Weaning very low birthweight infants from mechanical ventilation using intermittent mandatory ventilation and theophylline

Sir,

We read with interest the paper by Barr (Archives, 1978, 53, 598), and should like to report our recent experience with aminophylline in two very low birthweight infants.

Case 1

This infant born at a gestational age of 30 weeks weighing 1198 g was severely asphyxiated at birth and required mechanical ventilation for the first 4 days of life. At age 4 weeks, 48 hours after the introduction of nasojejunal feeds, he developed necrotising enterocolitis and required a 40 cm small bowel resection. At the same time, mechanical ventilation was recommended because of recurrent apnoea and bradycardia: initial ventilator settings were: peak pressure 25 cm H2O, positive end expiratory pressure 5 cm H2O, and frequency 28 cycles/min.

During the next 6 days attempts to wean him from the ventilator by decreasing the rate to 16 cycles/min resulted in episodes of bradycardia and cyanosis with the capillary Pco2 increasing from 4-7 to 7-9 kPa (35 to 59 mmHg). In view of this, aminophylline was administered with a loading dose of 3-3 mg/kg intravenously followed by a maintenance dose of 3 mg/kg per day in three divided doses. Serum aminophylline level 48 hours after starting treatment was 8 mg/l (therapeutic range 6-6-11 mg/l).

24 hours after the introduction of aminophylline, capillary Pco2 had fallen to 5-3 kPa (40 mmHg); there had been no change in the ventilator settings. The infant was then successfully weaned from the ventilator.

Case 2

This infant was also born at 30 weeks’ gestation and weighed 1150 g. At age 12 days he began to have episodes of apnoea and bradycardia. Capillary blood-gases at this stage showed a Pco2 of 8-9 kPa (67 mmHg). Biochemical and infective causes for the apnoea were excluded while the chest x-ray was compatible with early chronic lung disease of prematurity. A loading dose of 3.8 mg/kg aminophylline was given intravenously followed by a maintenance dose of 3-1 mg/kg per day in three divided doses. Serum aminophylline level 48 hours after starting treatment was 6-5 mg/l. 24 hours after the loading dose of aminophylline, the capillary Pco2 had fallen to 6-3 kPa (47 mmHg) with no recurrence of the apnoea.

Our results support Barr’s observations that aminophylline may be an aid in the weaning of infants from mechanical ventilation and, like caffeine (Aranda et al., 1977), will reduce the Pco2 probably by increasing the ventilatory effort and thereby increasing alveolar ventilation.
Bilateral Wilms’s tumour in Klippel-Trenaunay syndrome

Sir,

Involvement of the viscera, including the kidneys, is not uncommon in the Klippel-Trenaunay syndrome (KTS) (haemangiectatic hypertrophy) but the occurrence of Wilms’s tumour in KTS has not been described, although one child with bilateral nephroblastomatosis and KTS is known (Mankad et al., 1974). We have recently observed an infant with KTS and bilateral Wilms’s tumour.

The child presented from birth with typical signs of KTS (unilateral hypertrophy of the left ear, tonsil, labium majus, and lower extremity—especially the third toe—cutaneous haemangiomas on the trunk, subcutaneous haemangioma on the left thigh, hyperpigmentation at the right neck and arm). Psychomotor development was normal. At age one year, a left abdominal mass was found on routine examination. IVP showed an enlarged left kidney with distortion of the calyces. At laparotomy a nodular tumour originating from the left kidney was found and a nephrectomy performed. The right kidney showed small nodules which were biopsied. There was no evidence of metastasis at operation or in subsequent x-rays. The resected kidney measured 16 × 10 × 11 cm. The renal parenchyma was reduced to 8 mm thickness surrounding the tumour mass. Histologically glomerular and tubular differentiation and solid blastomatous structures were evident, consistent with Wilms’s tumour. The biopsy of the right kidney showed similar lesions. Chemotherapy and radiation therapy were given. 12 months after nephrectomy the patient remains well.

Wilms’s tumour has been reported in association with congenital hemihypertrophy, in the Beckwith-Wiedemann syndrome, and in association with aniridia.

Although a common embryological basis for KTS and Wilms’s tumour is not yet established, the association may be more than chance.

Reference


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Neonatal effects of maternal clomipramine therapy

Sir,

We read with interest the study by Crome and Braithwaite (Archives, 1978, 53, 902). We encountered a similar problem recently in a neonate affected by maternal clomipramine (Anafranil) in which the main problems were instability of body temperature and jitteriness.

The mother has been taking clomipramine, 25 mg three times a day for 18 months for depression, and this treatment continued unchanged throughout her normal pregnancy. The baby boy born at term had a birthweight of 3–14 kg, and a normal Apgar score, but at 12 hours he became dusky during feeding and had a rectal temperature of 35.4°C. His tendency to hypothermia was aggravated by feeding and handling, and persisted for 4 days. No biochemical or infective cause was found for this or for subsequent problems.

He became jittery on the 2nd day of life and this continued for 48 hours; perhaps this was the effect of drug withdrawal. Treatment with phenobarbitone (10 mg/kg per day) controlled this problem and may have induced the hepatic conjugating enzymes needed to metabolise clomipramine.

Plasma clomipramine levels in the baby were <20 μg/l on the 1st and 3rd days of life, but the corresponding levels of its active metabolite, chlorodesipramine, were higher at 116 and 96 μg/l.

The baby made an uneventful recovery and was making normal developmental progress at ages 3 and 6 months.

The use of tricyclic antidepressant drugs in pregnancy has been linked with the birth of malformed infants (Barson, 1972; Idänpää-Heikkilä and Saxén, 1973), but little is recorded about the associated neonatal morbidity. Hypothermia has been noted as a side effect of clomipramine treatment in adults, but this was not found by Crome and Braithwaite in their review of tricyclic drug poisoning in older children.

The frequency of the use of antidepressant drugs in pregnancy is unknown, but they should be avoided if possible.

We acknowledge the help of the National Poisons Information Service at New Cross Hospital, Poisons Unit, London, which carried out the estimation of plasma drug concentrations.

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