

ACCURACY OF GASTRIC ASPIRATE LECITHIN/SPHINGOMYELIN RATIO AND CHEST ROENTGENOGRAM IN THE DIAGNOSIS OF RDS. Robert C. Borer, Jr., Lawrence R. Kuhns, John F. Holt, Andrew K. Poznanski and Francis J. Bednarek (Intr. by William J. Oliver), Univ. of Michigan Med. Ctr., Depts. of Ped. and Radiology, Ann Arbor.

Gastric aspirate (GA) lecithin/sphingomyelin ratios (L/S) and chest roentgenograms (CR) obtained in the first 24 hrs. of life in 87 infants with respiratory symptoms were analyzed independently. CR diagnosis was made separately by three pediatric radiologists in three categories: definite RDS (D), absent RDS (A) and equivocal of RDS (E). Clinical diagnosis was made in 87 patients (histological confirmation in 19): 34 infants had RDS and 53 had other respiratory problems.

The agreement in CR interpretation by the radiologists was tested for the various categories D, E and A by Chi² analysis and found to be highly significant, $p < .0005$. The correlation of the CR diagnosis and clinical RDS, the correlation of GA L/S < 2.5 and clinical RDS, the correlation of the CR category D and the GA L/S < 2.5 and finally the correlation of the CR category A and the GA L/S > 2.5 were all significant by Chi² analysis, $p < .0005$.

This report documents the accuracy of both CR and GA L/S when obtained in the first 24 hrs. of life as highly reliable studies for both the diagnosis and exclusion of RDS.

LOW BLOOD VOLUME WITH NORMAL SYSTEMIC BLOOD PRESSURE IN INFANTS WITH HYALINE MEMBRANE DISEASE (HMD). Edwin G. Brown, Richard W. Krouskop, Avron Y. Sweet. Case Western Reserve Univ. at Cleveland Metropolitan Gen. Hosp., Dept. of Ped., Cleveland.

The central circulating blood volume (CCBV) was evaluated in 17 neonates with respiratory distress, 6 of whom had HMD. The infants were evaluated clinically and by strict radiographic criteria before entering the study at 1-2 hours of age. No small-for-dates infants were included. Measurements using I¹²⁵ albumin were made on each infant at 4 & 24 hours. Mean pressures were measured in the aorta continuously for 12 hours and at 24 hours. Hematocrit determinations were done at birth, 4 & 24 hours. The mean blood volume of infants with HMD and other forms of respiratory distress was 86.6 and 100 ml/kg respectively ($P < 0.01$). The difference was due to low red cell volume, mean 38.2 and 47.5 ml/kg ($P < 0.02$). The hematocrit values at birth and 4 hours were not statistically different indicating that low CCBV in the HMD group is not the result of an inadequate placental transfusion. It is curious that the CCBV at 4 & 24 hours was not statistically different despite whole blood or other fluid infusion. Mean pressures of each group during the first 12 hours and at 24 hours were not statistically different and correlated well with norms previously established for prematures. Our data show that 1) blood pressure and hematocrit measurements are poor parameters for estimating CCBV; 2) the low red cell volume in HMD appears to exist prior to delivery; 3) and implies that vasomotor activity adequately maintains mean aortic pressures in the HMD group.

CARDIOVASCULAR EFFECTS OF AIRWAY SUCTIONING IN INFANTS WITH H.M.D. ON ASSISTED VENTILATION. Luis A. Cabal, Bijan Siassi, Carlos E. Blanco and Joan E. Hodgman. (Intr. by Paul F. Wehrle.) Dept. of Peds. Los Angeles County-USC Medical Center

EKG and beat to beat heart rate (HR) were recorded during endotracheal suctioning in 10 premature infants with severe HMD receiving assisted ventilation. Birth weight and gestational age ranged from 750-2000 Gms and 24-36 weeks. Studies were carried out at a mean age of 12 days. Each infant was studied 4 times during suction of the airway. Two procedures were preceded by 30 sec. of bagging with increased ambient oxygen. Each record was analyzed for changes in EKG, baseline HR (BLHR), magnitude of peak drop in HR (PM), time of baseline to peak drop (BL-PD) and time of peak drop to baseline (PD-BL).

	BLHR	PM (b.p.m.)	BL-PD (Sec)	PD-BL (Sec)
\bar{x} incr. O ₂	155 ± 14	41 ± 28	6 ± 2	7 ± 4
\bar{s} incr. O ₂	151 ± 16	61 ± 30	9 ± 4	15 ± 8
p value		<0.05	<0.01	<0.01

In addition to more profound HR drop, the duration of bradycardia was significantly prolonged in all instances when oxygenation did not precede suctioning. Severe sinus bradycardia or sinus arrest were observed in 5 patients only when suctioned without prior oxygenation. These findings suggest that prior oxygenation prevents severe cardiac arrhythmias associated with hypoxia-inducing procedures commonly used during intensive neonatal care.

INTESTINAL COMPLICATIONS OF NASOJEJUNAL FEEDING. J.W. Chen and P.W.K. Wong. Dept. Ped. Abraham Lincoln Sch. Med., Univ. Illinois, Chicago, Ill.

Recently Cheek and Staub reported no serious complications in 46 infants given continuous nasojejunal tube feeding. We observed serious disturbances in 4 of 13 low-birth-weight infants fed in the same manner. In the 13 infants, mean gestational age was 29.61±1.68 wks and mean birth weight was 1,176.15±208.23 gm. All except one had respiratory distress syndrome and/or other problems. None was able to be fed orally or by nasogastric tube. Nasojejunal tube feeding was initiated from 2 to 9 days of age. Average duration was 16.0±11.78 days. At the termination of nasojejunal feeding, 8 infants were heavier and 5 lighter than their respective birth weight. Six died. In 2 the cause of death was unrelated to nasojejunal feeding. In 4 the causes of death were as follows: (1) necrotizing gastroentero-colitis with possible rupture of intestine, (2) jejunal perforation with diffuse peritonitis, (3) aspiration pneumonia due to distention of jejunum and ileum and vomiting, (4) jejuno-jejunal intussusception. The safety of this procedure requires careful evaluation by controlled studies before it can be recommended for routine purposes in small low-birth-weight infants.

EXPERIENCE WITH IRDS IN LARGE BIRTHWEIGHT PREMATURES

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This study was undertaken to assess the Idiopathic Respiratory Distress Syndrome (IRDS) in premature infants whose birth weights exceeded 1820 gms (4 lbs). During the past 3 years 66 (41%) of 160 infants admitted to our Newborn ICU with IRDS weighed more than 1820 gms. Thirty of the 66 were transferred from outlying hospitals. Estimated gestational ages ranged from 34-38 wks with a mean of 35.7. Birth weights ranged from 1820-3856 gms with a mean of 2358 gms. There was a predominance of males.

Of the various prenatal conditions assessed, 80% of the 66 mothers were > 20 yrs of age and 67% were multigravid. Twenty percent of the mothers had complications of pregnancy including 4 diabetics, 2 narcotic addicts, and 1 toxemic. Thirty-three percent were delivered by C-section.

The severity of IRDS in this group of infants was variable. Half of the infants required oxygen in concentrations > 60%. Assisted ventilation was needed in 87% of those transferred and 47% of those delivered at our hospital. Apgar scores and initial blood gases were not useful in predicting the subsequent need for ventilation assistance. Seven of the 66 infants expired. Pneumothorax and cerebral hemorrhage were encountered in 4 of the 7.

It is concluded that IRDS may be severe in a surprising number of large birthweight prematures. It is unclear whether IRDS occurs more frequently at higher altitudes (5000 ft) and is more severe. It is recommended that these infants be evaluated and followed as closely as their smaller-weight counterparts.

TRANSPORT OF THE VERY SMALL INFANT: TIME FACTOR ANALYSIS.

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Although regionalized care for the sick newborn has resulted in significant decreases in morbidity and mortality, there is little published experience of specific problems related to transport of defined groups of infants. A referral system was established to transport all infants (BW \leq 1500 grams) born at four community hospitals, 40-60 miles from our Neonatal Intensive Care Unit. Upon notification of delivery and transport request, a transport team composed of two neonatal intensive care nurses alone or with a neonatologist were sent by especially-equipped ambulance. Care included monitoring of oxygen concentration, heart rate, and skin and environmental temperatures; and when necessary, resuscitation and buffer correction. During the three years' experience, 76 infants were transported. No deaths occurred during transport, 3 infants expired within 3 hours after admission, and 20 within 48 hours. Time analysis of the system performed by studying the steps involved, showed that total transport time, i.e., from delivery to arrival at NICU, could be reduced 20% by prompt initial request. Total transport time was significantly shorter for infants who survived, and the difference in length of time between delivery and initiation of transport request was significant for those who survived versus those who expired (\bar{X} 26.3 minutes for survivors; \bar{X} 84.5 minutes for those who expired). Thus, the outcome of the small infant is improved by early initiation of transport.