

Total Body Opacification Technique in Neonatal Adrenal Haemorrhage*

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SUMMARY

A case is reported illustrating the possible usefulness of total body opacification in the diagnosis of neonatal adrenal haemorrhage. To derive maximum benefit from this principle, the routine use of an early film coupled with high dosage is urged whenever an intravenous pyelogram is performed for evaluation of a suspected abdominal mass.

S. Afr. Med. J., 45, 1370 (1971).

The following case report illustrates the possible usefulness of the total body opacification technique in the diagnosis of neonatal adrenal haemorrhage.

CASE REPORT

S. J. McK. (Colorado General Hospital No. 368100), a male baby weighing 4.1 kg, was born by spontaneous vaginal delivery 37 hours following rupture of the membranes. Apgar was 7 at 1 minute and 9 at 5 minutes. The estimated gestational age was 39 weeks. The initial examination was normal. In particular, no abdominal mass or jaundice was present. Within 24 hours, jaundice was detected and bilirubin levels reached 22 mg/100 ml in the first 72 hours of life (at peak levels, direct 2.1 mg/100 ml, indirect 21.4 mg/100 ml). The haematological values were: haemoglobin 18.2 g/100 ml, platelet count 250 000 mm³, reticulocyte count 2%. On the second day of life, a poorly defined tense mass was palpated in the right mid- and lower abdomen. The liver edge was fairly distinct above this mass. There was no hepatosplenomegaly. The mass

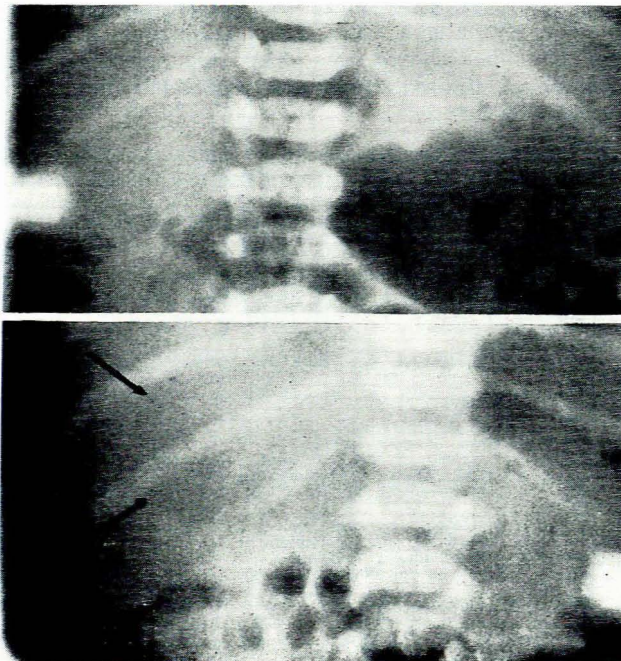


Fig. 1. Above: Survey film. Below: Circular area of relative lucency on 10-minute film representing avascular adrenal mass.

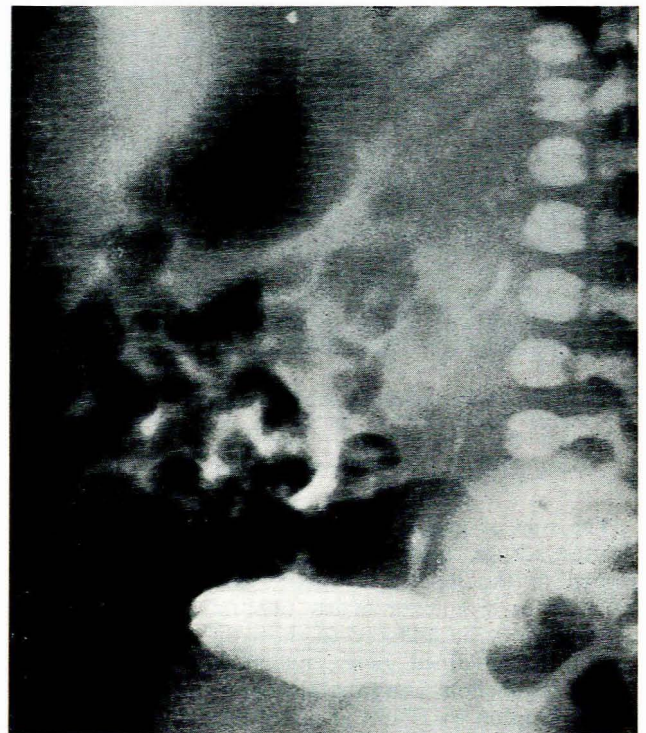


Fig. 2. Inferior displacement and anterior tilting of upper pole of right kidney.

*Date received: 14 June 1971.

continued to increase in size for 3 days and was then stable. Two exchange transfusions resulted in significant lowering of the bilirubin which reached normal levels within 1 week.

On the seventh day an intravenous pyelogram was performed using 20 ml of Hypaque 50% mixed with 20 ml of 5% dextrose and water.¹ At ten minutes (Fig. 1), a well-defined circular lucency measuring 28 mm in diameter, which was not present on the survey film, was noted in the right upper quadrant. The right kidney was inferiorly displaced and tilted (Fig. 2). An intrahepatic cyst was suspected. Liver scan performed the next day was normal (Fig. 3). A barium enema on the thirteenth day showed anterior displacement of the hepatic flexure by an extrinsic mass located posterior and superior to the hepatic flexure (Fig. 4). A barium study of the upper gastro-intestinal tract the following day showed slight medial and anterior displacement of the bulb and descending portion of the duodenum. An abdominal aortogram on the sixteenth day again showed the right upper quadrant circular lucency in the total body opacification phase and slight bowing of

the vessels by a right upper quadrant mass. There was no evidence of vascular supply to the lesion.

The patient was discharged from the hospital with a presumptive diagnosis of hepatic cyst and was readmitted 2 months later for exploratory laparotomy. On this admission, the liver was barely palpable and the abdominal mass could no longer be detected. At laparotomy a 10 mm thin 'adrenal cyst' on the right side was found and a right adrenalectomy was performed. The postoperative course was uneventful.

Surgical specimen: The centre of the adrenal gland was replaced by a 10 × 8 mm haematoma, a portion of which had organized. A thin rim of adrenal cortex surrounded the haematoma.

DISCUSSION

Neonatal adrenal haemorrhage has an autopsy incidence of approximately 1%,² usually occurring between the second and seventh days of life. Birth trauma related to difficult delivery and large babies are considered the main predisposing factors.² The incidence is higher on the right side (70%) than on the left. An abdominal mass is rarely palpated.³ It is presumed that the mass palpated in this case represented the anteriorly tilted upper pole of the right kidney. Absorption of the haematoma explains the hyperbilirubinemia.

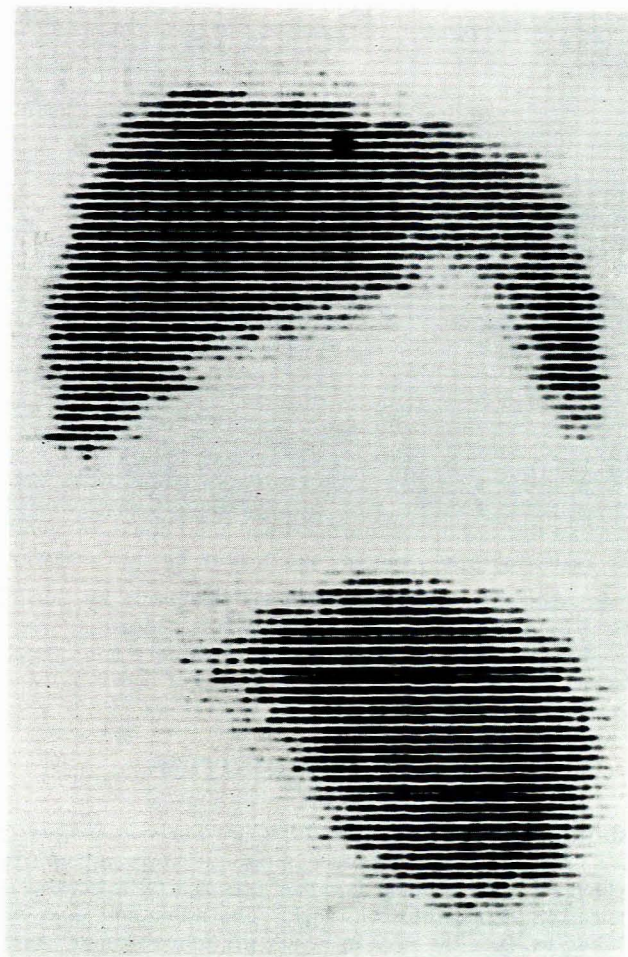


Fig. 3. Normal ^{99m}Tc technetium sulphur colloid liver scan. Frontal and lateral projections.

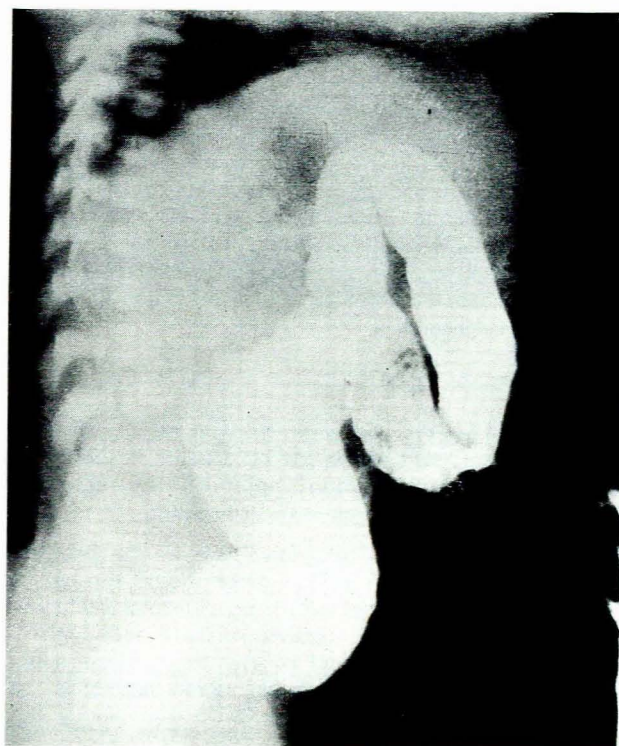


Fig. 4. Barium enema. Anterior displacement of hepatic flexure.

The underlying principle of total body opacification, as described by Neuhauser and O'Connor in 1963,⁴ is 'opacification of the entire blood vascular compartment with selectivity related to the vascularity of the organ concerned'. It follows that an avascular mass, such as a haematoma, will be seen as an area of relative lucency. This is seen to best advantage towards the end of, or immediately following, administration of contrast material. A routine newborn dose of contrast agent can be expected to show the abnormality, but the finding is greatly enhanced with a double dose (up to 4 ml/kg).

Although in the case reported the finding was demonstrated on the 10-minute film, it seems reasonable that if an abdominal mass is suspected the intravenous pyelogram

should as a routine include an early film. The routine pyelogram will usually show an adrenal lesion only when its diameter exceeds 5 to 6 mm.⁵ With addition of a single early film the yield should be enhanced with a minimum of additional effort. According to Becker the yield from angiographic procedures in demonstrating small adrenal lesions is so poor that their use is hardly warranted.⁵

REFERENCES

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