

Discussion

Immunoglobulin studies in idiopathic pulmonary haemosiderosis have been done to our knowledge in only one case so far in which IgA was decreased (Krieger and Brough, 1967).

Children with IPH studied in this series had a significant ($P < 0.001$) selective increase of serum IgA. High serum IgA levels have been observed in several conditions with pulmonary involvement such as cystic fibrosis of the pancreas (Schwartz, 1966; South *et al.*, 1967), chronic bronchitis, and pulmonary emphysema (Biegel and Krumholz, 1968; Falk, Siskind, and Smith, 1970). In most of these conditions there is an increase in serum IgM and IgG as well. This general rise in immunoglobulin levels has been attributed to stimulation by recurrent infections. This was not the case in the series of cases of IPH.

Assuming that the raised levels of IgA in children with IPH might be due to the presence of a fraction of IgA with specific antigenic determinants, in addition to the common ones, IPH sera were tested with specific IPH rabbit antiserum; no evidence of the presence of a pathological component could be shown by this technique.

Martinez-Tello, Braun, and Blanc (1968) observed an increase in the number of IgA producing cells in the bronchial tree in chronic pulmonary disease, and Falk *et al.* (1970) suggested that increased levels of serum IgA might reflect increase of secretory IgA in the respiratory system. In order to investigate this possibility, saliva IgA levels were estimated in IPH children, relatives, and controls. IgA concentration in saliva has such wide variations in the present series as well as in others (Haworth and Dilling, 1966; South *et al.*, 1967) that it is difficult to draw conclusions. Nevertheless, in the samples that were studied IgA salivary levels did not differ from those of normal controls, either in the children or their relatives.

Summary

Levels of immunoglobulin G, A, and M were studied in 31 children with idiopathic pulmonary haemosiderosis and in 35 relatives. A selective increase in serum IgA was observed in the patients. IgA levels in saliva did not show any difference compared with those of normal children.

REFERENCES

- Biegel, A. A., and Krumholz, R. A. (1968). An immunoglobulin abnormality in pulmonary emphysema. *American Review of Respiratory Diseases*, **97**, 217.
- Falk, G. A., Siskind, G. W., and Smith, J. D. Jr. (1970). Immunoglobulin elevations in the serum of patients with chronic bronchitis and emphysema. *Journal of Immunology*, 105.

- Haworth, J. C., and Dilling, L. (1966). Concentration of gamma A-globulin in serum, saliva, and nasopharyngeal secretions of infants and children. *Journal of Laboratory and Clinical Medicine*, **67**, 922.
- Krieger, I., and Brough, J. A. (1967). A deficiency and hypochromic anemia due to defective iron mobilization. *New England Journal of Medicine*, **276**, 886.
- Mancini, G., Carbonara, A. O., and Heremans, J. F. (1965). Immunochemical quantitation of antigens by single radial immunodiffusion. *Immunochemistry*, **2**, 235.
- Martinez-Tello, F. J., Braun, D. G., and Blanc, W. A. (1968). Immunoglobulin production in bronchial mucosa and bronchial lymph nodes, particularly in cystic fibrosis of the pancreas. *Journal of Immunology*, **101**, 989.
- Merrill, D., Hartley, T. F., and Claman, H. N. (1967). Electroimmunodiffusion (EID): a simple, rapid method for quantitation of immunoglobulins in dilute biological fluids. *Journal of Laboratory and Clinical Medicine*, **69**, 151.
- Schwartz, R. H. (1966). Serum immunoglobulin levels in cystic fibrosis. *American Journal of Diseases of Children*, **111**, 408.
- Soergel, K. H., and Sommers, S. C. (1962). The alveolar epithelial lesion of idiopathic pulmonary hemosiderosis. *American Review of Respiratory Diseases*, **85**, 540.
- South, M. A., Wollheim, F. A., Warwick, W. J., Cooper, M. D., and Good, R. A. (1965). Local deficiency of immunoglobulin A in the saliva of patients with chronic sinopulmonary disease. *Journal of Pediatrics*, **67**, 940.
- South, M. A., Warwick, W. J., Wollheim, F. A., and Good, R. A. (1967). The IgA system. IgA levels in the serum and saliva of pediatric patients. Evidence for a local immunological system. *Journal of Pediatrics*, **71**, 645.
- Steiner, B. (1954). Essential pulmonary haemosiderosis as an immunohaematological problem. *Archives of Disease in Childhood*, **29**, 391.

H. VALASSI-ADAM*, A. ROUSKA, J. KARPOUZAS, and N. MATSANIOTIS

'St. Sophie's' Children's Hospital, Athens University, Department of Paediatrics, Athens, 608, Greece.

*Correspondence to Dr. H. Valassi-Adam.

Gestational age assessment in infants of very low birthweight

Although birthweight has in the past been used to provide statistics in the newborn period, duration of gestation is a better guide to morbidity and mortality. This is particularly so towards term when weight is influenced by factors such as parity, altitude, maternal height, ethnic grouping, and maternal diseases. But accurate age assessment is just as important and necessary for infants born prematurely. The Dubowitz scoring system (Dubowitz, Dubowitz, and Goldberg, 1970) using both the external criteria of Farr *et al.* (1966) and the neurological evaluation of Amiel-Tison (1968), is accepted by many as the method of choice. The accuracy of this method, originally established in Britain, has recently been confirmed for populations in Nigeria (Brueton, Palit, and Prosser, 1973),

Rhodesia (Singer, Blake, and Wolfsdorf, 1973), and South Africa (Jaroszewicz and Boyd, 1973).

The above studies were primarily concerned with term infants. We record our experience with the Dubowitz system in infants of very low birthweight.

Materials and methods

Infants with birthweights below and including 1500 g were used in this study. All were born in and handled by the Peninsula Maternity Service, Groote Schuur Hospital. Infants with respiratory distress, congenital abnormalities, or obvious infection were excluded. The apparently healthy infants, 86 in number, were scored between 24–48 hours of age according to the Dubowitz system. In most instances only one assessment was made by one of us (S.C.H.). Liberal use of half-points was made, especially when examining very immature infants.

The mothers were subsequently interviewed and questioned as to their last normal menstrual period. Only 19% of mothers had no clear idea of their menses. A further 21% could name the month but not the date of their last menstrual period. In 52 instances (60%) a definite date was obtained and the gestational age calculated in the accepted manner from the first day of the last period. Only these 52 calculated ages, expressed in weeks, were used for comparison.

Results

The relation between the scored gestational age (x) and the gestation calculated by dates (y) is shown in Fig. 1. The regression formula is $y = 1.10x - 2.88$ with a correlation coefficient (r) 0.915. 95% confidence limits are 2.14 weeks.

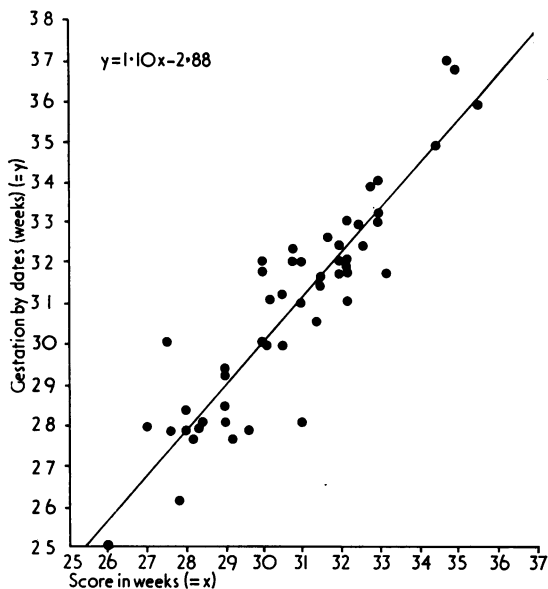


FIG. 1.—Distribution of gestation calculated by dates against scored gestational age in 52 infants.

All 86 infants were plotted on the intrauterine growth curve of Lubchenco *et al.* (1963) using the scored gestational age (Fig. 2). There is a normal distribution further supporting the accuracy of the scoring system for this population. The 8 infants who are small-for-dates at 34–36 weeks reflect the criterion of patient selection.

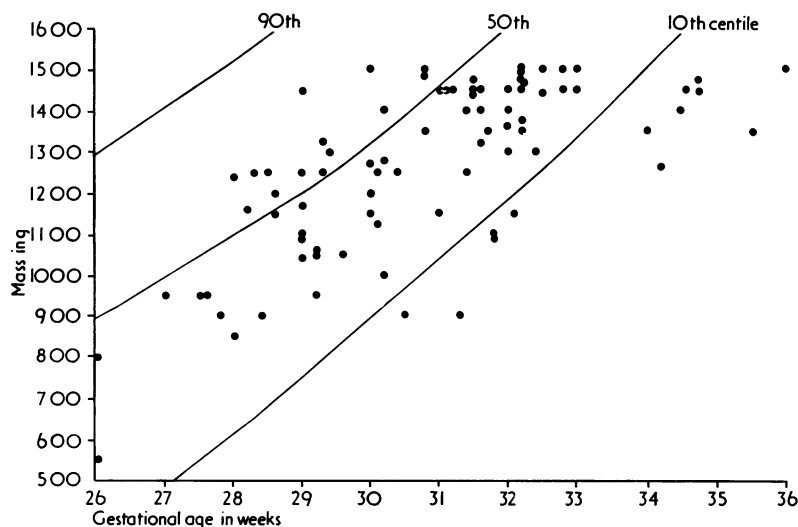


FIG. 2.—Distribution of weight against scored gestational age in 86 infants. Centile lines from Lubchenco *et al.* (1963).

Discussion

In the original article by Dubowitz *et al.* (1970) and in the subsequent studies there were few infants of very low weight or gestational age: there were only 3 infants at 32 weeks, one at 31, and 2 at 28 weeks. The line for the lower gestations is an extrapolation of the correlation found nearer term. Singer *et al.* (1973) added a further 16 scores below 32 weeks. It is therefore gratifying to have found a satisfactory correlation between the scored and calculated ages in the present study. The correlation could probably be improved if detailed antenatal findings were also used to calculate the duration of gestation. But it is in communities where such antenatal care is minimal that the highest incidence of very premature deliveries occurs. Mothers from less sophisticated backgrounds are, however, surprisingly accurate with their dates.

Summary

The accuracy of gestational age assessment (Dubowitz *et al.*, 1970) was tested for infants weighing 1500 g or less. There was good correlation with known dates. This system is applicable to and accurate for infants delivered very prematurely.

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REFERENCES

- Amiel-Tison, C. (1968). Neurological evaluation of the maturity of newborn infants. *Archives of Disease in Childhood*, **43**, 89.
- Brueton, M. J., Palit, A., and Prosser, R. (1973). Gestational age assessment in Nigerian newborn infants. *Archives of Disease in Childhood*, **48**, 318.
- Dubowitz, L. M. S., Dubowitz, V., and Goldberg, C. (1970). Clinical assessment of gestational age in the newborn infant. *Journal of Pediatrics*, **77**, 1.
- Farr, V., Mitchell, R. G., Neligan, G. A., and Parkin, J. M. (1966). The definition of some external characteristics used in the assessment of gestational age in the newborn infant. *Developmental Medicine and Child Neurology*, **8**, 507.
- Jaroszewicz, A. M., and Boyd, I. H. (1973). Clinical assessment of gestational age in the newborn. *South African Medical Journal*, **47**, 2123.
- Lubchenco, L. O., Hansman, C., Dressler, M., and Boyd, E. (1963). Intrauterine growth as estimated from liveborn birth-weight data at 24 to 42 weeks of gestation. *Pediatrics*, **32**, 793.
- Singer, B., Blake, L., and Wolfsdorf, J. (1973). Estimation of gestational age of African newborn infants by a scoring system. *South African Medical Journal*, **47**, 2074.

A. F. MALAN* and S. C. HIGGS

*Department of Paediatrics and Child Health, University of Cape Town, Observatory, South Africa 7900.

Desquamative fibrosing alveolitis unresponsive to steroid or cytotoxic therapy

Fibrosing alveolitis is not uncommon in adults but is rare in infancy, though cases have been reported with predominantly a fibrosing pattern (Hilton and Rendle-Short, 1961) and with a desquamative pattern (Liebow 1972; Howatt *et al.*, 1973). We describe a further case diagnosed by needle lung biopsy which showed a number of important differences from the usual adult pattern.

Case report

The patient was a male infant delivered by forceps at 39 weeks' gestation, weighing 3.6 kg, to a 40-year-old mother whose pregnancy had been complicated by mild hypertension for which she received diazepam and nitrazepam. 2 previous children, aged 10 and 14 years, and both parents were healthy. Though his immediate neonatal progress was uncomplicated and he was discharged home on the 5th day, he was readmitted to the Churchill Hospital aged 2 months because of persistent tachypnoea and failure to thrive. He had an occasional dry cough and was very irritable. There were no abnormal physical signs apart from his obvious growth failure. At this stage a number of investigations were carried out which failed to reveal any cause for his problems. Cystic fibrosis and immunodeficiency disorders were excluded and no pathogens were isolated. He was treated with high calorie feeds but did not gain weight.

Over the next 2 months the infant became obviously cyanosed at rest and pink when given O₂. Despite persistent tachypnoea there were still no abnormal signs in his chest and chest x-rays were thought to be normal. Arterial blood gases showed hypoxia breathing air with a Po₂ of 27 torr, Pco₂ of 35 torr, and pH 7.3. When given 90% O₂ the Po₂ rose to 287 torr, suggesting severe ventilation-perfusion imbalance and excluding atelectasis or cardiac causes of right to left shunting. He was transferred to Brompton Hospital for further investigation. His chest was now clinically hyperinflated and this was confirmed by x-rays. Lung mechanics were studied in the whole body infant plethysmograph (Dr. M. Radford). Thoracic gas volume was 240 ml (expected 135 ml) confirming the hyperinflation, and airways resistance was 16 cm H₂O/l per s (expected: 12 to 14 cm H₂O/l per s).

A needle aspiration biopsy of the left lung was carried out under radiological control (Dr. I. Kerr). This was reported (Dr. K. W. Hinson) as showing thickening of alveolar walls with mononuclear cell infiltrations. Other large mononuclear cells lined the alveolar spaces and were present free in the lumen. There was no apparent increase in fibrous tissue. Examination for *Pneumocystis carinii* was negative, as was screening for a range of autoantibodies. Because of the histological

*Correspondence to Dr. A. F. Malan.