Haemoperitoneum and Associated Torsion of the Testicle in the Newborn

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SUMMARY

A case of haemoperitoneum and concomitant torsion of the testes is reported — the first case in the English literature to our knowledge.

The management of the case and the aetiological factors responsible for haemoperitoneum and torsion of the testes in the newborn are discussed. The role of vitamin K in the prevention of a possible subcapsular haematoma is discussed.

S. Afr. Med. J., **48**, 2221 (1974).

In 1840 Delasiauve[1] reported the first case of torsion of the testes. Thirty-seven years later Taylor[2] recognised strangulation of the testes in a newborn baby, and recently two cases with bilateral simultaneous torsion of the testes in the neonate were reported.[3,4] Hodge[5] published the first case of haemoperitoneum in 1870, and in 1934 Rogers[6] cited the first case of haemoperitoneum that survived surgical exploration.

Haemoperitoneum in the neonate is not uncommon and is present in 1,2%[7] to 9,6%[8] of all babies who die during or shortly after birth. Ehrenfest[9] is of the opinion that of all the solid viscera that are injured during birth, the liver is most frequently involved. Cywes,[10] in a study of 809 consecutive autopsies performed on newborn babies, concluded that liver trauma was responsible for 2,5% of the deaths; stillbirths were excluded from his discussion.

Although some forms of birth trauma are rare, a review of the literature confirmed that no organ contained in the peritoneal cavity or in the retroperitoneal space is immune to birth trauma. In none of the cases of haemoperitoneum so far reported[7,8,10,11] has torsion of the testes been documented, and it would appear that the combination of torsion of the testes and haemoperitoneum is an extremely rare condition.

CASE HISTORY

A White male baby, birthweight 4 kg after spontaneous vertex delivery, was admitted 48 hours later with vomiting, abdominal distension and discoloration of the right hemiscrotum. The baby developed progressive distension of the abdomen and vomited on one occasion while in the ward. The vomitus was not bile-stained and he had passed normal stools. The parents were uncertain of the duration of the scrotal pigmentation and swelling.

On examination the baby appeared anaemic and he was restless. No cyanosis, herniae, stridor or lymphadonopathy were detected, but a mild degree of jaundice was present. The abdomen was mildly distended and several petechial haemorrhages were visible around both nipples. Percussion of the abdomen suggested the presence of fluid in the peritoneal cavity. No mass was palpable in the abdominal cavity. Bowel sounds appeared normal in quality, and rectal examination was normal. The right half of the scrotum was discoloured and swollen. It contained a mass which measured 2,5 × 2,0 cm in circumference and which did not transilluminate. Elevation of the scrotal mass did not initiate pain. The left testicle was normal in size, shape and level of descent.

Special Investigations

The haemoglobin was 13,3 g/100 ml, white cell count 9 500/mm³, erythrocyte sedimentation rate 36 mm in the first hour, but the platelet count was 35 000/mm³. The reticulocyte count was 10,0%, neutrophils 70% and lymphocytes 25%. Bleeding and clotting times were normal. The pH and electrolytes were normal, but the bilirubin was 7,5 mg/100 ml. Occult blood was not detected in the meconium.

X-ray films of the abdomen showed mild distension of the small bowel and colon, but no signs of obstruction. The chest was normal. No abdominal calcification was visible.

Management

We explore all cases of suspected haemoperitoneum or torsion of the testes, even when the patient presents late, as in this case. The presence of pallor, abdominal distension, anaemia, fluid in the peritoneal cavity and the scrotal mass warranted urgent exploration. Pre-operative vitamin K was given by intramuscular injection. The testicular mass was explored through an inguinal incision and measured 2,5 × 2,0 cm in circumference. The mesorchium was abnormally long and the tunica vaginalis unduly capacious. The testicle was blue in colour and rotated through an angle of 180° at its attachment to the epididymis. No hernial sac was present. The twist was undone and faint, arterial pulsation became visible after application of warm swabs to the testicle. The testicle was re-

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Date received: 1 August 1974

turned to the scrotum and fixed to the lateral wall. The latter procedure was also prophylactically performed on the left testicle.

At laparotomy approximately 80 ml of blood were aspirated from the peritoneal cavity. On the anterolateral aspect of the right lobe of the liver a 4-cm long tear (capsule and parenchyma) was discovered. No subcapsular haematoma was present and a small amount of blood was still oozing from the tear. The rest of the liver was intact. The tear was repaired with 2/0 interrupted Dexon sutures and a small corrugated drain put into the subhepatic space. Adequate blood transfusion was given during operation to compensate for the quantity of blood aspirated from the peritoneal cavity. The postoperative course was uneventful.

Aetiology

Many abnormalities predispose towards torsion of the testis, the commonest of which is a horizontal position of the testes, but other factors which may contribute to the condition include a long mesorchium, broad flat chord and an unduly large tunica vaginalis.[12] The same author doubts whether torsion can occur in an anatomically normal testis. Although trauma is usually blamed for torsion of the testis, torsion can occur during sleep.[11]

Although haemoperitoneum in the newborn is always due to birth trauma, abnormalities in the blood clotting factors are important. In one series[13] the concentrations of factors I, V and VII were normal, whereas those of factors II, IX and X were usually abnormal. These abnormalities manifested immediately or soon after birth, becoming worse from 48 - 96 hours after delivery.

There is a correlation between haemoperitoneum and breech extraction of the baby. This point was elucidated by others[7,14,15] who found that in 20% of their cases haemoperitoneum was associated with a breech extraction. Hendersen[15] states that the incidence of haemoperitoneum is much greater among abnormally large or premature babies. Our case was 4 kg in body weight.

In the case under discussion, trauma was probably produced by hyperextension, severe flexion or compression of the soft tissue structures against a hard bony prominence of the pelvic bones. This physiological trauma was presumably responsible for the linear tear of the liver. In favour of this surmise is the fact that the long axis of the tear corresponded to the long axis of the overlying rib. Other aetiological factors, e.g. venous congestion, breech extraction, anoxia and internal version quoted in the literature,[15] were not applicable in this case.

DISCUSSION

In the presence of haemoperitoneum, discoloration of the scrotum does not mean that torsion of the testes has occurred, because the appearance of the scrotum can be due to the blood in the peritoneal cavity which can accumulate in the tunica vaginalis when a patent hernial sac is present. The pigmentation may also be a manifestation of haemorrhage in the retro- or extraperitoneal space. Snyder[11] cited a case with liver injury (haemoperitoneum) that was thought to have concomitant torsion of the testes because of discoloration of the scrotum, but surgical exploration of the scrotum proved that this diagnosis was incorrect. This was the only reference in the literature resembling the findings in our case.

There are two possible reasons to explain the paucity of similar case reports in the world literature. The systemic reaction of the newborn baby to torsion of the testes is not marked,[5,11] and the condition often manifests as a hard, non-tender mass with discoloration of the overlying skin. As has been pointed out, in a case of haemoperitoneum and concomitant torsion of the testes the skin pigmentation may mask the testicular lesion, and recognition of the scrotal pathology may be impossible. This means that meticulous examination of the testes must be carried out in every case of haemoperitoneum when scrotal discoloration is present. This is the reason why in our case the torsion of the testicle was detected. Torsion of the testes demands urgent exploration and we explore the testes even if the diagnosis is doubtful.

An important observation made by Lanzkowsky[13] is the higher incidence of haemolytic disease of the newborn among the non-White compared with the White babies in the Cape Town population. This incidence of 9/1 000 live births as compared with 2/1 000 for White babies is related to vitamin K-dependent factors (II, IX and X) and possibly factor XI. Administration of vitamin K soon after birth produced higher levels of these factors in their series. This deficiency of vitamin K-dependent factors may predispose to subcapsular haematoma formation of the liver, which in turn may rupture, giving rise to shock and death, if not recognised and adequately treated.

The blood studies of our case were normal, except for a mild thrombocytopenia, which we regard as secondary to clot retraction at the site of injury to the liver. There was no bleeding tendency during surgery and the recovery was uneventful, notwithstanding the platelet count of 35 000/mm^3.

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