The time of administration has varied from 24 hours to 5 weeks before delivery,² and in most cases exchange transfusion or phototherapy, or both, was required to control the jaundice. In 2 cases respiratory distress was reported as well^{3,4} although it is difficult to determine whether or not this was related to the dye. In this case the L/S ratio at the time of amniocentesis was 2.4.

Although methylene blue was not looked for in the baby's urine, the high reticulocyte count of 16% is clear evidence of active haemolysis, and in the absence of blood group incompatibility, infection, or red cell enzyme defect it was felt that methylene blue was strongly implicated as the cause of the haemolysis in this patient. In addition, the amount of methylene blue administered was large (about 70 mg), being greater than the dose used in other reported cases²⁻⁴ and far exceeding the dose of 1.6 mg suggested by Plunkett² as insufficient to cause haemolysis.

A recent report⁵ of inadvertent intrauterine injection of methylene blue at 5½ weeks' gestation, followed by a normal delivery at term with no ensuing haematological problems, suggests that the dye does not necessarily affect the embryo and that its use for 'diagnosis of premature rupture of membranes should not be condemned'. It may be that the length of time between dye administration

and delivery is relevant with respect to the development of haematological problems, but since this length of time cannot be predicted and problems have been reported up to 5 weeks after administration of dye, this procedure may be potentially harmful at any gestation.

Methylene blue is not an innocuous drug and its use for detection of premature rupture of the membranes should be avoided.

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Ventricular tap under direct ultrasound control

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SUMMARY Real-time ultrasound was used for inserting a styletted needle into the lateral ventricle under direct vision. Eight successful taps have been performed using this method in a preterm infant with moderate ventricular dilatation after intraventricular haemorrhage.

The placement of a needle into the lateral cerebral ventricles may be performed as a therapeutic or a diagnostic procedure. Ventriculitis can be diagnosed only by the presence of organisms in the ventricular system, and instillation of antibiotics into the cerebral ventricles may be performed under certain circumstances. In addition, repeated ventricular taps may be undertaken in posthaemorrhagic ventricular dilatation before a shunt can be inserted. In this paper is described a method of inserting a needle

into the lateral ventricle under direct ultrasound control.

Methods

An ATL mechanical sector scanner fitted with a 5 MHz transducer was used to visualise the lateral ventricles in coronal section through the temporo-parietal bone of a 2-week-old girl born at 29 weeks' gestation with moderately dilated lateral ventricles (ventricular index 13-15 mm)¹ after intraventricular haemorrhage.

The infant was well wrapped up and placed supine on a mattress lying on a low table. Her head and neck were immobilised by an assistant's hand on either side of her head and she required no sedation. The ultrasound transducer was positioned just above and in front of the infant's ear to visualise the

body of the contralateral lateral ventricle in a coronal plane. Once identified, the transducer was held in position and a wide area of the infant's head was shaved and cleaned with povidine iodine and 70% alcohol. The sterile area was isolated from the ultrasound transducer by a sterile curtain and the person performing the ventricular tap then identified the lateral margins of the fontanelle and inserted a 22 gauge stylet needle through the skin, the fontanelle membrane, and the dura. The needle and its tip could then be identified as a bright linear echo in real-time on the screen of the ultrasound monitor. The ultrasonographer could determine whether the needle was pointed towards the optimal site for positioning within the ventricle. While continuously observing the movement and position of the needle the operator could be given instructions by the ultrasonographer to advance the needle to the

appropriate point. If the needle was thought to be too medial or too lateral, it was withdrawn to the dura and reinserted in a more appropriate direction. Fig. 1 shows various positions of the needle on its passage into the lateral ventricle.

Once the tip of the needle was thought to be in the midpoint of the lateral ventricle, the position of the needle could be confirmed by rotating the transducer through 90° so that the length of the lateral ventricle could be seen in axial plane and the needle position confirmed (Fig. 2). Once the position was considered to be acceptable the stylet was removed and cerebrospinal fluid (CSF) allowed to drain.

This procedure has been performed on 8 separate occasions by different staff with ranging degrees of experience in ventricular taps. There has been no apparent upset to the infant and the needle has not required repositioning once the stylet had been

Fig. 1 Scans showing various positions of the needle (arrowed) as it is inserted into the right lateral ventricle (V). The ultrasound transducer is situated over the left temporoparietal region.

Fig. 2 Position of the needle (arrowed) seen on coronal view (left) and when the transducer is turned through 90° to view the needle in axial plane (right).

removed. The operator did not find that the transducer encroached on the fontanelle nor did it impede his ability to perform the ventricular tap.

Discussion

Real-time ultrasound studies have shown that ventricular dilatation occurs in up to 40% of cases of intracranial haemorrhage during the neonatal period.² Papile *et al.*³ suggest that ventricular decompression by lumbar puncture may reduce the incidence of this condition. Decompression by the lumbar route, although obviously preferable, is not always possible due to basal arachnoiditis and cisternal obstruction. In this condition, non-communication of CSF between the cerebral ventricles and the lumbar subarachnoid space precludes the use of lumbar puncture and direct ventricular taps may be necessary to remove CSF.

Lateral ventricular taps are a potentially dangerous procedure which should be undertaken only by experienced staff. Risks include infection, cyst formation, and damage to important areas within the brain. Intraventricular haemorrhage as a result of a ventricular tap has been reported.⁴ In order to minimise the risks of unnecessary iatrogenic problems by the needle passing through the ventricle, a method of performing ventricular taps under direct vision is described. No stereotactic method for

needle insertion into the lateral ventricles has been previously reported. This method is simple and requires little ultrasound experience. The operator is given instructions on where the tip of the needle is in relation to the ventricle and insertion of the needle through the ventricle into the caudate nucleus can be avoided. Although the infant described here was fairly immature, it is likely that this procedure can be performed in most infants up to age 6 months, by which time progressive ossification of the skull prevents adequate visualisation of the ventricular system by ultrasonic methods.

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Congenital dislocation of the hip and short maternal stature

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SUMMARY The heights of 33 consecutively selected mothers of children in hospital for treatment of congenital dislocation of the hip (CDH) were compared with the heights of 54 mothers of children in hospital for conditions other than CDH. The mothers of the CDH children were found to be shorter than those of the control group by a mean of 4.4 cm. This difference was statistically significant. Short maternal stature is associated with a narrow pelvis and presumably also with reduced uterine size which may cause restriction of space for the fetus.

The aetiology of congenital dislocation of the hip (CDH) has been the subject of numerous investigations and is still considered multifactorial. Several

mechanical factors have been noted to correlate with CDH—such as breech presentation,¹ increased birthweight and length,² and a greater number of labours with fetopelvic disproportion.^{1,2} A restriction of space for the fetus *in utero* has also been suggested.³

Since maternal factors play an important role in affecting the available space for the fetus *in utero* and in view of the clinical observation that several mothers of children with CDH were short, we decided to investigate the association between maternal height and CDH.

Patients and methods

The subjects of this study were 33 infants and children with clinical and radiological evidence of