5 ANALYSIS OF THE CRY OF NEWBORNS WITH RESPIRATORY DISTRESS SYNDROME /RDS/

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Analysis of the cryl of 11 newborns with RDS, born in the 36th-39th gestation week is reported. The cry was recorded on tape. It was found that 1/in serious conditions the cry differs from the pattern observed in healthy infants. The interval between the cry and inspiration undergoes considerable changes. 2/The cry of infants with RDS differs characteristically from that of infants suffering from other diseases. Intermittent and considerable changes in pitch were found. The pitch of the cry at the end of the half minute period is one or one and a half octave deeper that at the beginning while the pitch of normal infants remains unchanged. 3/Characteristic of the recovery phase is the appearance of spontaneous hunger cry. 4/The changes in the cry are parallel to the changes of the patients' condition. Cry analysis is useful in differential diagnosis and for assessment of somatic state.

6 UDP-GALACTOSE 4-EPIMERASE DEFICIENCY IN BLOOD CELLS

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Deficiency of UDP-galactose 4-epimerase which catalyzes the interconversion of UDP-gal and UDP-glc, was found in the peripheral blood cells of two newborn children detected by routine screening. Two maternal relatives of one child are also affected. The disorder is characterized by elevated erythrocyte galactose 1-phosphate /blood and urinary galactose levels are normal/ and is inherited as an autosomal recessive trait. Physical examination and hematological findings are unremarkable. Liver and cultured skin fibroblasts have normal epimerase activity. Peripheral blood lymphocytes, which lack the enzyme in vivo, are capable of producing it upon stimulation with phytohemagglutinin in vitro. In addition, a lymphoblast cell line derived by transformation with Epstein-Barr virus from the peripheral blood of one child produces a normal amount of epimerase indistinguishable in kinetic properties from that produced by normal cell lines. It is not yet possible to decide if the deficiency state of this enzyme represents a simple lack of a presumed isoenzyme or a defect in the regulation of gene expression.

7 LATE PROGNOSIS IN SURVIVORS WITH SEVERE IDIOPATIC RESPIRATORY DISTRESS SYNDROME TREATED WITH INTERMITTENT POSITIVE PRESSURE VENTILATION

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26 patients treated in infancy with Bird Ventilator Mark 8 and 1o for IRDS and who have now reached 5 to 7,1/2 years of age, have been followed up together with regard to sex, season of birth, gestational age /or birth weight/ and parental social class. 3 more survivors with former IRDS were incompletely investigated /2/ or lost to follow up /1/.The IRDS group scored insignificantly lower than the controls in the WPPSI/WISC test /1o2,4 versus 1o9,6/. Significant handicaps possibly related to anoxi were found among 9 former IRDS patients /cerebral palsy and IQ 84 /1/, hydrocephalus and IQ 72 /1/, IQ scores below 85 /3/, epilepsy /1/ and speech retardation /3/ and among 2 controls /bilateral hearing loss /2/ one with IQ below 85/. 2 former IRDS patients had tracheostomies performed during their first year of life due to subglottic stenosis. The normal airway passage could be restored after 9 and 17 months respectively. 11 cases had at least one pneumonia against 2 in the control group /p o,o1/ but mainly during their first 2 years of life. The occurence of pneumonias in the IRDS group were positively correlated to the length of the ventilator treatment.

8 EFFECTS OF THAM AND SODIUM BICARBONATE ON METABOLIC ACIDOSIS AND MINERAL METABOLISM

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We caused in rabbits an acidosis by infusion of NH_4Cl solution. Following we infused $NaHCO_3$ solution, THAM solution pH 1o.2 or THAM acetic acid solution pH 8.6. In correcting the metabolic acidosis the buffers had an equal efficacy. The correction of pH and base excess in erythrocytes was more slowly by use of $NaHCO_3$ than by use of THAM solutions. Hematocrit, plasma K, Cl and phosphate decreased by infusion of buffer solutions. Na increased by use of $NaHCO_3$, it decreased by use of THAM solutions. Ca was not influenced. After the infusion of THAM followed by infusion of glucose solution in newborns we could see a fall of plasma electrolytes. Therefore we think that it is not sufficient to add minerals after 24 hours or later. but it is necessary to applicate minerals earlier. From the view of Na metabolism it is our opinion that we should not use $NaHCO_3$ for the therapy of an acidosis in newborns.

9 CHANGES IN AIRWAY RESISTANCE DUE TO NASOGASTRIC TUBES IN NORMAL NEWBORN INFANTS

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Nasal resistance represents approximately 4o% of the airway resistance /R_{aw}/ in newborns, who are obligatory nose breathers. To determine the effect of a nasogastric tube on the R_{aw}, 1o healthy newborn infants /3 preterm, and 7 term/ were studied using plethysmography. A nasogastric tube significantly and systematically increased R_{aw} /transformation coefficient $=1.318 \pm .21; p < .001$/. In 9, the estimate of the resistive work /WR/ increased proportionally to the increase in R_{aw} /ΔR_{aw}/, /transformation coefficient= $1.441 \pm .44; p < .001$/, but in an unpredictable manner. ΔW_R was lower than ΔR_{aw} in 4 term; higher in 3 preterm and 1 term; and identical in 1 term infant, depending upon adjustments in minute ventilation. The increase in work resulting from a nasogastric tube may be significant , particulary in premature infants.

10 SALT AND WATER HOMEOSTASIS IN THE NEWBORN

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Fluid and electrolyte administration to infants has been empiric and is critical to the survival of low birth weight infants.Inulin clearance/C_{IN}/, sodium reabsorption and clearance/C_{NA+}/ and free water clearance/C_{H2O}/ by constant infusion with free voiding technique were compared at I.V. infusion rates of 3.6/L.R./or 1o.3/H.R./ ml/kg/hr in 32 healthy appropriate for gestational age infants 545-39oo gm.Fractional Na+ reabsorption was similar in both groups, 98.8 $\pm$.79%/L.R./and 98.5$\pm$1.5/H.R./.C_{H2O} in 9 infants 2ooo grams studied at L.R. and, in 5 infants at H.R. were 2.1$\pm$o.98 and 5.o$\pm$2.7 ml/min/1oo ml GFR respectively /p= .o25/.Urine volumes were 5.96 and 9,5ml/min/1oo ml GFR respectively.Na+ reabsorption in the distal nephron /$C_{H2O}/C_{H2O}+C_{Na}$/ was 64.7$\pm$ 17% in the L.R. group. These data demonstrate that infants can excrete water and readsorb Na+ efficiently at L.R.Our results suggest that H.R. of fluid can be given to low weight infants if the osmotic load is not excessive. They respond to increased I.V. infusion rates by increasing delivery from the proximal nephron /V. x1oo/GFR/ but can reabsorb the increased sodium load presented to their distal nephrons and increase C_{H2O}.