who performed the insulin estimations on the pancreas; and to Professors I. Doniach and E. Williams for helpful advice.

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Measurements of systolic blood pressure in the preterm baby by the transcutaneous Doppler method

Comprehensive care of the sick small baby should include regular estimation of blood pressure (BP) by a technique which should be reliable and free of risks. Though a number of indirect methods exist in monitoring BP in the newborn, accuracy of such procedures remains largely undetermined. However, introduction of the trancutaneous Doppler ultrasound (Black *et al.* 1972; Kirkland and Kirkland, 1972) in measuring BP showed that the method was fairly accurate and correlated well with direct intra-arterial measurements (Elseed *et al.* 1973). Using the Doppler method we have estimated systolic BP in preterm babies during the first 7 days of life to determine within-patient variations and standard deviations.

Material and methods

Thirty-five babies were studied. All were well. Birthweights ranged from 1000—2500 g. None developed clinical features of respiratory distress. Systolic BP was taken in the upper limbs, after feeds when babies were quiet or asleep, twice daily during the first 7 days of life from 9.00 a.m.–11.00 a.m. and 3.00 p.m.–5.00 p.m. The instrument used was Model No. 802, Parks Electronic Ltd., cuff size 4 cm. 14 measurements were made on each of 35 babies, i.e. 490.

Results

Mean systolic BP is shown in the Table. In the analysis the groups have been treated as representing a random sample from a 'population' of babies with birthweights in the appropriate ranges. (All babies were born in Peterborough during the time over which the data were collected. The group means are considered as estimates of the means in the appropriate 'populations', and estimated standard errors have been calculated, on that basis, using the analysis of variance.

Table *Mean systolic blood pressure*

No. of babies	*Birthweight (g)*	*Mean systolic pressure (mmHg)*	*Standard error (mmHg)*
10	1000—1500	74·0	2·5
9*	1501—2000	69·5	2·6
16	2001—2500	71·8	1·9

*One baby omitted: this baby was excluded from some of the later analysis as its readings were felt to be a very extreme set of observations. Here it does not alter the estimates significantly. No weighting was used, since 14 observations were available on all the babies. The differences between the groups are not significant at the 5% level. Thus, overall, systolic BP in this group of babies has a mean of 71·9 ± 1·3 mmHg, SE).

The day from birth appears to have an effect on systolic pressures. An analysis of variance was carried out using all the data, with the model:

$$Y_{IJK} = \mu + \alpha_I + \beta_J + \gamma_K + \delta_{IJ} + \eta_{IK} + \varepsilon_{JK} + \zeta_{IJK}$$

where I (I = 1 . . . 35) represents 'baby', J (J = 1 . . . 7) represents *day* from birth', K (K = 1 . . . 2) represents *time* of day'.

The variance ratio, against the residual (i.e. baby × day × time) for baby × *day* was 1·70 ($P \simeq 0{\cdot}005$) and for baby × *time* was 1·85 ($P \simeq 0{\cdot}025$). The variance ratio (against the baby × *time* interaction) for *time* was 2·72 ($P \simeq 0{\cdot}1$). Thus the baby × *day* and baby × *time* interactions seem significant.

Three main sources of variation have been isolated (estimates based on the Table omitting one observation). (i) Between babies—estimated standard deviation 6·4. (ii) Variation due to the differing patterns over days—estimated standard deviation 6·9. (iii) Residual, within-baby variation—estimated standard deviation 11·6.

The effect of birthweight has been examined. There does not seem to be any clear relationship between birthweight and mean blood pressure.

Conclusion

The Doppler technique is easy to use, gives fairly reproducible results, and should prove useful in monitoring blood pressure of very ill neonates, e.g. with recurrent apnoeic attacks.

Summary

Mean systolic blood pressure estimated by the indirect Doppler technique, in a group of 35 preterm babies, was 71·0 ± 1·3 mmHg (SE).

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Congenital oesophageal stenosis

Oesophageal atresia is a deformity which cannot be overlooked: congenital oesophageal stenosis presents less urgently and occurs more rarely but can still prove fatal. When the case described here was treated, the advice found in the literature was confusing, and it seemed worthwhile to record our experience.

Case history

A girl was born by spontaneous delivery at term on 3 July 1974 in Kirkwall, Orkney, after an uneventful second pregnancy. Her birthweight was 3800 g and she appeared healthy. 2 days after delivery the mother became febrile and on the next day the baby was also feverish. No abnormality was found until, after 2 weeks, serological evidence of herpes simplex infection in both mother and child was reported. Recurrent regurgitation of feeds occurred during the third and fourth weeks. By 8 August this had settled, the baby was well, afebrile, and weighed 3730 g.

On 20 August 1974 the baby was admitted to the Royal Aberdeen Children's Hospital because there was a tendency to choke on feeds and tenacious mucus was brought up. The baby looked well and weighed 4170 g. On 27 August a barium swallow (Fig. 1) showed a very short membranous narrowing at the level of T4 below which there was a widened area, followed by a stricture, 2·5 cm long. Below this area the oesophagus looked normal and there was no evidence of hiatus hernia, gastro-oesophageal

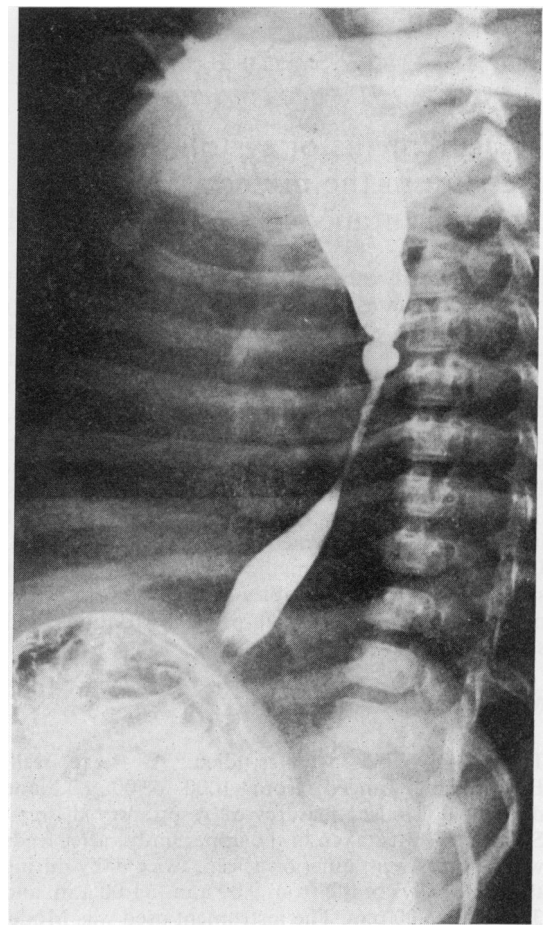

Fig. 1 *Barium swallow of 27 August 1974 at age 7 weeks.*