2. *Toxic*.—This is specific degenerative change following the use of certain local analgesic drugs, and based on the known susceptibility of certain nerves to particular toxins—for example, the radial nerve to lead, and the posterior columns to ergot. If this theory were correct the lesion would be expected to be bilateral, whereas that is rarely the case. That procaine can cause nerve degeneration is known (Spielmeyer, 1908; Lundy, Essex, and Kernohan, 1933). Dinsdale (1947) has reported cauda equina lesions after the use of spinal analgesia, but the sixth nerve is never bathed in the high concentrations he mentions. Further, the complication has followed the use of a wide variety of drugs (Blatt, 1928) and even simple lumbar puncture for diagnostic purposes (Dattner and Thomas, 1941).

3. *Inflammatory*.—This implies a low-grade meningitis. Babcock (1913) attributed two cases of his to this. But the unilateral palsy and absence of an accompanying rise in temperature are good arguments against this view. The complication affects women slightly more often than men. The prognosis is favourable, and over 50% recover within a month of onset. On rare occasions the paralysis is permanent, and if after an interval of two years recovery has not taken place a corrective operation may be necessary. Generally the treatment is palliative. The troublesome symptom of diplopia is prevented by covering the affected eye with a shield, and the headache is relieved by suitable analgesics. Therapeutic lumbar puncture has been recommended with the object of lowering a supposedly raised intracranial pressure (Hayman and Wood, 1942), but the pressure of the cerebrospinal fluid may well be low and the procedure result in more harm than good.

Case Reports

Two cases have occurred recently in our hospital—one following simple lumbar puncture, the other after a spinal analgesic.

Case 1.—A woman aged 42 was to receive an extradural analgesic, but inadvertently the dura was pierced by a 16-gauge Tuohy needle, with the patient lying in the right lateral position. There was a rapid loss of about 5 ml. of cerebrospinal fluid through this large-bore needle. At this stage the technique was abandoned and a general anaesthetic given instead. The operation of cholecystectomy was uneventful. The next day the patient complained of nausea, pain in the back of the neck, and headache, aggravated on sitting up. Three days later double vision was remarked on. The next day there was a complete paralysis of the left lateral rectus muscle. It took three months for recovery to be complete.

Case 2.—A woman aged 49 was to undergo a total hysterectomy. An extradural analgesic was intended, but again an inadvertent spinal tap was made with a 16-gauge Tuohy needle. When the woman was lying on her left side, 8–10 ml. of cerebrospinal fluid was lost rapidly and the patient complained of severe frontal headache at that time. Light "nupercaine," 15 ml., was injected and the patient put lightly to sleep with a general anaesthetic. The next day complaint was made of headache, aggravated by sitting up, and slight nausea. Three days later double vision occurred, and on the seventh post-operative day partial paralysis of the right rectus muscle was evident. Recovery in this case was more rapid and was complete in six weeks.

These two cases have two points in common. A large-bore needle was used, causing a rapid loss of a comparatively large volume of cerebrospinal fluid, and external rectus paralysis developed in the eye opposite to the side on which she was lying. The brain, deprived of its water cushion through the sudden loss of cerebro-

spinal fluid, sags and a strain may be thrown on the sixth nerve, which is uppermost. The nerve is stretched, but the lesion is due primarily to reduced and not to raised intracranial pressure, as suggested by Fairclough.

When considering the pathogenesis of sixth-nerve palsy three facts should be borne in mind. The paralysis is preceded by headache. The causal relation of headache to prolonged seepage of cerebrospinal fluid through the hole made in the dura by lumbar puncture is now widely accepted (Franksson and Gordh, 1946). A patient suffering from a post-lumbar-puncture headache invariably assumes a horizontal position in bed, immobile and curled up on one side. These circumstances may account for stretching of the upper abducent nerve. In one-quarter of the reported cases the lesion is bilateral: the explanation may be that after some time the patient, by rolling on to the opposite side, exposes the other nerve to trauma.

We are grateful to Mr. E. Wolff, author of *The Anatomy of the Eye and Orbit*, for permission to modify and reproduce his original drawing.

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TORSION OF THE GREAT OMENTUM

BY

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Torsion of the great omentum is a well-recognized condition, but the number of recorded cases is still comparatively small. The torsion may be primary or secondary, complete or incomplete, and partial or total. Primary torsion where there is no recognizable cause is the less common. In secondary torsion, a hernia, neoplasm, cyst of omentum, tuberculosis, or evidence of past or present intraperitoneal inflammation is present.

Marchetti (reported by Aimès, 1919) is credited with having reported the first case of torsion of the great omentum in 1851. Oberst (1882), however, was the first to describe the condition. In each of these cases the condition was associated with an inguinal hernia. Eitel (1899) reported the first case of primary torsion. Corner and Pinches (1905) collected 54 cases from the literature. Morris (1932) collected a further 161 cases, and added three of his own, bringing the total number reported to 218. Etherington-Wilson (1945), in a critical review of the literature, reported 190 cases of torsion of omentum, 73 of which were considered to be primary or idiopathic. The number of cases reported by different authors varies. This is due to the fact that some authors have included cases in which torsion has been

confined to small tags or strips of omentum. Others have reported only cases in which torsion has involved the whole or greater part of the omentum. Taking Etherington-Wilson's figure as the basis, the number of cases recorded to date, including the three reported below, bring the total to 214, of which 80 are primary or idiopathic. Though the cause of torsion is still speculative, a number of theories have been advanced.

Payr (1902) ascribes the formation of intra-abdominal torsion to haemodynamic forces: a change in the relative position of the omentum from any cause, such as a sudden twist, or fluctuations in intra-abdominal pressure, may produce kinking. The stasis resulting in the tortuous veins favours the completion of torsion, and, finally, occlusion of the straight arteries occurs. Some writers have stated that the condition occurs more often in stout people: overloading or uneven fat distribution in the omentum increases the tendency to pedicle formation, and this in turn predisposes to torsion. The torsion usually presents itself in the right iliac fossa. This is explained by the fact that the right side of the omentum is the larger and more mobile. Thrombotic and embolic processes in the vessels of the omentum may be a factor in some cases, while violent bodily movements may predispose to torsion in others. Though any of the above conditions may produce torsion, probably several factors act together.

The following three cases illustrate some of the varied clinical features with which patients may present.

Case 1

A man aged 45 was admitted to Central Middlesex Hospital on February 16, 1946. On the day before admission he awoke with aching pain referred to the right hypochondrium. There was no nausea or vomiting. He continued at work all day, but had a restless night. The pain became much more severe a few hours before his admission.

On examination he appeared to be in great pain. His temperature, pulse, and respiration were normal. There were rigidity and tenderness of the whole of the abdomen on the right side, with an area of maximum tenderness just above and to the right of the umbilicus. There was no other abnormality in the abdomen or in any other system. The condition was diagnosed as atypical appendicitis.

Operation.—The abdomen was opened through a grid-iron incision. The appendix was rather long and slightly thickened, but not inflamed. Further exploration of the abdomen revealed a semi-gangrenous piece of great omentum, about 3 by 2½ in. (7.6 by 6.3 cm.) in size, in the lower right hypochondrium, twisted anti-clockwise at its base. It was removed, together with the appendix. He had an uneventful convalescence, and left the hospital on March 4.

Case 2

A man aged 50 was admitted to Central Middlesex Hospital on November 16, 1948. He had suffered from right inguinal hernia for many years. Three days before his admission he felt a sudden pain in the right groin, followed by generalized abdominal pain, and the hernia became difficult to reduce. Since then he had had intermittent vomiting; the vomitus contained altered blood. The bowels were usually regular, but had not been opened on the day of admission.

On examination he was seen to be well nourished. His temperature was 102° F. (38.9° C.), pulse 120, and respirations 28. The abdomen was somewhat distended, and there was evidence of a moderate degree of free fluid in the peritoneal cavity. There was diffuse tenderness and guarding of the whole abdomen, more marked in the right iliac

fossa; auscultation of the abdomen was normal. There was a large reducible indirect right inguinal hernia which recurred rapidly after reduction. It contained a firm tender mass which was thought to be omentum; other systems were normal. A straight x-ray film of the abdomen showed distended loops of small intestine containing fluid levels. There was no free gas under the diaphragm. A provisional diagnosis of strangulated internal hernia was made.

Operation.—The abdomen was opened through a right lower paramedian incision. The peritoneal cavity contained about a pint (570 ml.) of dark blood-stained fluid and the strangulated omentum presented itself. It was delivered into the wound and found to involve the whole of the great omentum, which was suspended by a narrow pedicle and had twisted four times on its long axis (Fig. 1). The omentum appeared very bulky and had a number of accessory projections; one of these projections along the right border was inside the hernial sac, and this was easily reduced. The omentum was removed after a transfixion ligation of its pedicle. The patient developed a mild paralytic ileus, which responded to conservative treatment, and he was discharged on December 11.

FIG. 1.—Case 2. Torsion involving the whole of the great omentum. The actual torsion can be seen at the top of the drawing.

Case 3

A man aged 49 was admitted to Central Middlesex Hospital on November 13, 1944. Two weeks before admission he had colicky abdominal pain followed by pain in the right iliac fossa. This had continued ever since, but had eased considerably before his admission. On November 8 his doctor had noticed a tender lump in the right iliac fossa. He had had appendectomy five years previously. The bowels were regular and micturition was normal. There was no recent loss of weight.

On examination he was seen to be a well-nourished man with a clean tongue. There was a tender mass in the right iliac fossa below the appendectomy scar. Temperature, pulse, and respiration were normal. No other abnormality was found in any other system. The following investigations were carried out: culture of a clean specimen of urine grew a scanty growth of *Bact. coli*; occult blood reaction was negative in three consecutive specimens of faeces; the white blood cells numbered 6,500 per c.mm.; a barium enema showed no evidence of organic disease of the colon. No definite diagnosis was made, and laparotomy was thought to be advisable.

Operation.—The abdomen was opened by a low right paramedian incision on November 28. The mass was partially necrotic great omentum, completely separated from its normal attachment, and loosely adherent to the antimesenteric border of the last foot (30 cm.) of the ileum and to the postero-lateral portion of the abdominal wall in

the right iliac fossa; part of it hung down into the pelvis (Fig. 2). It was removed after separating the rather vascular adhesions binding it to the ileum and the posterior abdominal wall. With the exception of slight post-operative chest complications, the patient progressed satisfactorily and was discharged on December 19. Histology of the specimen removed showed necrotic omental fat tissue with vascular thrombosis. In some areas there was evidence of organization and recanalization of the vessels.

FIG. 2.—Case 3. Partially necrotic great omentum adherent to the antimesenteric border of the ileum.

The operation in this case was performed about a month after the onset of symptoms. It is reasonable to assume that torsion was the cause of complete separation of omentum from its normal attachment; partial revascularization had taken place following its further attachment to the small bowel and postero-lateral abdominal wall.

Comment

The pre-operative diagnosis of torsion is seldom made; about 80% of cases are diagnosed as appendicitis, but, considering the duration of symptoms, the patients look less toxic than do cases of appendicitis. The age incidence varies between 35 and 55 years, and the condition is twice as common in males. The three cases reported here were all those of men between 45 and 50.

Cases 2 and 3 are examples of secondary torsion, the third case being associated with intraperitoneal adhesions, and the second with a right inguinal hernia, though there was no evidence of adhesions between the hernial sac and the omentum. No definite cause was found for torsion in Case 1, which can therefore be grouped as an example of primary or idiopathic torsion.

I wish to thank Mr. T. G. I. James for his advice and for permitting me to publish these cases, which were admitted under his care. My thanks are also due to Miss D. M. Barber and Miss E. D. Hewland, the medical artists, for the drawings.

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SPONTANEOUS PNEUMOTHORAX FROM SECONDARY SARCOMA OF LUNG

BY

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The association of pulmonary metastases with spontaneous pneumothorax is rare, and is not described in such standard textbooks of radiology as those of Twining (1938) and Golden (1941). No recorded case of pneumothorax from secondary carcinoma of the lungs has been found in the recent literature. Thornton and Bigelow (1944) described two cases of spontaneous pneumothorax due to secondary sarcoma of the lung, and Lodmell and Capps (1949) added three further cases. In view of the apparent rarity of the condition, the following case is of interest. It showed bilateral spontaneous pneumothoraces following pulmonary metastases from a leiomyosarcoma of the uterus.

Case Report

A woman aged 51 was admitted to Brompton Hospital on March 19, 1949, for investigation of her chest. She was nulliparous, and her husband had died 15 years earlier from pneumonia. She had spent the past four years in Johannesburg. She had had no relevant previous illnesses, except an operation in May, 1948, when a subtotal hysterectomy had been performed for fibroids. No further details of this operation are available. She had since remained in good health until January, 1949, when she fell ill with an influenza-like illness. A radiograph of the chest revealed a left-sided pneumothorax and scattered rounded opacities in both lung fields; there were also bilateral pleural effusions. A provisional diagnosis of multiple secondary deposits was made and the differential diagnosis of hydatid disease was considered. As her relatives were in England, she was flown home on March 18.

On admission to Brompton Hospital next day she was orthopnoeic and had a temperature of 101° F. (38.3° C.). She had lost a stone (6.4 kg.) in weight since January, 1949, and had coughed up flecks of blood on two recent occasions. Bowel habits and micturition were normal, and there had been no recent vaginal discharge or bleeding.

On examination she was pale and showed signs of loss of weight. She had a remittent fever up to 102° F. (38.9° C.) while in hospital. No enlarged lymph nodes were felt. Air entry was diminished over both lungs, and there was dullness with scattered rales in the left upper and right lower zones. The liver was not palpable, and there was a right lower paramedian scar; vaginal examination revealed a fixed cervix and a firm mass in the right fornix.

Investigations.—The urine contained nothing abnormal. A blood count showed: Hb, 75%; red cells, 3,800,000 per c.mm.; white cells, 12,000 (polymorphs 76%, lymphocytes 8%, monocytes 13%, eosinophils 2%, basophils 1%). E.S.R. (Westergren) 76 mm. in one hour. Repeated examinations of the sputum showed no malignant cells, though in one examination a few clumps of "suspicious cells" were revealed. No tubercle bacilli were seen. The Casoni test (intracutaneous injection of hydatid fluid) was negative.

A chest radiograph on March 22 (see Illustration) showed bilateral pneumothoraces, that on the left side being now localized to the apex. In this region there was a large rounded opacity situated anteriorly, as seen in the lateral view, and a localized hydropneumothorax. Both lung fields showed several rounded shadows. Intravenous pyelography revealed no abnormality.

A punch biopsy was performed on April 6. A Silverman needle (kindly lent by Professor D. W. Smithers) was intro-