Hodgkin's tissue in floor of jejunal ulcer. ($\times 200$.)

Comment

Despite its rarity, adrenal hypofunction must be remembered when patients with poorly differentiated Hodgkin's tumours show electrolyte disturbances.

We thank Mr A S Bullough, FRCS, lately consultant surgeon, Hope Hospital, for referring this patient to the professorial surgical unit.

¹ Kaplan, H S, *Hodgkin's Disease*. Cambridge, Mass, Harvard University Press, 1972.

² Smithers, D W, (ed), *Hodgkin's Disease*, p 165. Edinburgh and London, Churchill Livingstone, 1973.

Department of Surgery, University of Manchester, Hope Hospital, Salford M6 8HD

C FEINMANN, MB, CHB, house surgeon
R GILLET, BM, FRCPATH, consultant pathologist
M H IRVING, FRCS, professor of surgery

Neonatal pneumothorax: survey and prevention

Neonatal pneumothorax is still an important cause of morbidity and mortality, recent reports giving an incidence of 3 cases per 1000 live births.^{1,2} Over a six-year period in this unit the incidence has been reduced from 5 cases to 1 case per 1000 live births, the perinatal mortality rate having fallen from 25 to 18 per 1000 in the same period. Thirty-two symptomatic cases occurred, of which 18 were associated with labour and resuscitation, four with prolonged assisted ventilation, and eight with severe congenital malformations.

Present series

Ten of the cases associated with resuscitation resulted from the delivery of excessive pressures from the Cardiff Penlon bag used with an endotracheal tube. Since the bag was modified in 1970³ no case has been noted when it was used with either a facemask or endotracheal tube. Six cases were due to misuse of the soft rubber McIlroy funnel. If the vent hole is occluded by a fingertip when the funnel is applied to the baby's face the airway is faced with an oxygen-line pressure of up to 350 kPa (3600 cm water). The funnels have been successfully modified by making four similar vent holes around the cone. Unmodified funnels designed for ventilation should be covered by a deadweight release valve (see figure). One baby suffered gross lung damage when an endotracheal tube was connected to the oxygen supply via a T piece without a pressure-relief system.

Two deaths from tension pneumothorax were caused by continuous positive airway pressure, which is now used only with a deadweight release valve that opens at 0.5 to 1.0 kPa (5 to 10 cm water). The inertia of water manometers is inadequate to compensate for surges of pressure that may occur in this and other apparatus used for ventilatory support. Intermittent positive-pressure ventilation with a prolonged inspiratory phase⁴ was associated with two deaths from tension pneumothorax, suggesting that prolonged

Right oxygen flowmeter supplies unmodified McIlroy funnel (McIF) via flow restrictor (FR) and deadweight release valve (DWRV).^{*} Left flowmeter supplies Cardiff Penlon bag (CPB).

^{*}Kits available from Vickers Medical, Basingstoke, Hants.

inspiration should be cautiously applied. Only one baby with idiopathic respiratory distress syndrome of the newborn developed spontaneous symptomatic pneumothorax.

Congenital abnormalities associated with symptomatic pneumothorax included three babies with polycystic kidneys, three with diaphragmatic hernia, and one each with misplaced intrauterine transfusion and situs inversus. Diagnostic lung aspiration produced one pneumothorax, and another occurred after meconium aspiration, which may be preventable by tracheal aspiration with a wide-bore endotracheal tube.

Comment

Interstitial emphysema, pneumomediastinum, surgical emphysema, pneumothorax, and even pneumopericardium may coexist in the same patient, since the causative mechanisms are similar.⁵ Many hours may pass after the initial lung damage before a bout of crying causes the final lung rupture and tension pneumothorax.

Careful investigation should determine the cause of any case of neonatal symptomatic pneumothorax and appropriate changes made to equipment and staff training schedules. A deadweight release or safe mechanical valves should replace water manometers, and enough simple safe resuscitation sets should be available wherever there are newborn infants. The results suggest that attention to technical detail can diminish potentially lethal pneumothorax while still providing full resuscitation and ventilatory support.

I thank Professor O P Gray and the many members of staff for advice. Initial results were presented to the Neonatal and Obstetric Anaesthetists' Societies in 1971-2.

¹ *British Medical Journal*, 1975, 4, 310.

² *Lancet*, 1973, 2, 1304.

³ Mushin, W W, and Hillard, E K, *British Medical Journal*, 1970, 4, 622.

⁴ Blake, A M, et al, *Lancet*, 1973, 2, 1176.

⁵ Macklin, M T, and Macklin, C C, *Medicine (Baltimore)*, 1944, 23, 281.

Department of Child Health, The Welsh National School of Medicine, Cardiff CF4 4XW

H V PRICE, MRCP, DCH, lecturer