Measurement of intrathoracic pressure in the newborn. George Russell and Robert Dinwiddie. Department of Child Health, University of Aberdeen.

Changes in intraoesophageal pressure (Poes) have been shown, in subjects to certain limitations, to reflect changes in intrapleural pressure (Ppl) in the adult. However, though Poes is widely used in the study of respiratory mechanics in the newborn, the only comparison of Ppl and Poes so far reported has been in a single anencephalic infant (Hustead and Avery, 1964).

Four infants with spontaneous left-sided pneumothorax were studied. The pressure recorded from an oesophageal balloon with known pressure-volume characteristics was compared with the pressure recorded from the pleural drain. The mean oesophageal pressure swing (Δ Poes) in 100 breaths in the 4 babies was 5.9 cm H₂O (SD $\pm$ 1.0), the corresponding value for the intrapleural pressure swing (Δ Ppl) being 5.7 cm H₂O (SD $\pm$ 1.0), giving a mean difference 0.2 cm H₂O. The relation between Δ Poes and Δ Ppl varied between infants, and in the same infant from time to time, but the correlation between the two pressure swings was close ($r = 0.823$, $P < 0.001$), and the regression of Δ Poes on Δ Ppl fell close to the line of identity (Δ Poes = 0.83Δ Ppl = 1.12). When absolute pressures were compared, Poes was slightly higher than Ppl.

The effect of posture on Poes is similar to that described in the adult (Ferris, Mead, and Frank, 1959). In the supine position, widely used in the study of respiratory mechanics in the newborn and especially during whole body plethysmography, Poes is substantially more positive than in the upright or lateral position, and does not accurately reflect Ppl.

A comparison of pressure-volume loops using simultaneously measured Poes and Ppl shows that Poes measured in the right lateral position can be used as a satisfactory alternative to Ppl in the measurement of respiratory mechanics.

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2', 3'-cyclic nucleotide 3'-phosphohydrolase in the developing human brain. Neville R. Belton and John M. Anderson introduced by F. Cockburn. Departments of Child Life and Health, and Pathology, University of Edinburgh, Edinburgh.

The activity of 2', 3'-cyclic nucleotide 3'-phosphohydrolase (CNP) has been examined in necropsy samples of brain of newborn infants and young children. At varying times in different areas a rapid increase in CNP activity occurs immediately preceding an increase in cholesterol concentration. In the areas studied these changes are found successively in medulla, internal capsule, occipital white matter, corpus callosum, and frontal white matter, at times which correspond to the histological onset of myelination. The increase in

specific activity of CNP is greater than that of creatine kinase, lactic dehydrogenase, and cholinesterase, and therefore appears to be characteristic of active myelination. This observation supports the subcellular fractionation studies in small vertebrates which have shown that CNP is localized in the myelin sheath or closely related structures such as the oligodendrocyte plasma membrane (Kurihara and Tsukada, 1967; Zanetta *et al.*, 1972).

Because severe undernutrition at the time of active brain growth is recognized to result in a reduction of myelin lipid concentration in experimental animals, CNP activity has been compared in a group of dysmature and normal weight infants at 38 to 42 weeks' gestation. A significant reduction in CNP activity is demonstrable in dysmature infants in 2 nonmyelinated areas, cerebral white matter and cerebral cortex, but not in the actively myelinating internal capsule.

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Plasma tocopherol values in infants and children. W. R. McWhirter, introduced by C. Forsyth. Department of Child Health, University of Dundee, Dundee.

Controlled clinical trial of corticosteroid therapy in prophylaxis of respiratory distress syndrome. H. V. Price. Welsh National School of Medicine, Cardiff.

An attempt has been made at preventing respiratory distress syndrome. Intramuscular hydrocortisone and Depot Synacthen have been given immediately after birth to randomly selected infants.

The babies have been clinically assessed by recording Fulham scores serially. Estimations of plasma cortisol blood glucose, blood gases and thrombotest have also been made.

Chest x-rays were taken when clinically indicated. The encouraging results were presented.

Neonatal cold injury. E. N. Hey introduced by J. M. Parkin. Department of Child Health, University of Newcastle upon Tyne, Newcastle upon Tyne.

Giardiasis and coeliac disease. F. Carswell, A. A. M. Gibson, and T. A. McAllister introduced by W. Hamilton. Departments of Child Health, Pathology and Bacteriology, Royal Hospital for Sick Children, Glasgow. To be published in full in the *Archives*.

Histidinaemia: its significance in neonatal screening. B. G. R. Neville and P. M. Lilly introduced by J. T. Harries. Institute of Child Health, 30 Guilford Street, London.