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Use of central and peripheral temperature measurements in care of critically ill children. A. Aynsley-Green and D. Pickering. Department of Paediatrics, The Radcliffe Infirmary, Oxford.

In the presence of constant ambient conditions, a fall in circulating blood volume causes peripheral vasoconstriction which is reflected in a fall in peripheral (great toe) temperature and an increase in the central (rectal)-peripheral temperature gradient.

We report 5 illustrative case histories to show the value of this noninvasive bedside technique in the medical care of critically ill children. The following points are discussed. First, a fall in peripheral temperature is an early sensitive index of hypovolaemia, which occurs before clinical evidence of dehydration or subsequent hypotension. Second, a rise in peripheral temperature occurs as rehydration is achieved and allows an objective end point for therapy to be recognized. Third, sequential measurement of pulse rate, blood pressure, and temperature changes allows α-adrenergic blocking drugs combined with rapid fluid replacement to be safely used in treating shock. Finally, these measurements allow the recognition of hypovolaemic hyperpyrexia, or dehydration fever, where peripheral vasoconstriction secondary to hypovolaemia prevents effective heat loss through the skin. In these patients traditional treatment of pyrexia by tepid sponging and exposure to a current of air causes further vasoconstriction and heat retention. A more rational treatment consists of fluid administration together with encouragment of peripheral vasodilatation. The response to treatment is shown by a fall in central temperature and an increase in peripheral temperature. We suggest that empirical methods of treating pyrexia should be more critically assessed in the light of information obtained from such temperature measurements.

Echocardiography in infants and children. M. J. Godman introduced by D. Pickering. Royal Hospital for Sick Children, Edinburgh.

The role of echocardiography in the assessment of congenital heart disease in infants and children has been evaluated from recordings in over 200 children. The age of the children ranged from 1 hour to 15 years. Using an Ekoline 20A ultrasonoscope interfaced to an Electronics for Medicine recorder, continuous time-motion recordings were obtained while the transducer was used to scan the heart. This technique permits the presentation of several areas of cardiac interest within the one recording and aids considerably in the identification of normal cardiac relation and recognition of abnorma cardiac anatomy.

In each case measurements were made of the excursion of the anterior leaflets of the mitral and tricuspid valves, the A-P diameter of the right ventricle, left ventricle, left atrium, and aorta and pulmonary artery. The spatial relations of the great vessels were also determined. The echocardiographical features were correlated with the angiographical findings in those cases who had cardiac catheterization. Discontinuity of the interventricular septum with the anterior wall of the aorta identified over-riding of the septum in 18 cases of tetralogy of Fallot and 3 cases of truncus arteriosus. Paradoxical motion of the interventricular septum was observed in 33 of 35 cases of atrial septal defect. The abnormal spatial relation of the great vessels was identified in 10 of 14 cases of transposition that were studied.

Specific echocardiographical features for most congenital heart lesions can be recognized and this technique represents a rapid, noninvasive, and accurate method of assessing congenital heart disease.

Genetics of wheezy children assessed by exercise-induced bronchial lability. P. König and S. Godfrey introduced by V. Dubowitz. Department of Child Health, Hammersmith Hospital.

There has always been controversy as to the relation between wheezing in infancy and asthma in childhood, and many studies have been carried out in the past to try to determine the exact relation. A very prominent feature of children with asthma is the postexercise bronchosconstriction which they develop, and we have therefore used exercise tests to assess bronchial lability in various groups of subjects. We have shown an increased incidence of bronchial lability in children who had wheezy bronchitis as infants but no further illness for some years, increased bronchial lability in the first-degree relatives of asthmatic children, and increased bronchial lability in the first-degree relatives of infants with wheezy bronchitis. There is a very close similarity in the patterns of bronchial lability in otherwise healthy relatives of wheezy infants and asthmatic children. We have also carried out studies of bronchial lability in monozygotic and dizygotic twins and showed a much higher incidence of concordance in the monozygotic as compared with the dizygotic patients. We believe that these studies indicate a similar genetic background in wheezy babies and asthmatic children, and that the clinical form which the disease takes probably depends upon the intervention of external factors.