1014

AUTOMATION OF THE PEROXIDASE ASSAY FOR MEASUREMENT OF APPARENT UNBOUND BILIRUBIN CONCENTRATION. L. Fraser Rasmussen, Richard P. Wennberg, Charles E. Ahlfors, Timos Valaes. University of California, Davis - Sacramento Medical Center, Sacramento, California.

The peroxidase assay measures the apparent unbound bilirubin concentration (AUBC) throughout the total bilirubin concentration (TBC) range observed clinically. The AUBC has been shown to correlate with cell uptake and toxicity of bilirubin in vitro and presumably would be a better predictor of the risk for kernicterus than would TBC. We have automated the assay on the Gilford 3500 Computer Directed Analyzer reducing the time for analysis from 30 minutes (manual method) to 4 minutes per patient sample using the automated system. The within-day and day-to-day coefficients of variation in AUBC were 2.8 and 4.9 percent, respectively, compared to 3.7 and 10.9 percent for the manual assay.

In a study of 46 serum samples from 22 jaundiced Greek infants, the automated assay correlated well with the manual method ($r = .92$). Sixteen of the infants had TBC's in excess of 20 mg/dl (max. 33 mg/dl), 11 were Sephadex positive, 8 had AUBC's in excess of 20 nmol/l and 4 had AUBC's greater than 25 nmol/l (measured at 27°C). The single case of kernicterus had a TBC of 29 mg/dl, AUBC of 29 nmol/l and was Sephadex positive.

Automation allows the peroxidase assay to be useful as an adjunct in evaluating the risk for kernicterus.

1015

ELECTIVE CESAREAN SECTION DELIVERY: IS SPECIAL NURSERY CARE (SNC) NECESSARY? Richard M. Reisman, Leo Heitlinger, Harry S. Dweck, New York Medical College, Department of Pediatrics and Ob., Div. of Perinatal Med. N.Y.C.

This study assesses whether a full term, AGA, elective cesarean section (S) baby with a normal prenatal and delivery room course requires SNC. Ninety-four S babies born over a 2 year period were retrospectively compared for nursery complications to 94 well baby controls (C) delivered vaginally. The groups were of similar birth weight, gestational age, sex, and date of birth. As expected, the S group had a greater mean maternal age (28 vs 26, C; $p < 0.02$).

Five babies (4S,1C) had problems recognized in the regular nursery that required SNC. Two (1S,1C) were erythroblastotic requiring exchange transfusions. The other 3 (all S) had, respectively, respiratory distress requiring supplemental O_2 (onset ½ hr. old), hypoglycemia (@ ½ hr. old) and hypocalcemia (@ 3 d. old). Other problems not requiring SNC included transient (duration < 90 min) tachypnea or grunting (5S,1C), physiologic jaundice (7S, 1OC) and conjunctivitis (1S). Mean age at first void, stool, and feed were similar in both groups.

These data suggest that special nursery care of full term, AGA, elective cesarean section babies with a normal prenatal and delivery room course is medically unnecessary and financially burdensome. In addition, it probably increases parental stress and impedes maternal-infant bonding.

1016

DEVELOPMENT OF LOW BIRTH WEIGHT (LBW) INFANTS. Michael B. Resnick, Donald V. Eitzman, Robert M. Nelson, Edmund A. Egan, Richard L. Bucciarelli, Ernest F. Beale, University of Florida College of Medicine, Shands Teaching Hospital, Department of Pediatrics, Gainesville.

Evaluations were done at 21 months post-conceptual age on 134 LBW infants discharged from the Regional Neonatal Intensive Care Center between 1974-1976. A 60% return of those assigned for evaluation (all infants with birth weights less than 1500 grams and 20% of infants with birth weights between 1500 and 2500 grams) was achieved. The evaluation tools were the Bayley Scales of Infant Development with mental and physical developmental quotients (MDQ;PDQ), neurological and general evaluations.

BIRTHWEIGHT		MDQ		PDQ		NEUROLOGICAL EXAM
GROUP	N	$\bar{X}$	% NORMAL	$\bar{X}$	% NORMAL	% NORMAL
1000	16	93	63%	98	81%	63%
1000-1499	74	105	95%	106	93%	89%
1500-1999	23	107	91%	112	96%	96%
2000-2500	21	109	86%	109	90%	100%
TOTAL	134	104	89%	107	92%	89%

The only group that was significantly different from the other groups was those less than 1000 grams, where 6 of 16 in this group were estimated to be mentally defective. Three of the 6 defective babies had birth weights less than 750 grams. No differences were evident due to race and sex. It would appear that the babies at major risk for serious handicap are the very LBW babies and they continue to provide a perplexing problem for those involved with the care of small infants.

1017

TIME OF INITIATION OF CPAP IN HMD - Jonelle C. Rowe, Robert D. Guthrie, Paul Hinkes, John Prueitt, Janet Murphy, David E.Woodrum, W.Alan Hodson, University of Washington School of Medicine, Department of Pediatrics, Seattle, Washington. (Spon. by David E. Woodrum).

The effects of the time of application of CPAP on the mortality and morbidity of HMD were examined in 36 infants in 3 weight groups (<1200, 1201-1800 and >1801 gms). Infants were randomly assigned by weight group to early (E) or late (L) CPAP by nasal prongs when $PaO_2 \leq 50$ mgHg while breathing in $F_IO_2 = 0.4$ or 0.7, respectively. Results are shown below:

		Mortality	Need for Respirator	Time in F_IO_2 (hours) >.3	Time in F_IO_2 (hours) >.7	Complications Airleak	Complications CLD
<1200 gms	E	2/2	2/2	---	---	0/2	---
	L	1/1	1/1	---	---	1/1	---
1201-1800	E	2/6	2/6	111 ± 61	17 ± 31	2/6	0/4
	L	1/8	3/8	99 ± 48	8 ± 14	2/8	1/7
>1800 gms	E	1/9	2/9	87 ± 47	6.7 ± 14	2/9	1/8
	L	0/10	1/10	77 ± 21	.4 ± 1	0/10	0/10
TOTAL	E	5/17	6/17	---	---	4/17	1/12
	L	2/19	5/19	---	---	3/19	1/17

There were no differences in mortality, need for artificial ventilation, time spent in an $F_IO_2 > 0.3$ or > 0.7 or in the incidence of air leak or chronic lung disease. Eleven of nineteen infants assigned to late CPAP never required an $F_IO_2 \geq 0.7$ and did not receive CPAP. The present study suggests that the early application of CPAP offers no measurable advantage over the late application of CPAP in the treatment of mild HMD.

1018

INCREASED RISK OF LOW GRADE RETROLENTAL FIBROPLASIA (RLF) IN SMALL FOR GESTATIONAL AGE INFANTS (SGA) ≤ 1500 GM. AT BIRTH. Linda M. Sacks, David B. Schaffer, Endla K. Anday and Maria Delivoria-Papadopoulos. University of Pennsylvania School of Medicine, Department of Pediatrics. Philadelphia, PA.

The incidence of RLF increases with decreasing birth weight (BWT) and gestational age, and with exposure to O_2 therapy. Since SGA infants are of advanced gestational age in relation to appropriate for date infants (AGA), one might expect the incidence of RLF therefore to be decreased. Twenty-one infants ≤ 1500 gm. who received ≤ 120 hrs. of O_2 therapy were followed by indirect ophthalmoscopy for development of proliferative RLF. Seven infants were below the 10th % for gestational age as determined by the Colorado Intrauterine Growth Chart. Fourteen infants were AGA. Duration of O_2 therapy, BWT, and incidence of exchange transfusions (ET) were similar in both groups. SGA infants had a statistically significant greater incidence of RLF (59%) than AGA infants (7%), $P < .05$. All RLF was grade 1 or 2.

	No.	Gest. Age	O_2 Hours	BWT	ET	RLF
SGA	7	35.1 ± 2.7	42.4 ± 21.0	1.31 ± .18	1/7	4/7
AGA	14	31.3 ± 1.1	43.2 ± 39.4	1.31 ± .12	2/14	1/14

The increased susceptibility to RLF of SGA infants may be related to prenatal compromised nutritional status, chronic intrauterine hypoxia, or other unknown factors. It is also possible that diagnosis of early RLF is facilitated in SGA infants by the earlier postnatal resolution of intraocular embryonic structures, affording a better view of the fundi.

1019

EXCHANGE TRANSFUSION AND RETROLENTAL FIBROPLASIA (RLF) - LACK OF CAUSE AND EFFECT. Linda M. Sacks, David B. Schaffer, George J. Peckham, Endla K. Anday, and Maria Delivoria-Papadopoulos. University of Pennsylvania School of Medicine, Department of Pediatrics. Philadelphia, PA.

Exchange transfusion (ET) in preterm infants decreases Hb-O_2 affinity and theoretically might enhance the development of RLF. We followed 62 infants ≤ 1500 gm. with repeated fundoscopic examinations by indirect ophthalmoscopy. They were divided into 2 groups: Group I consisted of 22 infants ≤ 1000 gm. of whom 14 were exchanged, and Group II consisted of 40 infants 1001-1500 gm. of whom 16 were exchanged. In Group I (mean O_2 therapy 1118 hrs.), there was no difference in incidence of proliferative RLF between exchanged (79%) and non-exchanged infants (88%) ($p > .9$). In Group II, those infants with ≤ 120 hrs. exposure to O_2 therapy (n=20) showed no significant difference in incidence of RLF between exchanged (0%) and non-exchanged infants (22%) ($p > .45$). In Group II, those infants with > 120 hrs. O_2 therapy (n=20) showed no significant difference in incidence of RLF between exchanged and non-exchanged infants. In infants < 29 wks. gestation exposed to > 120 hrs. O_2 therapy (n=22) there was no significant difference in incidence of RLF in exchanged (73%) and non-exchanged infants (88%) ($p > .85$), nor was there a significant difference in infants ≥ 29 wks. gestation exposed to > 120 hrs. O_2 therapy (n=19) between exchanged (92%) and non-exchanged (72%) infants ($p > .45$). These data indicate that the occurrence of RLF is unrelated to ET when infants are matched for birth weight, gestational age, and duration of O_2 therapy.