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ACCURACY OF MANUAL VENTILATION WITH AND WITHOUT A MANOMETER. Ehud Zmora and T. Allen Merritt (Spon. by Donald L. Shapiro) U. of Roch. School of Med., Strong Memorial Hospital, Department of Pediatrics, Rochester, NY.

The quality of ventilation in ill neonates and the prevention of acute and chronic respiratory complications depends in part on accuracy and stability of ventilatory performance. While mechanical ventilators are manufactured under strict standards, the performance of manual resuscitators is not and depends upon human skills. Performance of MDs and RNs in the ICN in manual bag ventilation was tested with & without monitoring using a manometer. Manual ventilation of a Resusci-Baby using a pediatric Ambu-bag[®] connected to a manometer (Bird #4407)[®] and transducer with recorder was performed. Ten ICN RNs and MDs were asked to create stable pressure wave forms at a constant rate (30 breaths/min). One minute samples of recordings at 2 pressure levels (15 & 30 cm H₂O) with & without the performers observing the manometer were analyzed. Watching the manometer, performers could maintain the above low & high pressures in a range of ± 2 cm H₂O 70 and 74% of the time respectively. Without the ability to monitor their bagging with a manometer, the desired pressure ranges were maintained in only 18 and 14% respectively. Only 2/10 could maintain the low pressures ± 2 cm H₂O and only 1/10 could maintain the high pressure ± 2 cm H₂O accuracy without a manometer at a rate of 30/min. Our results demonstrate that accurate (± 2 cm H₂O) manual ventilation can only be achieved by the use of a manometer in most instances by skilled neonatal caregivers & that all manual ventilation bags must incorporate a pressure manometer for accurate manual ventilation. (Supp. by HD-13279)

Abstract Withdrawn

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INCIDENCE OF TACHYPNEA FOLLOWING MECONIUM ASPIRATION Alan B. Zubrow, John M. Driscoll, Jr., Mark Stefanski, and L. Stanley James, College of Physicians & Surgeons of Columbia University, Department of Pediatrics, New York City.

Eighty-two consecutive infants born through meconium stained amniotic fluid were prospectively followed to determine the incidence of tachypnea (respiratory rate greater than 50 during a 24 hour period) at the time of discharge. These infants represented 8.3% of all deliveries during the study period. Eighty-five percent were intubated in the delivery room; 39% had meconium aspirated from below the vocal cords. All infants received percussion and suctioning after birth. Seventy percent of the infants were born vaginally and 30% by caesarean section. The study population had a mean birth weight of 3420 grams, gestational age of 40.1 weeks, 1 minute Apgar of 6, 5 minute Apgar of 8. Respiratory rates were recorded every four hours until discharge or until normal for 24 hours.

Twenty infants (24%) were still tachypneic at discharge; 16 were born vaginally and 4 by caesarean section. Nonparametric correlation coefficient and multivariable discriminate analysis revealed no predictability of the recorded variables (route of delivery, 1 minute Apgar, 5 minute Apgar, birth weight, gestational age, presence of meconium below the vocal cords) with tachypnea. Tachypnea at discharge following meconium aspiration has not been previously described. The pathophysiology of tachypnea in these infants requires further study.

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CHANGES IN BLOOD PRESSURE (BP) DURING HEMODIALYSIS (HD) IN PEDIATRIC PATIENTS. Cyrus Akrami, Wilma J. Hunter, Eddie S. Moore, Bruce A. Kaiser, Mahmoud Loghman-Adham. Dept. of Pediatrics, Michael Reese Hosp., Chicago.

Factors related to changes in BP during 4 hr of conventional HD were studied in 13 children and adolescents ages 10 to 20 yr, mean 15.7. No antihypertensive medications were given before HD. Patients were dialyzed with a single-pass delivery system with either plate or hollow-fiber dialyzers while using a constant weight monitoring chair. Body weight (BW), BP, and plasma renin (PRA) and catecholamines (C) were measured immediately pre-HD and after 2 and 4 hr of HD. Mean pre-HD systolic and diastolic BP were 133 ± 4.4 and 78 ± 5.5 mmHg, respectively. After 2 and 4 hr of HD, mean BP was $127 \pm 5.7/76 \pm 3.0$ and $127 \pm 2.4/71 \pm 5.0$ mmHg. Mean pre-HD BW was 52.9 ± 6.4 kg (29.3-80.3). Mean BW after 2 hr of HD was 52.1 ± 6.2 kg and 51.1 ± 6.0 kg after 4 hr of HD. Initial PRA was 6.66 ± 2.28 ng/ml/hr (0.14 to 16.9). After 2 and 4 hr, mean PRA was 9.45 ± 3.15 and 9.76 ± 3.73 ng/ml/hr, respectively. There was no significant correlation between changes in BP and changes in PRA. However, there was a significant correlation between decrease in BW and decrease in BP after 4 hr of HD ($r=0.914$; $p<0.002$). These data suggest that changes in BP during HD in children do not correlate with plasma renin activity but are related to changes in total body water as previously demonstrated in adult patients.

NEPHROLOGY

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TIME OF GENTAMICIN (GN) ADMINISTRATION: AN IMPORTANT VARIABLE IN EXPERIMENTAL NEPHROTOXICITY IN THE RAT. Raymond D. Adelman, University of California Davis Medical Center, Department of Pediatrics, Sacramento, CA 95817.

Na loading can reduce the severity of drug nephrotoxicity. Rats, frequently used in such studies, consume food primarily at night and are thus relatively Na loaded in the early morning. To examine if this "natural" state of Na excess confers any protection from GN nephrotoxicity, male Fischer 344 rats on ad libitum Purina Chow (Na 0.36%) were given GN 60 mg/kg/d sc at 8 AM (Gr 1) and 6 PM (Gr 2) for 8 days. Control rats (Gr 3) on the same diet were given 0.1 cc saline sc. Urine was collected daily for a 10-hour period preceding each injection. There were no initial differences between groups in mean age, weight or BUN.

Gr 1 rats had decreased urinary osmolality (Uosm) but normal serum creatinine (S_{Cr}) and Cl_{Cr} (8.5 ± 2.6 ml/min/kg). Gr 2 rats had decreased Uosm, increased S_{Cr} and decreased Cl_{Cr} (3.0 ± 0.7 ml/min/kg).

Group	S_{Cr} mg/dl	Uosm mosm/L	Una mEq/hr/day
1 GN (8 AM)	$0.58 \pm .14$	$1757 \pm 347^*$	$.055 \pm .02$
2 GN (6 PM)	$0.80 \pm .04^*$	$1732 \pm 241^*$	$.036 \pm .02$
3 Ctl (8 AM)	$0.63 \pm .08$	2968 ± 44	$.045 \pm .02$

In evaluating drug nephrotoxicity in rats and comparing data, the time of drug administration should be considered.

* $P < .05$ (compared to control).

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IMMUNE DEPOSITS IN MINIMAL CHANGE NEPHROTIC SYNDROME (MCNS): CLINICAL RELEVANCE. William R. Allen, Luther B. Travis and Tito C. Cavallo, Department of Pediatrics, Fitzsimons Army Medical Center, Aurora, Colorado and Department of Pediatrics and Pathology, University of Texas Medical Branch, Galveston.

MCNS has been described as having negative immunofluorescence and no immune deposits on electron microscopy. Occasional patients with nephrotic syndrome (NS) and minimal histologic change demonstrate glomerular deposition of small amounts of immunoglobulin and complement. Some consider patients with NS, mesangial hypercellularity and evidence of immune deposits as a separate disease entity. To investigate the clinical importance of the findings of mesangial hypercellularity and immune deposits on the initial biopsy, the clinical records, follow-up data and renal biopsy of 68 patients (ages 6 mos-16 yrs) with MCNS by light microscopy were reviewed. Clinical classification utilized criteria of the International Study of Kidney Disease in Childhood. Among patients with immune deposits present there was a 16-fold increase in the frequency of steroid non-response at follow-up (mean 6.2 yrs). Frequent relapse was noted less often with normal mesangial cellularity.

Immunologic Deposits	Steroid Responsive	Steroid Non-Responsive	Mesangial Cells	Relapse 3/yr	Relapse 3/yr
Present	17	8(a)	Increased	9	6
n=25			n=18		
Absent	42	1	Normal	13	31(b)
n=43			n=50		

(a) $p=0.0005$ (b) $p=0.035$

The data suggest that in children with NS and minimal light microscopic change evidence of immune deposits and increased mesangial cells are predictive of clinical course.