containing 7 ml. of thiopentone and 10 mg. of tubarine was injected into a vein and anaesthesia was maintained with 60% N_2O , 10% C_2H_6 , and 30% O_2 .

The right forearm and hand became blanched; this was particularly noticeable on the ulnar half. The right radial artery was barely palpable at the wrist. Shortly afterwards giant urticarial weals appeared, extending from the hand to the axilla. Immediately 100 mg. of procaine (5 ml. of 2% procaine) was injected into the aberrant artery at the site of the original puncture. The forearm and hand rapidly became pink, the radial pulse became full, and shortly afterwards the urticarial weals began to disappear. In view of this good response no anticoagulants were given and no block was performed. A further 100 mg. of procaine, however, was given intra-arterially at the end of the operation 20 minutes later. A careful watch was kept on the circulation in the ward, but no sequelae developed and the patient was discharged fit seven days later and has had no further trouble since.

Although intra-arterial procaine is reputed not to be effective in intense arterial spasm, it seems worthy of trial before resorting to more drastic methods of treatment. Furthermore, its antihistaminic action makes it a useful antidote to the inadvertent intra-arterial injection of curare.

W. N. ROLLASON, M.B., D.A.

Delayed Haemorrhage after Traumatic Rupture of Spleen

The normal spleen is ruptured usually as a result of a severe injury. In most cases this leads to a severe internal haemorrhage, which is rapidly fatal unless immediate operation is performed. Delayed haemorrhage after traumatic rupture of the spleen is well known, but when the initial injury is so slight as to be almost ignored by the patient it may present as a diagnostic problem.

The following case is reported as a reminder that mild trauma may assume fatal proportions even after a week's delay.

CASE REPORT

A labourer aged 76 was admitted to hospital at 11.30 p.m. on February 9, 1949, as a case of acute abdominal emergency. He complained of an agonizing pain in the epigastrium and left hypochondrium, which had started suddenly six hours before, when he had just finished his afternoon tea. The pain came in spasms and radiated to the left shoulder-tip. He had vomited once, and his bowels, normally constipated, had been opened with enemata before admission. There were no urinary symptoms. He stated that he had had dyspepsia for some years but had had no treatment for it.

On examination he was seen to be gravely ill, his skin was pale and sweating, and he was in obvious pain. He lay completely still, and resisted movement. In fact, he was too ill to respond readily to questioning. All he wanted was relief. His temperature was $98^{\circ} F.$ ($36.7^{\circ} C.$), pulse 96, and respirations 24 (mainly costal). His tongue was furred. The abdomen showed generalized board-like rigidity with maximal tenderness in the epigastrium. No masses could be felt, and the bowel sounds were diminished. Rectal examination was painful but no mass was felt.

It was noticed that his left lower ribs were strapped. He had not mentioned this, but, on direct questioning, stated that he had fallen at work one week previously and hurt his left side. This was strapped at the casualty department and he was able to continue his work next day. When the strapping was removed the sixth and seventh ribs in the left axilla were found to be mildly tender but not obviously fractured.

The heart was enlarged, with sounds of poor tone. The vessels were sclerotic and there were occasional extrasystoles. His blood pressure was 120/90. The chest showed poor expansion, but there was a resonant percussion note with vesicular breath sounds and no rales.

The provisional diagnosis of a perforation of a hollow viscus was made, though the degree of shock was greater than would have been expected. However, immediate laparotomy was decided upon.

In the anaesthetic room the patient was noticed to have developed auricular fibrillation, so that operation was begun under local analgesia, using 1% procaine.

Operation.—The abdomen was opened by an upper midline incision, and blood was seen immediately inside the peritoneum. General anaesthesia was then induced by Dr. B. Humphries, using thiopentone, gas, oxygen, and ether sequence. Exploration revealed an enormous amount of blood clot in the region of the spleen. The incision was then extended transversely to the left, and the spleen delivered without difficulty. A small tear could be seen in the pulp of the convex surface in addition to an extensive subcapsular haematoma that had ruptured. Splenectomy was performed and the abdomen hurriedly closed, as the patient's condition was critical. He died 24 hours later, despite blood and plasma infusions.

Post-mortem Examination (Dr. J. Clark).—The sixth and seventh ribs were fractured in the left axillary line, with no deformity or tearing of the pleura. The peritoneum was full of blood clot, the main portion being in the left upper abdominal quadrant. The ligatures on the splenic pedicle were intact. No other intra-abdominal abnormality was detected. Section of the spleen revealed normal histology of the pulp.

COMMENT

The following points require emphasis with regard to delayed haemorrhage after traumatic rupture of the spleen (MacIndoe, 1932-3): (1) Fractured ribs are a common complication. (2) The pain often radiates to the left shoulder. (3) Cessation of bleeding after the initial injury depends mainly on the strength of the capsule—that is, continues until pressure exerted by the distended capsule equals that produced by the extravasating blood. The clotting of the blood in the vessel is another factor. (4) What determines the severity of the haemorrhage is not the depth of rupture but the importance of the vessels sectioned—for example, fissures in the neighbourhood of the hilum. (5) Most patients do not return to work entirely free from symptoms, but nevertheless they are often able to work. During the latent period, which is rarely more than 14 days, a dull persistent pain is often felt in the left hypochondrium, with some slight rigidity. (6) The shock varies in degree, and may be severe enough to suggest coronary thrombosis, mesenteric thrombosis, or pulmonary embolism. (7) "Ballance's sign":—There is a dull note in both flanks, but on the right side it can be made to shift, whereas on the left side it is constant. The interpretation of this sign is that there is blood in the peritoneal cavity, but the blood in the neighbourhood of the lacerated spleen has coagulated. In many cases it is not possible to demonstrate this sign clinically. (8) The mortality is 27% in operated cases and 90% in cases treated conservatively.

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REFERENCE

McIndoe, A. H. (1932-3). *Brit. J. Surg.*, 20, 249.

The following changes have been made in the names of hospitals in the Liverpool region: City Hospital East, Liverpool, to Rathbone Hospital; Green Lane Isolation Hospital, Ormskirk, to Ormskirk Children's Hospital; Fazakerley Sanatorium to Aintree Hospital; and Borrowdale Sanatorium to Barrowmore Hospital.