

hyperviscosity. The signs were (1) 'cerebral'—jitteriness, stiffness, fits, lethargy, and hypotonia; (2) plethora and cyanosis; (3) respiratory distress.

Active treatment was undertaken in 8 infants: increased oral fluids in 2 produced no improvement, but the remaining 6 had a plasma exchange (20–30 ml./kg.) with resultant marked reduction in blood viscosity and clinical improvement in 5.

Hyperviscosity of the blood may cause abnormal signs in infants with respiratory distress, 'cerebral' irritation, and in the parabolic syndrome. These signs together with a venous PCV greater than 75 may be an indication for a plasma exchange.

Perforation of Bowel in Newborn as Complication of Exchange Transfusion. R. Orme (*Royal Devon and Exeter Hospital, Exeter*). (Introduced by J. Scopes). Spontaneous perforation of the bowel without evidence of intestinal obstruction occurred in 6 infants who had exchange transfusions for Rhesus incompatibility. The clinical signs followed a distinct pattern which may misleadingly suggest portal vein thrombosis in the early stages. The pathological findings resembled those found in acute necrotizing enterocolitis in adults, which is known to be associated with arterial hypotension. It is suggested that the cause in these infants may also be due to periods of hypotension during the exchange transfusions. Hypoxia and infection may also be important, though the infection when it occurs is superimposed upon the necrosis of the bowel.

Human Breast Milk Jaundice; Estimation of Steroids in Milk. J. A. B. Darling and R. A. Harkness. (*Department of Paediatric Biochemistry, Royal Hospital for Sick Children, and Department of Clinical Chemistry, University of Edinburgh*). About 1% of newborn breast-fed infants develop jaundice, which starts during the first week of life and may be severe. The jaundice, which is due to defective conjugation of bilirubin, can be related to the infants' intake of breast milk, and factors inhibiting conjugation have been shown in milk, serum, and urine. Many steroids have been shown to inhibit the glucuronyl transferases *in vitro*. After the isolation of 5 β -pregnane-3 α , 20 β -diol from human milk, it seemed reasonable to assume that breast milk jaundice was due to steroids transmitted in the milk. However, the evidence supporting this assumption was largely indirect. There have been no quantitative studies of the steroids in human milk, probably due to the analytical difficulties.

In the present investigation, a method has been developed for the group analysis of 17- and 20-oxogenic steroids in milk. Group analysis has been used since many steroids are capable of inhibiting conjugation mechanisms. The method consists of the following steps—saponification, gentle mechanical extraction, CrO₃ oxidation, Girard separation, thin-layer chromatography, and, finally, gas-chromatography. Preparative gas-chromatography has been used to provide evidence of specificity. The quantities of steroids in cows' and in human milk are small. The mean concentration

(\pm SD) of 5 α -androstane-3, 17-dione in the final fractions from 48 samples of cows' milk was equivalent to 0.52 ± 0.46 μ g./100 ml. milk. Similar small quantities of steroids with a predominantly 5 α -structure were found in human milk. There was no large difference in the quantities present in the milk from mothers with jaundiced babies. However, it has so far only been possible to study a small number of such cases.

The results obtained so far are consistent with previous work on other problems, mainly in animals, and suggest that the metabolism of steroids by the breast is an important factor affecting the steroids present in milk. Breast milk jaundice may therefore be a complex problem.

Assessment of Gestational Age in Newborn: A Practical Scoring System. L. Dubowitz (*Department of Child Health, University of Sheffield*). (Introduced by V. Dubowitz). At the Aberdeen meeting of the Paediatric Research Society we reported on the variability and subjective nature of many of the traditional neurological criteria used in assessing gestational age (*Arch. Dis. Childh.* (1969), **44**, 135).

We have now tried to quantitate 10 neurological criteria which we have found to be most objective and reproducible. Each criterion has been scored, the grades range from 0–2 to 0–5, depending upon the number of substages one could readily define and recognize. In each case 0 is the grading consistent with the earliest gestation.

The scoring system has been applied in 400 newborn infants of varying gestational age. We have also assessed in these infants 11 superficial or skin criteria, along the lines and scoring system of Farr *et al.* (*Develop. Med. Child Neurol.* (1966), **8**, 507).

After clinical assessment of the infants all the mothers were personally questioned with regard to the date of the last menstrual period and regularity of the menstrual cycle. Contrary to the confidence of the obstetrical notes, we found that in only 150 out of 400 were the data from the mother reliable enough for further analysis.

In these 150 infants we have analysed statistically the correlation between the gestational age and the total score of neurological signs, the total score of the superficial signs, and the grand total score. All three scores showed a correlation coefficient in the region of 0.9. We also analysed separately observations done within 24 hours of birth and those done after 24 hours—the earlier observations, if anything, gave a better correlation. The highest correlation coefficient (0.97) was that of total score within 24 hours and gestational age.

We have found this scoring system to be a practical one. It can be done in about 10 minutes and has been readily reproducible by resident staff and nurses.

Further Studies of Motor Nerve Conduction Velocity in Newborn Infants. A. Moosa (*Department of Child Health, University of Sheffield*). (Introduced by V. Dubowitz). Recent studies have shown that motor nerve conduction velocity of the ulnar and posterior