of Betamethasone (B) or Placebo (P) were given at random on admission of each patient to the study. The same dose was repeated 24 h. later and then weekly up to 34 weeks of gestation. Isoxsuprine was administrated to all patients to stop labor. No antibiotics were used prophylactically. Gestational age at delivery ranged from 25 to 34 weeks and birth weight between 730 gms. and 2650 gms. 60 patients met all the criteria of our protocol.

	Betamethasone (%) n=28		Control (%) n=32		P
R.D.S.	7	25	18	56.7	.016
Severe R.D.S.	1	16.6	7	36.8	.09
Fetal deaths	0	-	2	-	N.S
Death from R.D.S.	0	0	6	33.3	.04
Death from R.D.S.<1000gms	0	0	3	16.6	N.S

All infants between 25 and 27 weeks developed RDS (3B+ 6P). With the exclusion of this age group P value for difference in incidence of RDS =.027. Steroid levels and metabolic parameters were monitored at regular intervals. This data suggests that B is effective not only in reducing the incidence of RDS but also in decreasing the severity of its expression.

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COMPARISON OF THE SEPHADEX COLUMN TEST WITH THE SALICYLATE SATURATION INDEX AS A MEASURE OF ALBUMIN BINDING CAPACITY FOR BILIRUBIN. Tong S. Park, John Kattwinkel, and Hallam H. Ivey, Dept. of Pediatrics, Univ. of Virginia, Charlottesville, Va. (Spon. by Robert M. Blizzard).

A commercial Sephadex Column test (SC) (Kernlute^R) has been advocated to estimate the binding capacity of albumin for bilirubin in neonates. In an effort to compare the results of this test with those of the Salicylate Saturation Index (SSI), which is the only test for which long-term follow-up studies have been performed, 39 sera from newborns with hyperbilirubinemia were evaluated. These sera were obtained from infants categorized as sick preterm (n=20), post exchange transfusion (n=9), healthy formula fed (n=2), and healthy breast fed (n=8). Testing included SC, SSI, total and conjugated bilirubin, albumin and/or total protein.

16/39 sera had positive SC results. However, only 1 of these 16 had a SSI result above 8.0 (a level considered dangerous as determined by previous long-term follow-up studies). Therefore, it appears that there are a significant number of false positives obtained using SC. All 16 with a positive SC had a conjugated bilirubin level ≥1.4mg% and 13/16 had a conjugated bilirubin ≥1.4 but ≤2.0mg%. 11 of these 16 were from the sick preterm group.

We conclude that 1) the SC test is not reliable if conjugated bilirubin is ≥1.4mg% (rather than >2.0mg% as previously reported) and 2) because of the large number of sick infants with conjugated bilirubin levels ≥1.4mg%, the number of false positive values renders the test of limited value in clinical practice.

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NEONATAL HYPOTENSION: THERAPY WITH BLOOD VS. DOPAMINE. Charles L. Paxson, Univ. of Nebr. Med. Center Omaha, Nebr. (spon. by G. C. Rosenquist)

We have compared the efficacy of blood versus dopamine HCl infusions for resuscitation of the hypotensive newborn. Polyvinyl catheters were placed in 10 newborn lambs (5.4 - 7.7 kg) and the animals were sujected to hypotension by withdrawal of 25% circulating red cell volume (RCV). Serial blood volume determinations were completed using a technique of 51 Cr and Tc-99m labeled red cells as blood pressure (BP) and vital signs were continuously monitored. The animals were then alternately resuscitated with heparinized blood and/or dopamine HCl (1-50 ug/kg/min).

All animals became hypotensive, tachycardic, tachypneic, and hypovolemic. The fall in BP was directly related to the reduction of circulating volume (BP = 1.6 RCV + 15).

Resuscitation with blood resulted in a prompt predictable rise in BP. As BP rose, heart rate returned to normal. However, dopamine infusions produced unpredictable results: 3 animals exhibited fluctuations in BP between normal and hypotensive levels. Two animals had no rise in BP with dopamine; when blood was infused, they developed hypertension (180 mm Hg, nl = 85 mm Hg), and died of cardiac arrest.

We conclude that blood transfusions to hypotensive, hypovolemic newborn lambs produces a predictable rise in BP. We are concerned about the clinical use of IV dopamine HCl in small preterm babies until further studies in animals have demonstrated its safety.

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RELIABILITY OF SKIN (tc)PO_2 ELECTRODE HEATING POWER AS A CONTINUOUS NON INVASIVE MONITOR OF MEAN ARTERIAL PRESSURE IN SICK NEWBORNS. J.Peabody, M. Willis, G.Gregory & J.Severinghaus. CVRI Univ. of Ca., San Francisco

In 10 sick newborns (850-4140 gm) we continuously monitored, for 2-7 hrs, central mean aortic blood pressure ($\overline{BP}$) and the incremental power (ΔHP) used to heat the Huch PO_2 electrode to 44°, having offset the HP recording to zero during leg cuff occlusion. We term $\Delta HP/\overline{BP}$ the power pressure ratio (PPR), assuming that 44° gives full vasodilation and that flow under the electrode is proportional to pressure. The tc electrode was insulated from ambient with 2 cm of ensolite. In the 10 babies ($34<\overline{BP}<66$), mean PPR was 0.32mw/torr ±11% coefficient of variation (CV=100sd/mean) while mean individual CV=4.1±1.9%. The variation among babies appears due to differences in skin thickness and temperature. ΔHP correlated well with $\overline{BP}$ during changes induced by crying, straining (fig.1), apnea, transfusion and curare administration, but correlated inversely during tolazoline infusion when asphyxial episodes increased $\overline{BP}$ but decreased ΔHP. We conclude that ΔHP is a useful and reliable index of $\overline{BP}$ in most sick infants although PPR appears to be affected by skin thickness, body temperature and by infusion of tolazoline.

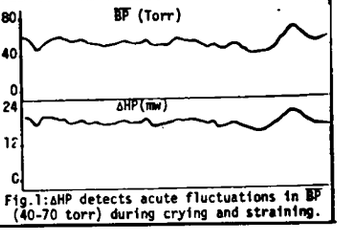

Fig.1: ΔHP detects acute fluctuations in BP (40-70 torr) during crying and straining.

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ABSENCE OF KERNICTERUS IN LOW-BIRTH-WEIGHT INFANTS 1971-1976: COMPARISON WITH 1966-1967. Mark A. Pearlman, Lawrence M. Gartner, Kwang-sun Lee, Rachel Morecki, and Dikran S. Horoupian, Albert Einstein College of Medicine, Departments of Pediatrics and Pathology, Bronx, N.Y.

A review of all autopsied infants weighing less than 2251 grams (34 cases) who expired on the third to seventh days of life during the six year period from 1971 to 1976 failed to reveal any cases of kernicterus. This contrasts with an incidence of 64% (9 of 14) in low-birth-weight infants from the same neonatal intensive care unit during the period 1966-67 (Pediatrics 45:906, 1970). The infants in the two series were not significantly different with regard to their birth weights, Apgar scores, perinatal complications, or non-neurologic postmortem findings. The only significant difference between these two groups of infants was a lower mean peak serum bilirubin concentration in the 1971-76 series (11.1±4.0 mg/dl vs. 8.7±3.4 mg/dl), resulting from the use since 1970 of lower serum bilirubin concentrations as criteria for exchange transfusion and the use of phototherapy since 1974. The prevention of excessive hyperbilirubinemia as well as the development of more sophisticated intensive care of the neonate in recent years may be responsible for the elimination of kernicterus in the 1971-76 series of infants weighing less than 2251 grams.