On arrival she was intensely cyanosed, pulseless, and apnoeic. Cardiac massage and intermittent positive-pressure ventilation were started immediately and the cardiac arrest team was summoned. Ophthalmoscopic examination at this time showed widespread "railroading" in the retinal vessels. An E.C.G. showed ventricular fibrillation against a background of severe electrical interference. In view of the doubt on how long she had been in circulatory arrest it was decided to defibrillate the heart. This was done externally with a single shock and was immediately followed by good heart action. A later examination of the fundi showed normal vessel architecture, though there was widespread oedema of the fundi.

Despite dehydration therapy with mannitol, hypothermia, artificial ventilation, etc., she did not regain consciousness. An E.E.G. taken the next day with a portable electroencephalograph showed widespread abnormal activity with high-voltage spikes alternating with slow waves every one to two seconds. Regular spontaneous respiration did not return until eight days after admission.

Fourteen days after admission she developed pneumonia and died. At necropsy there was widespread diffuse infarction of the cerebral cortex, hypothalamus, right caudate nucleus, and pons.

COMMENT

This case illustrates that despite an easy restoration of the circulation the brain may still be irreparably damaged. Had this patient survived she would have been decerebrate. The outcome suggests that the appearances of the fundi at the time of arrest provided a good indication of the state of the brain.

In a series of 70 personally attended cardiac arrests occurring in 61 patients "railroading" has been seen on 14 occasions during the time of active resuscitation. Of these, despite persistence of resuscitatory effort for up to 30 minutes after making observations, the only occasion when the circulation was adequately restored was in the case described above. This is a marked contrast to the results of the overall series, in which 33 times out of 70 the circulation was initially restored adequately. For technical reasons fundal examinations were not always carried out.

If "railroading" has no significance nearly half of the 14 patients showing this sign might have been expected to have

their circulation restarted. Instead only one did. On statistical grounds this may be regarded as significant (χ^2 9.32; $P < 0.01$).

Nevertheless, in dealing with individual patients suffering from cardiac arrest such statistics relating to a single physical sign should not influence management unless the clinical significance of the physical sign is absolute—that is, the brain is always dead. The chances of full recovery after cardiac arrest are limited and the aim of instituting treatment is to improve these against the statistical certainty of death.

The preliminary observations presented here suggest that the presence of "railroading" is of grave prognostic significance, and it would be useful to know of any cases where this physical sign has been observed (and recorded at the time) and the patient has made a full neurological recovery.

Early ophthalmoscopic examination of the fundi in cardiac arrest is extremely easy because the pupils are usually widely dilated (if they are not, then this too is useful information). It can be carried out quickly with very little practice. Cardiac massage need not be stopped until a retinal vessel is seen, and then it need only be stopped momentarily. The one difficulty in making the very rapid examination of the fundi required in these circumstances is the presence of lens opacities. These may be readily seen with the ophthalmoscope held some 2 feet (60 cm.) away from the eye being examined. A green filter makes the retinal vessels appear black, and then they stand out even more clearly. A routine search for this physical sign when taken in conjunction with other features of such cases should establish its prognostic value.

I should like to express my thanks to D. J. S. Wigglesworth, Institute of Child Health, for the necropsy report.

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Haemoperitoneum after Traumatic Avulsion of Uterine Fibroid

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The causes of intra-abdominal haemorrhage can be divided into two main groups: those following traumatic injuries and those arising spontaneously.

In a review of 129 consecutive cases of haemoperitoneum, Ellis *et al.* (1958) noted that 68% were the result of gynaecological haemorrhage, 23% followed trauma, and the remainder resulted from a variety of causes. The gynaecological causes in their series were ruptured ectopic pregnancies and follicular cysts. Traumatic cases were usually the result of splenic, hepatic, or mesenteric injuries.

It is rare for haemoperitoneum to result from a gynaecological injury.

CASE REPORT

A woman aged 46 was admitted to Westminster Hospital on 14 January 1966 after a road accident in which she was knocked down by a car.

On admission she was concussed and shocked. Her blood pressure of 100/70 rapidly fell to unrecordable values. This was restored

and maintained by blood transfusion. Her injuries included (a) a fractured pelvis, central dislocation of the right hip (Fig. 1), and a deep penetrating wound 3 in. (7.5 cm.) in diameter over the right greater trochanter; (b) a fractured neck of the left fibula with a lateral popliteal nerve palsy, and rupture of the lateral ligament of the knee; and (c) lacerations of the chin and buccal mucosa.

FIG. 1.—Radiograph of pelvis showing central dislocation of hip.

She complained of pain in her right shoulder—there was no external evidence of injury—and of lower abdominal tenderness. On abdominal examination there was tenderness and guarding over most of the lower abdomen which was maximal on the right near the pelvic brim. Rebound tenderness was elicited. Bowel sounds were present but diminished. The presence of free fluid was not detected clinically.

Chest x-ray examination showed a raised right diaphragm. A plain film of the abdomen did not demonstrate the presence of subdiaphragmatic gas. A catheter was passed to exclude any injury to the bladder or urethra and clear urine was obtained. It was thought that her symptoms and signs could be due to extraperitoneal haemorrhage alone, but as an intra-abdominal lesion could not be excluded laparotomy was undertaken.

Operation.—The findings were: (a) considerable intraperitoneal blood; (b) an avulsed pedunculated fibroid measuring 8 by 7.5 by 5 cm. lying free in the peritoneal cavity (Fig. 2); (c) arterial bleeding from a raw area 2.5 cm. in diameter on the superior left surface of the uterus near the junction with the fallopian tube; (d) a cyst of the right broad ligament 8 cm. in diameter; and (e) extra-peritoneal haemorrhage on the right side of the pelvis in relation to a central dislocation of the hip; the peritoneum was intact. The

FIG. 2.—Avulsed fibroid with pedicle marked.

raw bleeding area was oversewn and the broad-ligament cyst removed. Under the same anaesthetic the thigh wound was explored and found to be a deep penetrating wound with contamination. Debridement was performed and a Steinmann pin inserted into the right tibia.

The patient was given a course of penicillin and streptomycin, and antitetanus and anti-gas-gangrene serum. The transfusion of 6 pints (3.4 litres) of blood was completed and continuous traction was begun.

Her recovery was uneventful until the fifth day after operation, when she became cyanosed, dyspnoeic, and disorientated. Signs of congestive cardiac failure were present. It was thought probable that this was due to fat embolism. She was treated with digitalis and diuretics and made a complete recovery.

Traction was maintained on her right leg for eight weeks and then gradual mobilization with increasing weight-bearing was begun. The movements of the right hip steadily improved and further x-ray examination of the pelvis showed consolidation of the fracture lines. The left lateral popliteal nerve palsy recovered and no abnormalities were detected on examination of the abdomen and of the cardiovascular system at follow-up.

COMMENT

The main feature of interest in this case was the presence of an avulsed fibroid and a fractured pelvis. We have been unable to find any previous report of this association.

It is known that fibroids may bleed spontaneously. Hasskarl (1949) collected 58 reports of cases where spontaneous bleeding occurred from dilated veins over the surface of fibromyomata. He excluded from his review those following torsion, though this does occur, as reported by Turel (1934).

We have traced only two cases where spontaneous separation of a fibroid caused intra-abdominal haemorrhage. The first (Shelley, 1931) was that of a woman aged 43 who complained of a sudden abdominal pain at rest. Laparotomy revealed haemorrhage from the pedicle of a separated fibroid lying free in the abdomen. The second (Cottalorda, 1935) was that of a patient who presented as a case of acute appendicitis. At operation the abdomen was filled with blood from the pedicle of a detached fibroid lying adherent to a gangrenous appendix in the pelvis.

We conclude that the most likely cause of the avulsion in our patient was a contrecoup type of injury, the uterus and fibroid moving at relatively different rates producing a shearing stress in the pedicle. There was no evidence to suggest torsion or direct injury.

We wish to thank Mr. David L. Evans for his permission to publish this case, Professor Ellis for his helpful advice, and the photographic department of Westminster Hospital.

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