performed in an environment which was precisely the same as that in which the babies were normally nursed. Activity was monitored by a nontouch technique. 3 groups of babies were studied over the first 3 weeks of life. Each period of measurement lasted from 4 to 9 hours within a 24-hour calorie balance period. The subjects were 11 babies of over 37 weeks' gestation and of birthweight <5th centile, 16 normally grown babies of <36 weeks' gestation, and 11 infants of diabetic mothers. 6 term normal infants were also studied.

It was shown that activity accounts for 15–20% of calorie expenditure in term babies in the first 24 hours whether small-for-dates, heavy-for-dates, or normally grown. The preterm infant expends significantly less energy on activity in the first day. From the second to fifth day activity fell slightly in the term infants but rose in the preterm babies. Thereafter, each infant seemed to develop its own pattern of rest and activity and no clear differences were discernible between the groups. The effect of swaddling on activity was also noted. For the first 4 or 5 days there was no significant difference in energy expenditure on activity (though the basal metabolic rate and evaporative water loss were higher) between the naked babies and those dressed fully in nighties, nappies, and blankets. After this time swaddling did indeed reduce movement.

Oxytocin, prostaglandin, and neonatal jaundice.

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One possible reason for the recent increase in the incidence of neonatal jaundice is the widespread use of oxytocic drugs in labour. We have measured serial serum bilirubin levels at days 2 and 5 in three groups of term neonates. (1) Spontaneous onset of labour (20); (2) labour induced, or hastened, with oxytocin (26); (3) labour induced with oral prostaglandin PGE₂ (28). Excluded were babies of low birthweight (>2.5 kg), gestation 37 weeks' or less, positive direct Coomb's test, infected ill babies, cephalhaematoma.

On day 2 the mean bilirubin level was 7.7 mg in the prostaglandin induced group, compared to 6.5 mg in the oxytocin group, and 5.9 mg in the control group. At 5 days mean bilirubin levels were 7.9 mg, 5.9 mg, and 6.0 mg, respectively. The differences in bilirubin levels between the prostaglandin group and the controls were significant ($P < 0.01$) on day 2 and on day 5 ($P < 0.05$). The bilirubin level was clinically significant (> 12 mg/100 ml) in one control baby, in 3 from the oxytocin group, and in 4 from the prostaglandin group. These results do not support the suggestion that the use of oxytocin in labour is responsible for the increase in neonatal jaundice. The apparent increase in the prostaglandin induced group requires further investigation.

Resistance of endotracheal tubes used for neonatal intensive care. D. J. Hatch. The Hospital for Sick Children, Great Ormond Street, London.

The Cole pattern endotracheal tube, often used for newborn resuscitation and intensive care, was intro-

duced as having a lower resistance to air flow than a plain tube of similar size. When tubes of similar external diameter at the tracheal end are studied it is seen that resistance is in fact higher in Cole pattern tubes than in plain ones. This is due to turbulent airflow produced by the sudden change in diameter, and to greater wall thickness. The same disadvantage applies to Jackson-Rees tubes, where the change in diameter is accompanied by a change in direction of airflow.

Cave and Fletcher (1968) suggested that as 2.5 mm ID tubes (12 FG) had a high resistance compared with the infant's airway resistance they should only be used in association with artificial ventilation. The present study suggests that though this is true for 8 FG tubes, 10 FG ones are probably acceptable for spontaneous ventilation in a quietly breathing baby.

REFERENCE

Cave, P., and Fletcher, G. (1968). Resistance of nasotracheal tubes used in infants. *Anesthesiology*, 28, 588.

Osmolar relation between CSF and serum in hyperosmolar hypernatraemic dehydration. A. H. Habel and H. Simpson. Edinburgh.

The relation between CSF and serum osmolality was studied in 16 patients with hyperosmolar hypernatraemic dehydration at the time of admission to hospital. During rehydration the serum osmolality, electrolyte concentrations, blood urea nitrogen, and pH were measured sequentially. After correcting shock and severe metabolic acidosis, all patients were rehydrated with 0.45% saline in 5% dextrose over a period of 48–72 hours. 5 patients developed neurological abnormalities during the course of therapy within 48 hours of admission (convulsions 2, convulsions with hemiplegia 2, hemiplegia 1). Of these, 3 had residual defects on follow-up examination. The two groups of patients (those with and those without neurological abnormality) were indistinguishable on clinical grounds before rehydration. Analysis of routine admission and sequential serum biochemical variables also failed to discriminate between them.

Determination of the osmolality of CSF and serum on admission showed a significant osmolar gap in most patients, ranging from 46 mOsm/kg H₂O higher in CSF than serum to 41 mOsm/kg H₂O higher in serum than CSF. Severe neurological disturbance occurred only in the presence of a CSF of 8 mOsm/kg H₂O or more greater than serum osmolality. Rapid accurate prediction of neurological disturbance, before embarking on rehydration, may thus be possible. The result of discriminant analysis of the osmolar data was presented and the implications for therapy discussed.

Study of a group of children who initially had convulsions associated with fever and later developed epileptic attacks in the absence of pyrexia. D. H. Mellor, I. Lowitt, and D. Hall. City Hospital, Nottingham; and Royal Aberdeen Children's Hospital and University of Aberdeen, Department of Mental Health.