

Clinical Assessment of Gestational Age in the Newborn*

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SUMMARY

The scoring method of Dubowitz *et al.* was used for the assessment of gestational age in 100 newborn Cape Coloured infants. The accuracy of prediction of gestational age by this method was confirmed.

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There is a real need for a clinical method of estimating the gestational age of newborn infants, because many mothers are uncertain about the exact date of their last menstrual period. A method based on the scoring of neurological and external characteristics, has been reported by Dubowitz *et al.*¹

Briefly, the method consists of the evaluation of 10 neurological and 11 'external' signs. Each of these signs is given a score, depending on the stage of development (Tables I and II). Dubowitz *et al.*¹ obtained a correlation coefficient for the total score against gestational age, in weeks, of 0,93.

TABLE I. NEUROLOGICAL SIGNS¹

Sign	Score
Posture	0 - 4
Square window	0 - 4
Dorsiflexion of foot	0 - 4
Arm recoil	0 - 2
Leg recoil	0 - 2
Popliteal angle	0 - 5
Heel-to-ear	0 - 4
Scarf sign	0 - 3
Head lag	0 - 3
Ventral suspension	0 - 4
Total	0 - 35

We decided to test the applicability of this method to the local Cape Coloured population.

MATERIALS AND METHODS

Newborn babies delivered at Tyberberg Hospital are scored for gestational age according to the method of Dubowitz *et al.*¹ as a routine.

All the scoring in this particular study was done by one of us (A.M.J.). One hundred infants (45 female and

TABLE II. EXTERNAL SIGNS¹

Sign	Score
Oedema	0 - 2
Skin texture	0 - 4
Skin colour	0 - 3
Skin opacity	0 - 4
Lanugo	0 - 4
Nipple formation	0 - 3
Plantar creases	0 - 4
Breast size	0 - 3
Ear form	0 - 3
Ear firmness	0 - 3
Genitals	0 - 2
Total	0 - 35

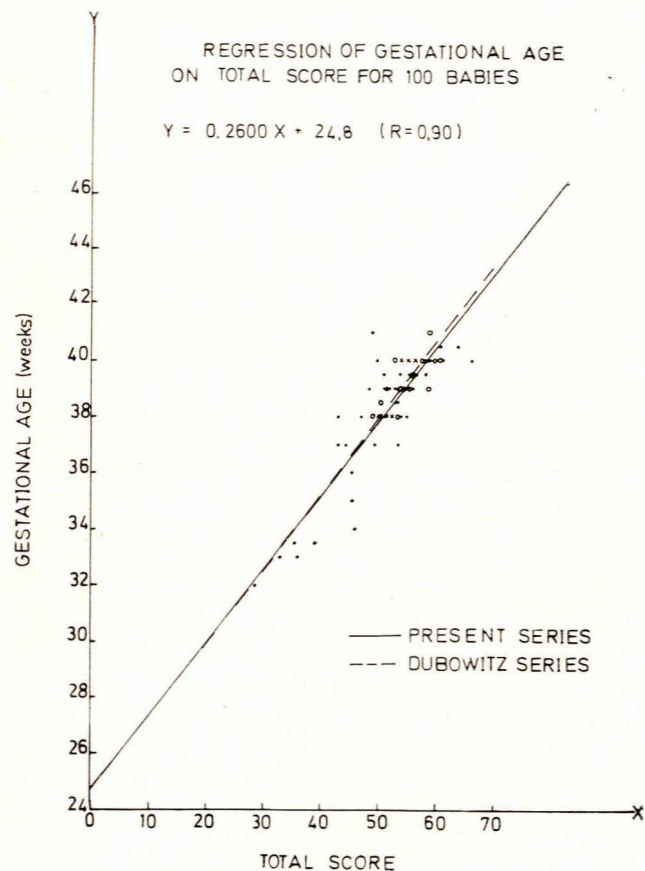


Fig. 1. Scatter diagram of gestational age against total score (• = 1 case; o = 2 cases; x = more than 2 cases).

*Date received: 16 April 1973.

55 male) were selected for study. They were the infants of the first 100 mothers who were reasonably sure of the date of their last menstrual period. The gestational period was calculated from the first day of the last menstrual period. Twins were not included. All the mothers had had uncomplicated pregnancies and labours.

RESULTS

The scatter diagram of gestational age (Y) against total score (X) is shown in Fig. 1. The regression line obtained from these data is seen to differ only slightly in slope and position from that of Dubowitz *et al.*¹ and in the range of 30-42 weeks, the gestational ages estimated from the 2 regression lines differ by less than 0.2 weeks.

The equation for the regression lines is:

$Y = 0,2600 X + 24,8$ (Dubowitz *et al.*: $Y = 0,2642 X + 24,6$) and the correlation coefficient is 0,90 (Dubowitz *et al.*: 0,93).

The 95% confidence interval for a single estimation of gestational age is $\pm 1,7$ weeks.

CONCLUSION

On the sample of 100 Cape Coloured infants used in this study, the scoring method of Dubowitz *et al.* can be used to estimate the gestational age, with only negligible changes in the equation of the regression line.

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REFERENCE

1. Dubowitz, L. M. S., Dubowitz, V. and Goldberg, C. (1970): *J. Pediat.*, **77**, 1.

Assessment of a 6-Channel Multiple Analyser for Renal Function Monitoring*

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SUMMARY

The biochemical monitoring of renal function in patients in the care of the Renal Unit in the Johannesburg General Hospital requires the regular estimation of electrolytes, urea and creatinine in blood and urine specimens. An evaluation is presented of a 6-channel multiple analyser which was introduced into this department to provide this service. Our experience indicates that this analytical system is well suited to the performance of this important supporting role for controlling the treatment of renal patients.

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For many years it has been customary for the determination of serum levels of sodium, potassium, chloride and bicarbonate to be requested by the clinician and for them to be performed in the laboratory as a group, termed the 'serum electrolytes'. Twenty-five years ago the laboratory

work associated with such a request included a gravimetric determination for sodium, a colorimetric one for potassium, a titrimetric one for chloride, and a gasometric one for total carbon dioxide. The present-day large-scale monitoring of electrolyte balance has been made possible only by technological advances, of which the most important were the introduction of the flame photometer in the late 1940s and the development of continuous-flow methods for chloride and bicarbonate in the late 1950s, all of which were combined in the 4-channel electrolyte analyser introduced by the Technicon Corporation† in 1962.

The extent of the demand for electrolyte determinations can be gauged by the increase in the number of requests made to our department over the last 20 years, from a monthly average of 288 in 1952 to over 3 700 in mid-1972.

The establishment of a Renal Unit in the Johannesburg General Hospital, where the first renal transplantations were carried out in August 1966, has placed an additional

*Date received: 16 April 1973.

†Local address: Technicon AutoAnalyzer (Pty) Ltd, P.O. Box 39390, Bramley, Tvl