Medical Memoranda

Intrauterine Transfusion of Twins

British Medical Journal, 1970, **1**, 609

Intrauterine transfusion has a select and important part to play in the management of Rh-isoimmunization, and occasionally it is necessary to carry out this treatment in a case of multiple pregnancy.

Bowes and Droegemueller (1968) recorded intrauterine transfusion in twins and outlined some of the difficulties encountered in identifying each amniotic sac, interpreting liquor analysis, and carrying out the transfusion. Unfortunately, both fetuses died in utero, one after two transfusions and the other after a single transfusion. There have been other reports of intrauterine transfusions of twins (Crosby and Gheen, 1967; Raphael, Gordon, and Schiff, 1967), but we can find none where both twins were liveborn and survived. We report such a case and comment on some of the problems involved.

Case Report

The mother, a gravida-7, was referred to us for intrauterine transfusion because of a high and rising bilirubin level in the liquor amnii. Our criteria for selection of patients for intrauterine transfusion have already been described (Fairweather *et al.*, 1967), and in the present case the liquor ratio at 25 weeks' gestation was 1·128 and at 27 weeks had reached 1·175. Details of liquor ratios, together with those on intrauterine transfusion, are shown in the Table.

Previous Obstetric History.—Apart from her first infant, which was adopted, she had no living children. Her second infant died of pneumonia at 3 months. After this she had four stillbirths, the last two being due to proved rhesus incompatibility—one occurring after intrauterine transfusion at 26 weeks. The other stillbirths were born at home and no data are available.

First Transfusion.—The first attempt was made at 27 weeks' gestation, the technique used being that previously described (Fairweather *et al.*, 1967). The preliminary *x*-ray film showed a twin pregnancy, the first twin presenting by the vertex and the second twin a breech presentation. It was decided to attempt transfusion of Twin 1 first, and the amniotic sac was punctured with the Tuohy needle and a specimen of liquor was obtained. Indocyanine green (Cardio green) was injected into the amniotic sac for identification purposes and the needle was then advanced into the fetal peritoneal cavity. Group O rhesus-negative packed cells 30 ml. were then transfused, after which an attempt was made to transfuse the other twin, but we failed to locate the amniotic sac. One week later a further attempt was made and the sac of the previously transfused twin was punctured and identified because of the presence of blood-stained liquor, which proved to be donor blood. The position of the twins had changed, the presenting fetus being that previously transfused and presenting as a breech, and the other twin lying higher in the abdomen and presenting by the vertex. The amniotic sac of Twin 2 was, on this occasion, successfully punctured, the liquor not being blood-stained. The needle was advanced into the fetal peritoneal cavity and 45 ml. of packed cells was transfused.

Second Transfusion.—Almost three weeks after the first intrauterine transfusion—that is, at 29½ weeks—each fetus received a second transfusion of 70 ml. of packed cells. No difficulties were encountered on this occasion and liquor was obtained from both amniotic sacs. Fetal positions appeared to be the same.

Third Transfusion.—Two weeks later each fetus received a third transfusion of 100 ml. of packed cells, and on this occasion both were presenting by the vertex. A specimen of liquor was obtained only from the first twin on this occasion and 10 ml. of ascitic fluid was obtained from this fetal peritoneal cavity before the transfusion.

A week later after spontaneous premature rupture of the membranes the patient had easy normal vertex deliveries of the twins. They were male, binovular, and consistent with 32 weeks' gestation. Twin 1 weighed 3 lb. 7 oz. (1,560 g.). The cord blood was group O Rh-negative (cde/cde), the direct Coombs test was negative, and 99% of the red cells were donor in origin. The reticulocyte count was 1%. The cord haemoglobin was 14·9 g./100 ml. The serum bilirubin was 7 mg./100 ml. He received two exchange transfusions at 1½ and 26 hours of age and three simple transfusions during the next two months. Twin 2 weighed 3 lb. 3 oz. (1,445 g.). The cord blood was group O Rh-negative (cde/cde), the direct Coombs test was negative, and 99% of the red cells were donor. The reticulocyte count was 1%. The cord haemoglobin was 16·3 g./100 ml. The serum bilirubin was 6·8 mg./100 ml. Two exchange transfusions were carried out at ½ an hour and 26 hours of age and three simple transfusions during the next two months.

Apart from the persistent anaemia, which we have noted elsewhere (Fairweather *et al.*, 1967) in infants after intrauterine transfusion, neither twin gave rise to any anxiety. Both were alive and well on discharge.

Liquor Ratios and Volume of Blood Given at Intrauterine Transfusion (I.U.T.)

Gestation (Weeks)	Liquor Ratios		Volume of Blood Given at I.U.T.	
	Twin 1	Twin 2	Twin 1	Twin 2
25	1·128	(Twins not diagnosed, sac not specified)		
27	1·175		30 ml.	
28	1·208			45 ml.
29½	1·391 (Blood-stained)	1·201	70 ml.	70 ml.
31½	1·175		100 ml.	100 ml.
32	Delivered			

Comment

Successful puncture of the fetal peritoneal cavity for intrauterine transfusion depends mainly on accurate palpation of the fetus. Our technique of taking a flat *x*-ray picture, by means of an under-couch tube, of the mother's abdomen and then placing it over the abdomen like a map to help accurate palpation is extremely valuable in the single pregnancy, but the excess liquor of a twin pregnancy makes such palpation extremely difficult. Our experience in this case showed the value of not persisting in our attempts to transfuse the other fetus at the first transfusion, and by trying again after one week we were able to identify the first sac because of the blood-staining by donor blood. With advancing gestation palpation of each fetus was more easily performed and the technique of transfusion proved to be no more difficult than with a single pregnancy. The use of intra-amniotic dye at the time of the first transfusion proved helpful in that it enabled us to identify the amniotic sac of Twin 1 from that of Twin 2, but was no guide at the second transfusion, as it had all dispersed.

M. Ivonna Ellis, M.D.,
Medical Assistant, Newcastle Regional Transfusion Service.
Alan Coxon, M.B., B.S., M.R.C.O.G.,
Consultant Obstetrician, Ashington General Hospital, Northumberland.
Cyril Noble, M.B., M.R.C.P.ED., D.C.H.,
Consultant Paediatrician, Newcastle General Hospital.

References

Bowes, A., and Droegemueller, W. (1968). *California Medicine*, **108**, 380.
Crosby, W. M., and Gheen, D. L. (1967). *Obstetrics and Gynecology*, **29**, 674.
Fairweather, D. V. I., *et al.* (1967). *British Medical Journal*, **4**, 189.
Raphael, M. J., Gordon, H., and Schiff, D. (1967). *British Journal of Radiology*, **40**, 520.