Around the edge of the ulcer were found three sutures attaching diaphragm to oesophagus. Both pleural cavities contained 250 ml. of fibrinous liquid but no food particles. A well-developed Meckel's diverticulum was present in the ileum. No other significant abnormalities were found.

Histological examination of sections from the edges of the ulcer was made difficult by the extent of post-mortem change which had taken place. The appearances were compatible with peptic ulceration; no evidence of malignancy was found. The ulcer floor consisted of vascular fibrous tissue. In a section from the lower edge gastric mucous membrane was seen. In sections from the upper edge no epithelium was recognizable: they included two thick, well-defined layers of smooth muscle.

Comment

A search of the literature has yielded very few reported instances of oesophageal lesions forming communications with the pericardial cavity. Parkes (1849) described the first case, due to trauma, in a sword swallower aged 19, fit and athletic. His patient also developed, some hours before death, a "friction sound both diastolic and systolic . . . mixed with . . . a peculiar kind of metallic rhonchus carried up to the top of the sternum." At post-mortem examination it was found that the sword had penetrated the oesophagus and passed into the pericardium at the angle formed by the reflection of the sac from the right auricle.

The second case was described by Trotter (1852), the cause being "simple ulceration." Rose (1883) reported a case in a boy of 13, the oesophageal lesion being a "silent ulcer." Fairen (1927) claimed to have collected seven cases from the literature, but he gave no references, and we have been able to find only the above three cases reported prior to his paper. He himself added two more—one following the ingestion of lye, and one due to a malignant ulcer.

The next case was that of Imperatori (1928), who found a fistula between oesophagus and pericardium in a child of 13 months who had swallowed an open safety-pin. Barrett and Franklin (1949) described the perforation into the pericardium of an ulcer occurring in the oesophagus after oesophago-jejunosomy.

Finally, Viollet (1954) has described a case in a patient very similar to ours who had had dyspepsia for years and at necropsy was found to have oesophagitis and a benign ulcer just above the cardia. All these cases were fatal. In only four was the perforation due to peptic ulceration.

The diagnostic clue in our patient, and in Parkes's (1849), was the peculiar murmur heard over the praecordium, the significance of which was not appreciated at the time. If it had been, the question of surgical intervention and pericardial toilet would have had to be considered: certainly conservative measures would appear to have no part to play in the treatment of the condition.

Summary

A case is described of perforation of a peptic ulcer of the oesophagus into the pericardium. Only four such cases have been reported previously.

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FOETAL EXSANGUINATION ASSOCIATED WITH SURGICAL INDUCTION OF LABOUR

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In our experience it is not unusual for a blood-stained tap to be obtained when labour is induced by surgical rupture of the hind-waters. That this accident may be associated with damage to foetal vessels in the placenta and consequent serious foetal blood loss has been brought home to us by the deaths of two babies within the past few months.

Surgical induction of labour is generally regarded as a minor obstetric procedure, and, provided it is carried out with care, accidents to mother or baby are not expected. We record here the clinical details of our two cases because the complication that we describe carries a very real threat to the life of the child.

Case 1

The patient, a 5-gravida aged 29, was admitted to hospital when 37 weeks pregnant because of albuminuria and hypertension. One week after admission it was decided to induce labour by rupturing the hind-waters. The membranes were swept and an attempt was made to rupture the hind-waters with a Drew Smythe catheter. A few millilitres of blood was obtained and the procedure was abandoned. The foetal heart sounds were checked at once and afterwards at regular intervals, but no distress was noted. Once or twice during the next 24 hours there was a small ooze of blood from the vagina. Twenty-eight hours after the attempted induction of labour the foetal heart suddenly became irregular and a lower-segment caesarean section was performed at once. A live child, weighing 7 lb. 8 oz. (3.4 kg.), was delivered. The baby looked pale and the haemoglobin level at 20 minutes was 70% (10.3 g.). The maternal aspect of the placenta was quite normal, but on the foetal side there was a blood clot of 2 to 3 oz. (60 to 85 ml.) lying under the membranes. When the blood clot was gently removed it was found to surround a puncture wound in one of the large foetal vessels. A portion of the blood clot was examined by a modification of the method described by Singer, Chernoff, and Singer (1951) and proved to be foetal blood.

The baby, at the age of 1 hour, was given a blood transfusion, and although the child's condition did initially improve it became very oedematous and died at the age of 52 hours. No urine had been passed, nor had any been obtained on catheterization. Post-mortem examination revealed extensive tubular necrosis in both kidneys, and death was considered to have been due to shock following upon haemorrhage.

Case 2

The patient, a 6-gravida aged 34, was admitted to hospital at term on account of mild pre-eclamptic toxæmia. Six days after admission surgical induction of labour was attempted.

The membranes were swept and a Drew Smythe catheter was introduced in order to rupture the hind-waters. A few millilitres of pure blood was obtained and the catheter was at once withdrawn. The foetal heart was checked carefully but there was no evidence of distress. Three days later the membranes were successfully ruptured with a Drew Smythe catheter and 6 oz. (170 ml.) of heavily blood-stained liquor was withdrawn. The foetal heart sounds were checked regularly until labour began 16 hours later; at no time was foetal distress noted, but with the onset of labour the heart sounds suddenly disappeared. After labour lasting 12 hours the patient delivered a stillborn child, weighing 7 lb. (3.2 kg.). The child was very pale, and examination of the foetal aspect of the placenta revealed a tear in one of the vessels. Under the amnion, surrounding the torn vessel, was a blood clot 2 in. (5 cm.) in diameter. Death was attributed to foetal exsanguination.

Haemolytic disease was excluded in both cases.

Discussion

In performing surgical induction of labour it is invariably our practice to sweep the membranes off the lower uterine segment before rupturing the hind-waters. Possibly, in both cases described above, the placental edge lay just beyond the examining finger. On the other hand, in the course of rupture of the hind-waters the Drew Smythe catheter is introduced well beyond the examining finger, and it is not surprising that the lower margin of a posteriorly situated placenta is occasionally encountered, even though the placenta lies entirely in the upper segment. It is not practicable for placentography to be carried out on all patients who are to have a surgical induction of labour, and it seems to us that so long as rupture of the hind-waters with a Drew Smythe catheter is accepted practice then the risk of the accident we describe will always be present.

In the first case a caesarean section was undertaken as soon as foetal distress was noted, but the warning was too late, for the baby died in spite of blood transfusion. In the second case the foetal heart sounds disappeared without warning several hours after the injury to the foetal circulation. Where a blood-stained tap has been obtained we believe there is need for a simple reliable test to differentiate foetal from maternal blood. By this means earlier warning of damage to the foetal circulation will be obtained and the case managed with greater assurance. Had such a warning been available in our two cases the lives of the babies might well have been saved.

One of our colleagues in the Princess Mary Maternity Hospital, Dr. G. S. Anderson, has modified the test described initially by Singer *et al.*, and by means of a technique employing rapid denaturation of the blood sample (Mitchell *et al.*, 1956) is able, within 10 minutes, to tell whether foetal blood is present. This test is now being applied to all cases of ante-partum haemorrhage in the hospital.

Summary

Rupture of the hind-waters by means of a Drew Smythe catheter is a method often used for induction of labour in this country.

We record two cases in which the procedure resulted in damage to foetal vessels in the placenta and death of the baby due to exsanguination.

When a blood-stained tap is obtained with a Drew Smythe catheter we suggest that the sample be checked to find out whether foetal blood is present.

We are indebted to Professor Harvey Evers for permission to publish details of Case 1.

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Medical Memorandum

Complete Rupture of Uterus with Subsequent Pregnancy

A Mohammedan woman, a primipara aged 30, was first admitted to hospital as an emergency in May, 1954. Labour pains had started on the morning of May 15, and the membranes had ruptured during the night of the 16th. Labour continued all day and night with apparently little progress. On the morning of the 17th the pains suddenly became severe and slight bleeding per vaginam started. The pains ceased just as suddenly, but the bleeding continued.

Her condition on admission on the afternoon of May 18 was poor. The pulse was rapid, of low tension, and of poor volume. The tongue was dry and she was repeatedly vomiting. A slight blood-stained discharge was coming from the vagina. Abdominal palpation showed the foetus to be easily palpable, and a diagnosis of rupture of the uterus was made. Two pints (1,140 ml.) of "plasmosan" was given intravenously.

A para-umbilical incision was made and the foetus was found lying free in the abdominal cavity along with the placenta. Both foetus and placenta were removed. Inspection of the uterus revealed a complete rupture extending from the anterior surface of the lower segment laterally up to the fundus. There was no damage to the bladder. As the patient's condition was poor and no facilities for blood transfusion exist here the uterus was sutured and the abdomen closed.

The patient made a good recovery and was discharged on June 3. She was advised not to become pregnant for at least a year. Post-natally she was seen here twice routinely, and had made a good recovery.

About a year after her discharge pregnancy was confirmed again. On December 28, 1955, she was admitted to the General Hospital and kept under observation in view of her previous history. Her height was 4 feet (122 cm.). The haemoglobin was 10.5 g.% Sahli; R.B.C., 3,488,000 per c.mm.; W.B.C., 6,100 per c.mm.; Kahn negative. One tablet of "fersolate" was given four times a day. Urine and stool examinations revealed no abnormality, and blood-pressure recordings were within limits of normality. Vaginal and x-ray examinations revealed a severe degree of contracted pelvis.

Pregnancy proceeded normally, and on January 31, 1956, the abdomen was opened through a midline subumbilical incision under chloroform anaesthesia. The old uterine tear had healed remarkably, and it was difficult to realize that only a year previously a complete rupture had existed. With a lower-segment caesarean section a live 7½-lb. (3.4-kg.) male child was delivered. The child cried immediately. The old scar did not tear and bleeding was minimal. The placenta was delivered easily. Sterilization was carried out and the abdomen closed in the normal manner. The mother and child did well, and the patient was discharged on February 12.

COMMENT

The patient was an ordinary tea estate labourer living in an isolated estate.

There are no facilities for blood transfusion here, and in cases of rupture of the uterus, which occur not infrequently, the uterus is sutured on every occasion. No hysterectomies are done for such cases.

In this case it was apprehended that the uterus might rupture a second time, and for this reason the patient was admitted to hospital for observation. Another reason was that a child to this type of woman, particularly a male child, is so important.

I am indebted to Dr. M. O. Cheriyan for his helpful advice and criticism in this case and to Mrs. T. George and Mrs. M. Philip for their help and assistance at operation.

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