responsible for the diagnosis of the lesion and the decision as to its treatment.

With regard to the operation, he believed that an attempt at surgical relief with the possibility of cure should always be made, however desperate the case might at first appear, with the exception of certain tumours which could be accurately localized in inaccessible situations and cases of metastases in the brain. It was known that over 40 per cent. of cerebral tumours were gliomatous in nature, and of these comparatively few could be extirpated, even at the earliest period at which they could be diagnosed; it was clear that a very large proportion of advanced cases would prove to be hopeless whatever treatment was adopted. Nevertheless operative treatment was justified. When there was great intracranial tension an attempt should be made to lower the pressure within the skull before opening the dura, either by withdrawing the fluid from the lateral ventricle or from a cyst if present; by infusion of hypertonic saline solution; or, if these failed, by lumbar puncture, everything being in readiness to open the dura should untoward symptoms appear. When the tumour was beneath the tentorium it was necessary, and usually easy, to tap the lateral ventricle to relieve pressure, but when the tumour lay in the substance of one of the hemispheres the ventricle might be much diminished in size, greatly displaced, or completely obliterated, and it might be impossible to use this method. He believed it of great importance, when fluid was obtained by puncture of the brain, that it should be allowed to escape very slowly, for if it escaped rapidly and the tension were quickly reduced, the oedema which always resulted from this reduction in pressure was correspondingly greater in degree and extent. The cerebral oedema which followed decompression was believed to account for an appreciable post-operative mortality, and any measures which tended to prevent its occurrence should be carefully considered and practised. He instanced the case of a woman admitted to St. Bartholomew's Hospital in a semiconscious condition, where the diagnosis was only made exactly by skiagrams showing the shadow of the calcified pineal body displaced to the right side. The left side of the skull was explored, and an attempt was made to tap the lateral ventricle. This failed, but a gliomatous cyst was discovered in the region of the motor cortex and the fluid was evacuated. The dura was then opened with safety, but the tumour was irremovable. Some hours after operation the patient showed signs of cerebral compression, but these disappeared after an intravenous injection of 70 c.cm. of 15 per cent. sodium chloride. Her condition greatly improved, and she was later given a course of x-ray treatment, focused on the growth; the improvement was only temporary, however. The speaker hoped that advance might be made in the future towards more radical treatment of gliomas, and that the tumour might be removed without causing so much damage that, though the patient's life was saved, yet it was scarcely worth living. The control of haemorrhage presented great difficulty, and the operative procedures would often have to be divided up into several stages. Local anaesthesia could often be used with advantage, especially for the preliminary stages; rectal and subcutaneous saline infusion and blood transfusion during the operation would enable the patient to stand surgical treatment, which could not be attempted without such aid. A record of the blood pressure and pulse rate throughout the operation was taken. He had repeatedly seen the pulse become steadier and the blood pressure rise when the patient, during the course of an operation, was given a rest for a few minutes. Two important causes of death after operation were oedema and haemorrhage. Oedema was to be combated by minimizing the amount of trauma to which the cerebral tissue was exposed, and by making the process of reduction of intracranial tension as gradual as possible. Hypertonic saline solution was used to control symptoms of cerebral compression appearing after operation, but when this failed, and further decompression was called for without delay, he had seen good results follow enlargement of the decompression opening left in the base of the flap of osteoplastic resections, or, in the worst cases, complete removal of the bone from the flap. Haemorrhage was not a frequent cause of post-operative trouble when care had been taken to arrest

all bleeding before closing the wound, but when, despite all precautions, signs of bleeding appeared, the wound should be reopened without hesitation, the clot removed, bleeding points dealt with, and the wound closed once more. Sometimes post-operative rise in intracranial tension was due to the refilling of a cyst tapped at operation, and in cerebellar operations there might still be hydrocephalus present. Before reopening the wound an attempt should be made to reduce the intracranial pressure by tapping either the cyst or the ventricle, by introducing a lumbar puncture needle through the hole made in the bone at operation.

Very little was known of the value of radium and x rays in the treatment of intracranial tumours. He had seen several cases of inoperable glioma benefit by x-ray treatment, while others appeared to be unaffected. In one case where a portion of the tumour was removed for histological proof, subsequent x-ray treatment enabled the patient to return to work. She did well for a year, when she was knocked down in the street and died as the result of the accident. At the necropsy it was found that almost the entire tumour had been converted into a structureless mass, which was infiltrated with leucocytes and was apparently undergoing absorption, although there was still some active growth at one point. He attributed the various results obtained by radiation of the gliomata to the several varieties of this tumour which were believed to exist.

Professor R. E. KELLY (Liverpool) called attention to the slight changes in the inner table of the skull sometimes caused by endotheliomata. There was a curious roughening of the inner table, exactly corresponding with the underlying tumour, which might be a determining factor in its localization.

Dr. A. GURNEY YATES (Sheffield) wished to reinforce what had already been said about the importance of early diagnosis, but thought that it should be remembered that slight localizing signs might occur in the early stages and be masked ultimately by the increasing intracranial pressure. It was therefore, in many cases, not desirable to wait for the development of further localizing signs. He illustrated his point by reference to a recent case of cerebellar tumour under his care.

Mr. PERCY SARGENT, in reply, said that x rays were sometimes useful in the diagnosis of a tumour of the brain, therefore it was a method of diagnosis which should be used. Calcified gliomata might be revealed in this way. Very often there was a history of trauma in tumour of the brain, but if careful inquiry was made, almost anybody, at some time or other, would be found to have had a blow on the skull, and therefore too much importance should not be attributed to the injury, and its importance as the causative agent could not be accurately estimated. He agreed that the effect of increasing general pressure might be to mask localizing signs. He also referred to false localizing signs, first called attention to by Victor Horsley.

PERFORATION AND RUPTURE OF THE GALL BLADDER.

BY

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THIS paper is based on 28 cases of perforation or rupture of the gall bladder which have occurred during the last twenty-five years at the London Hospital. In that period there have been in the surgical wards 520 cases of cholecystitis with gall stones (80 acute, 66 chronic, and 374 unclassified) and 546 (73 acute, 87 chronic, and 386 unclassified) without them—1,066 cases in all.

Rupture of the gall bladder may result from violence, such as a blow on the abdomen or a run-over accident, but is a very uncommon occurrence and less frequent than rupture of the bile ducts. One only of the present series of cases was due to this cause.

A youth, aged 22, was run over by a cart. He was treated expectantly and apparently completely recovered from the accident. Two months later he visited his doctor, complaining of a

gradual increase in the size of his abdomen. He was not jaundiced. Laparotomy was performed by Mr. Hutchinson and an enormous collection of bile found in the subhepatic pouch, the right anterior subphrenic space, and the right lumbar fossa. In the remaining part of the peritoneal cavity (which was shut off by adhesions) was a large quantity of serous fluid. The hole in the gall bladder was sutured and the subhepatic fossa and pouch of Douglas drained. The patient made an uninterrupted recovery.

Perforation or rupture results much more frequently from ulcerative cholecystitis, generally associated with the presence of gall stones. In this series 27 cases were due to ulcerative cholecystitis, and in 26 of them gall stones were present. The remaining case, was, perhaps, sufficiently interesting to be recorded in more detail.

A man, aged 38, was suddenly seized with severe upper abdominal pain, fell down and could not move. He vomited twice; the abdomen was "board-like." The diagnosis of perforation of a gastric ulcer was made (he had a two months' history of indigestion of the gastric ulcer type). Laparotomy was performed and a perforated gangrenous gall bladder found. No gall stones were present. Drainage of the gall bladder and subhepatic pouch was provided for, and the patient made an uninterrupted recovery.

Mitman reported a case of chronic pancreatitis with rupture of the gall bladder following ulceration near Hartmann's pouch, and thought that straining at stool precipitated the catastrophe. No history of strain or injury, however, could be obtained in the great majority of the present series of cases. Nordentoft recorded a case of perforation in a paratyphoid carrier with acute cholecystitis (no calculi), and cases of perforative cholecystitis during typhoid fever have been placed on record.

AGE INCIDENCE.

One patient, the traumatic case already reported, was 22 years of age; 4 were between 30 and 39; 5 were between 40 and 49; 6 between 50 and 59; 6 between 60 and 69; and 6 between 70 and 79. Sixteen of the patients were women, and 12 (including the traumatic case) were men.

DIAGNOSIS.

Diagnosis was often very difficult. In 4 cases the diagnosis of acute intestinal obstruction was made, there being absolute constipation, colicky abdominal pain and vomiting, and some distension; 3 patients were thought to be suffering from perforation of a gastric or duodenal ulcer (2 gastric, 1 duodenal); they were suddenly seized with agonizing upper abdominal pain, vomited, and were in a condition of shock when seen, the abdomen being board-like in its rigidity. One of these patients actually fell down in the street, so sudden in onset and severe was the pain. The diagnosis of a high appendix abscess was made in 2 cases in which an abscess had resulted from perforation of the gall bladder. In just over a third of the cases acute cholecystitis was diagnosed, and in the remainder (which included the very late and moribund) diffuse peritonitis of unknown origin. Slight jaundice was present in 5 cases, of which 4 were suffering from diffuse peritonitis and one from abscess formation. From only 8 of the patients could a history of flatulent dyspepsia or biliary colic, with or without jaundice, be obtained.

CONDITION FOUND AT OPERATION.

In early cases (4) bile and sometimes calculi were present within the peritoneal cavity; in later cases (15) diffuse peritonitis was present, while in others a localized abscess had resulted in the subhepatic pouch (10 cases, 2 of which are also included in the 15 cases of diffuse peritonitis). Diffuse peritonitis, therefore, was found in the majority of the cases—15 out of 28. The gall bladder was in a condition of suppurative or gangrenous cholecystitis and a perforation present, most commonly near the fundus. Almost as frequently it was situated at Hartmann's pouch or midway between the two. The perforation varied in length from a quarter of an inch to an inch and a half, and bile or pus and calculi were generally to be seen escaping through it. In 2 cases the gall bladder was found only with the greatest difficulty, and in 2 others was not seen at all, dense adhesions and the poor condition of the patient contraindicating further search. Extensive fat necrosis was

present in 2 cases, but in one of these the patient also had acute pancreatitis. One case of subhepatic abscess resulting from perforation of the gall bladder was complicated by fistulae leading from the abscess cavity into the colon and duodenum.

In Gjellerup's case there was a haemoperitoneum of 2 pints. Sussig and Hörnhammer reported 2 cases of extraperitoneal perforation; Wendel recorded an extremely interesting case of torsion of the gall bladder with perforation and calculi lying free in the resulting abscess cavity. The gall bladder was not gangrenous, although the cystic duct and vessels had rotated completely several times. Schweizer reported a case of perforation of the gall bladder with fat necrosis.

TREATMENT.

Treatment depended on several factors, especially the condition of the patient and the condition found at operation. Cholecystectomy was performed in 5 cases—one with diffuse peritonitis, 2 with abscess formation, and 2 soon after perforation. The first died, the second two recovered, and one of the last two died. The remainder were treated by drainage of the gall bladder and subhepatic pouch; suprapubic drainage was added if diffuse peritonitis was present. Summarized, the treatment is generally drainage of the gall bladder by a tube inserted through the perforation and drainage of the subhepatic pouch. Suprapubic drainage is sometimes necessary. Cholecystectomy may be performed if the patient's general condition and the local condition of the gall bladder and surrounding tissues do not contraindicate it.

PROGNOSIS.

Of the 4 patients operated upon soon after perforation 3 recovered and one died of shock; 7 of the 8 cases in which an abscess had formed recovered, one died. Fifteen patients were suffering from diffuse peritonitis; 10 died (2 had localized abscesses in addition) and 5 recovered.

It will be seen, therefore, that when operation was performed soon after rupture, or when an abscess had formed, prognosis was good, 10 out of 12 recovering. On the other hand, when diffuse peritonitis was present the prognosis was poor, 10 out of 15 dying.

In cases of rupture due to violence the prognosis depends upon concomitant injury to other viscera, the presence of infection in the gall bladder, and the time elapsing between the accident and operation. If the bile be sterile the last factor is of less importance.

In the present series only one was the result of violence, and he recovered, although operation was performed two months after the rupture had occurred.

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