1326 HEAD ULTRASOUND: UNSUSPECTED VENTRICULAR CONFIGURATIONS IN HEALTHY NEWBORN INFANTS

Rebecca Cooper, Patricia Winchester, Paula W. Brill, Hart deC. Peterson, Alfred N. Krauss
New York Hospital-Cornell Medical Center, NY, NY.

Head ultrasound was performed on each of 53 full term healthy infants in order to determine the normal variation of ventricular appearance. All infants had good Apgar scores, normal physical examinations and normal neurological examinations.

Three types of configuration of the lateral ventricles were identified. In 44 infants (83%), "compressed" ventricles containing little or no cerebrospinal fluid were identified. In 8 infants (15%), the lateral ventricles were easily visible, containing clearly demonstrable CSF. In the remaining 9 infants (17%), the ventricles were distinctly asymmetric, six markedly. The choroid plexus in four of the six seemed irregular.

No correlation existed between the ventricular configuration and either maternal age and parity or the infant's age and weight. Nor was there a correlation between type of delivery and the presence or absence of ventricular asymmetry. A statistically significant correlation existed between type of delivery and the configuration of symmetrical lateral ventricles. 75% of infants with easily visible lateral ventricles were delivered by Cesarean section, while C-section accounted for only 34% of all deliveries. 94% of vaginally delivered infants had "compressed" ventricles. These findings support the conclusion that both asymmetric ventricles and "compressed" ventricles are normal variants in the healthy newborn population.

†1327 CORD BLOOD COAGULATION CHANGES IN MATERNAL HYPERTENSION.

Charles D. Lox, R. Ann Word, Monette Jeter and James J. Corrigan, Jr. Dept. of OB-GYN, Texas Tech Univ Health Sci Center, Lubbock, Texas and Dept. of Peds, Univ of Arizona Health Sciences Center, Tucson, Arizona.

The occurrence of thrombocytopenia and disseminated intravascular coagulation (DIC) are newborn hematologic manifestations of maternal hypertension syndromes. Since hepatic disease occurs in mothers with preeclampsia-eclampsia we examined the levels of various coagulation factors to determine if other coagulopathies exist other than DIC. Fifty-three (53) cord blood samples were studied (PTT; pro time; fibrinogen, factors II, V, VII, VIII, IX, X, XII levels). There were 30 normal term controls, 6 with pregnancy-induced hypertension (PIH) and 17 with moderate to severe preeclampsia (PRE). Newborns with asphyxia were excluded. The mean gestational age was 37 in the two study groups; APGARs were 8/9 in PIH and 7/8 in PRE. The significant changes (*) are shown in the Table (mean ±SE).

FACTOR;(Units/dl)	NORMAL	PIH	PRE
VII	77±5	63±10	57±6*
V	99±3	95±14	79±5*
VIII	95±2	167±23*	172±21*

Reduced factor VII and V with elevated factor VIII levels in the PRE group suggest liver damage as the cause of the coagulopathy. Elevated factor VIII levels was the only abnormality found in PIH neonates. No infant had DIC or evidence of vitamin K deficiency. Hepatic dysfunction may be a major manifestation of infants born of toxemic mothers.

1328 COMPARISON OF METHODS FOR DETERMINATION OF GFR IN PRETERM NEONATES.

A.T. Costarino, S. Baumgart, R.A. Polin, J. Egler, M. Norman. Dept. of Peds., Univ. of PA Sch. Med., Child. Hosp. of Phila., Phila., PA & Wilmington Med. Ctr., Wilmington, DE.

A simplified method for accurate determination of GFR would be useful in the management of critically ill, premature neonates. Serum creatinine (Sc) has been used to estimate GFR in children and adults but its validity in preterm infants has yet to be established. The purpose of this study was to compare GFR as estimated from Sc to that determined by three accepted clearance methods: UV/P creatinine clearance (Cc), UV/P inulin (In-a), and inulin constant infusion method (In-b). Eleven neonates with RDS (BW 2.24 ± .5 kg, GA 33 ± 1.7 wks, length 45.9 ± 4.2 cm) were studied longitudinally during the first 5 days of life. Timed urine collections (233 ± 48 min) for Cc were performed every eight hours in 8 patients. Once each day, simultaneous with Cc, In-a was performed in 5 infants, and In-b was performed in 7 infants. GFR was estimated from Sc and length (Sc-L) using the formula: GFR (ml/min/1.73 m2) = .4 X length (cm) /Sc (mg/dl) (Feld et al, Ped. Res. 17:1567, 1983). Comparison of methods is shown below.

COMPARISON	n	r	P	COMPARISON	n	r	P
Sc-L vs Cc	88	.8	<.001	Cc vs In-a	18	.87	<.001
Sc-L vs In-a	16	.86	<.001	Cc vs In-b	16	.51	<.05
Sc-L vs In-b	28	.44	<.01	In-a vs In-b	16	.53	<.05

The Sc-length formula correlated significantly with each formal clearance method but less well with the constant infusion method. We conclude that when body length is taken into consideration, Sc will provide a valid marker for GFR in premature infants.

1329 THE EFFECT OF SPECTRAL IRRADIANCE ON THE ISOMERIZATION OF BILIRUBIN IN VIVO.

A.T. Costarino, J. Ennever, W.T. Speck, S. Baumgart, R.A. Polin. Dept. of Peds., Univ. of PA Sch. Med., Child. Hosp. of Phila., Phila., PA; Rainbow Babies & Child. Hosp., Case Western Reserve Univ., Cleveland, Ohio

The initial event during phototherapy is the isomerization of native bilirubin to more polar configurational isomers (Z,E) and a structural isomer called lumirubin (LUM). The purpose of this study was to compare the effect of narrow spectrum blue light (B) versus broad spectrum white light (W) on the production of photoisomers in jaundiced infants. Thirteen preterm neonates (BW 1.68 ± .45 kg, GA 32 ± 2.3 wks) were studied under both B and W light. Irradiance at 450 nm was controlled at 12 uwatt/cm^2/nm for both B and W. Infants were assigned to one of two study orders: B,W,B (n=4) or W,B,W (n=9). Each light condition (B or W) was administered for 12 hrs. Serum for Z,E and LUM were obtained before treatment and every 12 hours thereafter. Results were expressed as a percent of the total bilirubin. For all study infants % Z,E and LUM under B were compared with % under W for the two possible treatment sequences: W to B and B to W

Sequence:	White → Blue			Blue → White		
	W	B	P	B	W	P
% LUM	1.48 ± 0.61	1.34 ± 0.58	NS	1.27 ± 0.52	1.30 ± 0.52	NS
% Z,E	12.25 ± 2.9	14.69 ± 2.85	*	14.50 ± 2.48	11.28 ± 2.81	*

*p <.01

These data suggest that B is more effective than W in producing Z,E. The inability to demonstrate differences in % LUM may be due to more rapid excretion of this photoproduct.

1330 THE EFFECT OF DIFFERENT FLUID AND ELECTROLYTE INTAKES ON MOBILIZATION OF THE NEONATAL TISSUE WATER RESERVOIR.

David M. Coulter and Timothy R. LaPine. Departments of Pediatrics, Primary Children's Medical Center and University of Utah School of Medicine, Salt Lake City, Utah.

We administered artificial formula (Unilac) to neonatal rabbit pups for the first 72 hours of life and then measured skeletal muscle water content by dessication and fat extraction. We defined a feeding volume of 10% of birthweight (BW) twice daily as normal. H_2O = Ml/gm fat free dry wt.

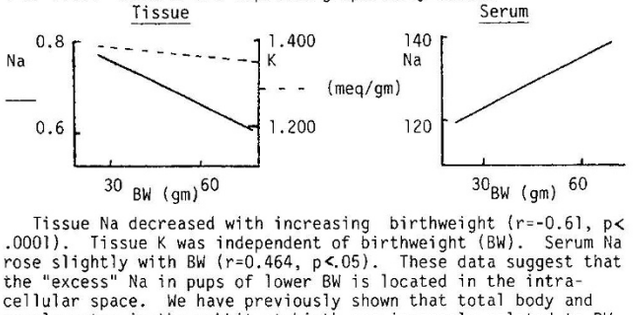
FORMULA	% of NL VOLUME	# of ANIMALS	MUSCLE H_2O (Mean±SD)	p
Full Str	100	28	5.61 ±.46	
Full Str	50	34	5.98 ±.63	.02
1/2 Str	100	15	5.77 ±.28	ns

Reducing fluid and electyrolyte intake to 1/2 of normal resulted in significant retention of muscle water. Returning fluid intake to normal but leaving electrolyte intake 1/2 normal resulted in an intermediate water content which was not statistically different from either of the other two groups. We have previously shown that muscle water content at 72 hours of age is lower than at birth and is inversely related to postnatal weight gain. We speculated that the water lost after birth represents release of water from a tissue reservoir and that this process is regulated in response to fluid intake. The data reported here support that speculation but raise the possibility that electrolyte intake also affects reservoir release.

†1331 SKELETAL MUSCLE WATER AND ELECTROLYTES AT BIRTH IN THE RABBIT.

David M. Coulter, Tim R. LaPine, Departments of Pediatrics, University of Utah School of Medicine, Salt Lake City, Utah.

We measured serum and skeletal muscle electrolytes by flame photometry and muscle water by dessication in 45 rabbits on day 1 of life. Results are depicted graphically below.



Tissue Na decreased with increasing birthweight (r=-0.61, p< .0001). Tissue K was independent of birthweight (BW). Serum Na rose slightly with BW (r=0.464, p<.05). These data suggest that the "excess" Na in pups of lower BW is located in the intracellular space. We have previously shown that total body and muscle water in the rabbit at birth are inversely related to BW and have speculated that this "excess" water represents a tissue water reservoir. The data presented here suggest that there is also a reservoir of sodium at birth, possibly located in the intracellular space, and that this reservoir is larger in animals of low birthweight.