THE ACUTE ABDOMEN.*

By WILLIAM TURNER, M.S., F.R.C.S.

(Consulting Surgeon, Westminster Hospital.)

What is an "Acute Abdomen?" An abdomen is said to be acute when something has occurred inside it which will lead to peritonitis, intestinal obstruction and death, unless preventive measures are taken immediately.

During my Surgical career I have been impressed and appalled by the number of cases of this kind which come under the care of the surgeon too late, and by the terrible mortality that this entails.

I am not speaking only of my own cases but also of those of all my colleagues. Do not, for a moment think that I am blaming the doctor for this, but as early operation is the only hope for most of the cases, it is necessary to find the reason for this delay.

Let us take first the personal equation of the patient, secondly the difficulty of diagnosis, and thirdly the extraordinary effect of a comparatively small dose of morphia which may effectively obscure the symptoms and lead the patient and the doctor into a fool's paradise.

Patients to-day treat themselves by books, drugs, their friends, and occasionally the chemist. Accustomed to rectify minor "upsets", (usually due to food or drink) in this way, they often fail to realize a condition of greater gravity, and, loth to send for a doctor, they treat themselves with remedies, frequently containing chlorodyne, until the last moment. How often do we get the excuse—"I waited to see how I felt in the morning before sending for the doctor." This delay is often fatal, as after the acute symptoms have passed off, there is in many cases, a short period in which the symptoms are dormant and the patient thinks he is better. If the case is first seen by the doctor during this interval, and the definite symptoms of general peritonitis have not shown themselves, the diagnosis may very easily be missed and the doctor says—"I will see you again to-night."

Mrs. X, aged 40, very neurotic and always complaining of odd pains, very liable to feel sick and vomit for apparently no reason except emotional causes, got one of her so-called attacks, but finding that the pain in the abdomen was persistent and that she really felt ill, she and her husband decided that after all they had better send for the doctor on the evening of the fourth day. He suspected appendicitis and advised consultation with a surgeon. But he was met with—"She has had so many attacks that it could not be anything different this time and would be sure to clear up." So another twenty-four hours was lost, and when the operation was performed the following night a localized appendix abscess had ruptured, producing general peritonitis, from which she died.

And do not forget that when a patient complains of an abdominal pain, so severe that he is completely incapacitated, it is safest to assume that the case is serious until absolutely proved otherwise.

*The Creasy Memorial Lecture delivered to the Sutton and District Medical Society on November 1st, 1935.

In many cases the pain, even of a perforation, does not last very long, as lymph is rapidly laid down round the opening, and the acutely irritated peritoneum pours out fluid, both tending to relieve pain.

Again, when the patient, in great pain, sends for the doctor, he and his friends, who immediately rally round, urge the doctor to stop the pain. In kindness of heart the doctor yields, and gives the patient an injection of morphia, after which the examination of the abdomen may show so little that again the diagnosis is missed.

Mr. Y, aged 68, had retired from business and was leading a more or less sedentary life. He complained of occasional attacks of colicky pain and discomfort in the gall bladder region. Earlier in life his appendix had been removed. He had a large inguinal hernia on the right side, which was not properly controlled by a truss, and it came down directly the truss was removed. When these attacks of pain and discomfort in the abdomen came on, the hernia always gave trouble, and on one or two occasions became partially obstructed and irreducible for a time. Quite suddenly at 10.30 one evening he was taken with another attack of acute abdominal pain, this time so severe that he fell to the ground and remained on his hands and knees. He suffered from shock but did not vomit: the hernia protruded to the size of a large orange and could not be replaced. The doctor was sent for and gave him some morphia before he moved him, and then when he got him back to bed found no definite physical signs except that the hernia, which was protruding more than usual, was apparently not strangulated but was more difficult to control than formerly. Thinking it was only the same type of semi-obstruction, the patient was treated with enemata and an action of the bowels further complicated the diagnosis. Two days later he developed all the signs of general peritonitis and operation revealed a perforated duodenal ulcer, from which he died.

Avoid giving morphia in a case of sudden acute abdominal pain if you possibly can. If you must give something, give atropine instead, this will certainly help colicky pain but not that due to a perforation.

The symptoms produced by acute abdominal trouble are few and in such a complicated anatomical area there are so many possibilities that the diagnosis is very difficult, particularly as the previous history may be quite misleading.

Pain, shock with or without vomiting, and constipation are nearly always present in each case.

Pain due to irritation of the parietal peritoneum is continuous and agonizing, and is made worse by movement; this is particularly noticeable in cases of perforation.

Pain due to muscular spasm is colicky in nature as is shewn in cases of intestinal obstruction, pyloro or entero-spasm, and biliary or renal colic.

Shock varies from a little faintness to complete collapse.

Vomiting may not occur, or may only occur once with the shock of the acute pain. In cases of obstruction, however, it becomes a prominent symptom, and it may also be an indication that general peritonitis has set in.

On examination of the "acute abdomen" there is usually marked tenderness corresponding to the position of the pain, and marked rigidity of the muscles over that area. The latter is reflexly produced by the irritation of the parietal peritoneum, thus in cases of a perforated gastric or duodenal ulcer, there is nearly always a "tuck-in crease" between the ensiform cartilage and the umbilicus due to the transversalis muscle (which is very well developed in this region) pulling by its irritative spasm, on the fibrous intersection of the rectus sheath.

This "tuck-in crease" is a very valuable physical sign, since it invariably denotes that the trouble is in the upper part of the abdomen. It usually disappears, however, when general peritonitis is established.

The rigidity may be so wide spread that it produces a scaphoid abdomen, and cases have been known where the patient suffering from intestinal obstruction has died from toxæmia before distension of the bowel and abdomen have occurred at all.

The usual causes, excluding trauma, of an "acute abdomen" may be grouped under the following headings:—

Perforation of a viscus;

Internal hæmorrhage due to ruptured ectopic gestation or ovary;

Rupture of local abscess or cyst;

Internal strangulations;

Mesenteric thrombosis;

Pancreatitis;

Intestinal obstruction;

Gangrenous appendicitis.

The sub-divisions which come under some of these headings are extraordinarily numerous and varied. The following cases will demonstrate a few of them.

I have already referred to a case which illustrates perforated duodenal ulcer.

A *porter*, aged 46, had occasionally suffered from indigestion, but had never had any acute abdominal disease, operation or jaundice. He was employed in a solicitor's office and was carrying a box of deeds upstairs, when he suddenly fell down in a dead faint. He had violent abdominal pain, continuous vomiting and was obviously very ill. He was brought straight up to the hospital, and when seen he was

collapsed and cold, had a very anxious abdominal expression and a very retracted abdomen which was quite rigid. The abdomen was therefore opened and we found that perforation of the jejunum had occurred and that the contents of the bowel had escaped into the peritoneal cavity. The patient died that same night.

A patient, aged 75, had suffered from constipation of late years. On a very hot day in August he went for a long bicycle ride, a distance of sixty miles. The following day he did not feel well. The next day, still feeling a little "off colour," he thought he would do another bicycle ride to make himself fit, and he put in another thirty miles. Following this he had acute pain in the abdomen with obstinate constipation and vomiting, gradual distension, but no temperature. Everything was done to relieve his bowels, but they never acted. He was even given calomel and castor oil. I saw him on the fourth day two hours after he had had another attack of very violent pain referred to the umbilicus. He then had the typical abdominal aspect, generalized distension, marked rigidity and absolutely immobile abdomen, with dullness in both flanks and very great tenderness. I operated and found gangrenous perforations of the cæcum and the ascending colon in about thirty places, and hard fæces all over the abdominal cavity. This was a case of acute atony leading to stercoral ulceration, not to diverticulitis.

A girl of 21 had suffered all her life from constipation. After taking an aperient she was seized with sudden acute pain in the left side of the abdomen between the anterior superior iliac spine and the umbilicus. Symptoms of acute peritonitis rapidly set in and on opening the abdomen the same evening a foul smelling peritonitis was found, and definite fluid fæcal material free in the peritoneal cavity. A malignant growth was found in the lower end of the descending colon, the ulcer having ruptured. The presence of a growth in a girl of 21 was the last thing any of us suspected.

A man of 40 had always been thin, and suffered from chronic irregularity of the bowels. Had a sudden attack of severe central abdominal pain with tenderness and vomiting, soon followed by distension of the lower part of the abdomen, rigidity of muscles below umbilicus, some fever and complete constipation. 48 hours after the onset of the pain, operation revealed a very foul fæcal peritonitis, not due to a gangrenous pelvic appendix, but to a ruptured diverticulum in Douglas's pouch, the hole leading into the upper part of the rectum, just at its junction with the sigmoid. At least one foot of the bowel was a mass of diverticulæ.

Now to take cases of hæmorrhage:—

A young woman, aged 27, married two years, had missed one period when she was suddenly attacked by acute abdominal pain with collapse, followed by a rapidly swelling abdomen, with signs of peritonitis and marked anæmia. Operation five hours after revealed the abdomen full of blood and a ruptured ectopic tubal gestation of 6 weeks to 2 months' duration.

Mrs. M., aged 28, with one child, had suffered from three attacks of appendicitis but had not been operated upon. Fourteen days after a normal period she had the same symptoms as the previous case, but the cause in this case was a ruptured ovary from a Graafian follicle with a branch of the ovarian artery pumping blood into the peritoneal cavity.

Dealing with cases of rupture, I will give a few instances.

A young man, aged 21, just after rowing in a regatta, was seized with acute pain in the right iliac fossa, and showed all the signs of a gangrenous appendix. He was operated upon the same night, general peritonitis was found, a gangrenous appendix removed and the wound drained. (A true fulminating case.) He made good progress and appeared to be going on well, and left the nursing home after three weeks to go home, but the night before he left he had a slight temperature, otherwise there was no evidence of anything wrong. Next day, against orders, he went out with his motor car (a high-powered sports model) and drove himself about 100 miles at least. The same evening he was taken with another attack of very acute abdominal pain, vomiting and collapse and the abdomen soon became rigid and tender all over. Operation that night revealed a general peritonitis, starting from the rupture of a localized abscess at the position of the base of the appendix. He was very ill indeed and got a secondary abscess in the left iliac fossa, as well as a faecal fistula, but eventually recovered.

A man, aged 65 years, suddenly had severe abdominal pain, vomiting and collapse, rapidly followed in an hour or so by all the signs of peritonitis, with much free fluid, rigidity, typical aspect, etc. About 6 weeks before he had been operated on for an acute appendix, which was removed from Douglas's pouch, a drainage tube being put in. He had done very well and had been going about as usual for more than a fortnight. On opening the abdomen there were pints of almost clear fluid in the peritoneal cavity, no true pus and no blood, but in Douglas's pouch there was definite evidence of a cyst about the size of a small apple, which had ruptured. Cultivation of the fluid revealed streptococci in pure culture. He got quite well.

A man, aged 40, was apparently in perfect health and had never had a doctor since childhood. He was suddenly seized after breakfast with acute epigastric pain, vomiting and collapse. There was marked rigidity and tenderness over the gall bladder region, the crease I mentioned above was quite marked, and early peritonitis was definitely present. Operation revealed, not a perforated duodenal ulcer but a ruptured cyst of the liver, with fluid in the peritoneal cavity. It was a case of unsuspected multiple cystic disease of both kidneys and liver—the so-called congenital cystic liver.

I believe the above case is unique.

In the case of Mrs. P., aged 30, the left fallopian tube and ovary had been removed five years previously, and for some unknown reason. She was seized with acute pain in the lower part of the abdomen and rapidly increasing peritonitis. Operation revealed a ruptured pyo-salpinx with an enormous fibroid impacted in the pelvis.

Some examples of *Internal Strangulation* and *Mesenteric Thrombosis* will next be given.

Miss R., aged 52, who had had a hysterectomy performed 10 years before for fibroids and hæmorrhage, was seized with sudden violent pain in the right hip, vomiting, abdominal distension and tenderness. Operation three and a half hours later shewed much blood in the peritoneal cavity, a mass of blood cysts filling up the pelvis, leading to a malignant ovarian cyst which had ruptured.

Mr. H., aged 57, suffered very severely from hæmorrhoids, and after all treatments had been attempted I performed a Whitehead's operation. On the 8th day he was suddenly taken with acute abdominal pain, urgent vomiting, and very retracted

rigid abdomen. Operation revealed internal strangulation of six inches of the small intestine through a hole made by Meckel's diverticulum. The gut was gangrenous and the six inches had to be resected.

Mr. W., aged 66. On 29th October, two weeks after the initial symptoms had appeared, a large pelvic abscess due to a gangrenous appendix was opened and drained. On the 10th November he had pain in the left side and some swelling of the abdomen and the next day operation revealed a mesenteric thrombosis affecting 18 inches of the small intestine, which was becoming gangrenous and had to be resected. Thereafter he did very well until 11th December, when he got another acute attack, and on again operating we found a long loop of small intestine strangulated by a band. He eventually made an excellent recovery.

Next in order we have *Pancreatitis*.

Mrs. L., aged 65, who previously had no abdominal trouble, was seized with acute pain and vomiting, followed by great distension of the abdomen. Operation revealed fat necrosis, peritoneal fluid, and a very enlarged, acutely inflamed pancreas.

Mrs. B., aged 69, with similar symptoms as above, had blood stained fluid in the peritoneal cavity.

Both these cases did well by incising the coverings of the pancreas and draining.

In cases of ulceration of the gall bladder and perforation into the peritoneal cavity, the history of previous attacks of gall bladder trouble will nearly always help the diagnosis.

Under the heading of *Intestinal Obstruction* the following two cases may be quoted:—

Mrs. M., aged 63, who had always been thin but with no history of any previous abdominal trouble or jaundice. She was suddenly taken ill with acute abdominal pain, vomiting and collapse. Vomiting was continuous and the abdomen was scaphoid, very rigid and very tender. Operation six hours after the original attack commenced revealed a large impacted gall stone in the jejunum. She subsequently made a good recovery,

Mr. D., aged 72, after eating some gorgonzola cheese on a Wednesday evening, had pain and vomiting in the night. He did not improve and the vomiting was faecal on Friday. On examining him I found he had all the signs of an "acute abdomen" and as well, pulsation in the right iliac fossa, under McBurney's point. He had acute intestinal obstruction due to a kink just above that known as Lane's kink of the lower part of the ileum, and this was caused by the pressure of an aneurism of the internal iliac artery. The bowel was freed, the adhesions were divided and the obstruction relieved, but four and a half years after he died from rupture of the aneurism. He had refused all treatment for this after the first operation.

It must not be forgotten that similar symptoms are produced by rotation of an ovarian cyst, a sub-peritoneal fibroid, a moveable kidney or even the omentum, but in these cases there is a swelling to be felt in the abdomen.

Certain cases of pneumonia, renal disease and diabetes give rise to symptoms very similar to those of the "acute abdomen", as the following case histories illustrate.

One winter day I was sent for to see a young married woman of 29 years of age. She had no previous history of any importance, but in the early morning she had

pain suddenly in the right hypochondrium and vomiting. Her doctor diagnosed the case as an appendix, and I saw her about 6 o'clock. I found her with a little fever, pulse a little up but regular, and respiration also up. She was rigid and tender over McBurney's spot; there was no hyperæsthesia or anæsthesia, and the rigidity spread up to her ribs on that side, but the epigastrium itself was clear. She was breathing very quietly but did not move her lower ribs at all, and the breath sounds were less on that side than on the other. I thought it safer to move her to a nursing home, and proposed to operate if necessary at 9 o'clock. When 9 o'clock came we found she had started the typical signs of an early pneumonia and no operation was performed. Her temperature never rose beyond 101°.

On the other hand, it is also possible to mistake an "acute abdomen" for pneumonia.

A girl, aged 12, was admitted to Westminster Hospital, having been seized with a rigor, pain in right loin and side of abdomen, difficulty of breathing and high temperature—104°. She was sent in as an acute appendix, but on seeing her I felt bound to suggest a diaphragmatic pleurisy and probable commencing pneumonia on that side. The next day there were no physical signs in the chest, though the movement was still deficient and there was definite dullness in the loin extending nearly to the rectus. Operation revealed a gangrenous appendix with an abscess that had burst in the cellular tissue behind the colon and in front of the liver.

Mr. A. B., aged 19, had acute abdominal pain which doubled him up. It came on following some days of pain and discomfort after food. His case was diagnosed as pneumonia and for two days he was treated on this assumption and given morphia for the pain. When I saw him he had all the signs of general peritonitis and the rigid bar above the umbilicus was still present. Operation two hours later shewed a perforated pyloric ulcer, but no definite food in the peritoneal cavity. He got quite well, and it is seldom that a patient with a perforation of 48 hours' duration does so, but he was young and had taken no food before or after the perforation occurred, and as he had been kept under morphia no great leakage had taken place. He was very lucky.

A medical practitioner, aged 53, had suffered from diabetes for a long time, and for some days was so fatigued that he obtained a locum tenens. Two or three days later he complained of severe pains in the epigastrium, slightly greater on the right side and radiating to the shoulder. The pains occurred in crises lasting some minutes, and were not accompanied by vomiting. At first he appeared to be suffering from biliary colic, but the gall bladder was not tender, and the abdomen was neither distended nor rigid. He was definitely short of breath, and the examination of the urine showed abundance of sugar and acetone. The pain persisted and the abdomen became tympanitic with obstinate constipation. The temperature became sub-normal and the patient died from diabetic coma 36 hours after the onset of the pain.

A woman, aged 38, was admitted to Westminster Hospital with urgent vomiting and continuous abdominal pain referred to the umbilicus, which had been going on for three days. She was thin and very toxæmic, the abdomen was scaphoid, very tender and rigid. Nothing had been passed, the vomit was not fæcal but appeared to be from the upper part of the small intestine. The urine was scanty and contained no albumin or sugar. There was no history of any previous illness, but she had always been thin and never robust. As the pain and vomiting continued I opened the abdomen

and found nothing! She remained in a state of semi-coma after the operation, the urine became solid with albumin, the heart failed and she got gangrene of the nose, hands and feet before she died of uræmia. Small red granular kidneys were found, post-mortem.

A stout man, aged 43, known to have chronic renal disease, was under treatment for a gastric ulcer, the presence of which had apparently been confirmed by an X-ray examination, when he was suddenly seized with acute pain in the left hypochondrium, accompanied by vomiting, tenderness and rigidity. There was no change in the urine, and a friction rub was heard over the lower ribs on that side. His symptoms did not improve and he was operated upon in the belief that the ulcer had ruptured into the lesser peritoneal sac. Nothing abnormal was found at the operation, but the patient died of uræmia twenty-four hours afterwards. The post-mortem examination revealed small granular kidneys and no trace of any gastric ulcer at all.

Difficulty in diagnosis is specially marked when two diseased processes are present in the one patient as occurred in the following case:—

Mr. H., aged 48, had suffered previously from recurrent gastric attacks. He was suddenly seized with acute pain in the left side and back, followed by vomiting, distension and marked rigidity all over the right side of the abdomen. All the symptoms pointed to a duodenal ulcer, which was leaking. On opening the abdomen an old duodenal ulcer was found with great pyloro-spasm, but no peritonitis and no perforation. There was enormous distension of the colon, but no growth or stricture was found. The distension was relieved by a rectal tube, and on further examination of the gall bladder, kidneys and ureter an impacted stone was found in the left ureter, one and a half inches above the pelvic brim. (It was learned afterwards that the patient had passed blood on one occasion some three months before, but had taken no notice of it and no investigation was undertaken.) The stone was removed and six years afterwards a gastro-enterostomy had to be performed for a large ulcer in the second part of the duodenum.

The treatment of these cases of "acute abdomen" is undoubtedly operative, but the surgeon has not only to remove the cause, he must be prepared to deal with the peritoneal infection, to allow for adequate drainage, and, in cases of obstruction, to open and let out the contents of the bowel.

The administration of a general anæsthetic calls for special care in cases where obstruction is present. When the stomach is full the danger of vomiting is greatly increased, and with it the risk of inspiring the vomit. Well known as this is, I feel I must mention it on account of its great importance. It is well to wash out the stomach before the operation whenever possible, but such a procedure does not obviate all the risk, it only serves to minimise it. I have known a case to vomit the contents of the upper part of the small intestine even when this precaution had been taken.

The presence of blood-stained fluid in the peritoneal cavity points to the case being one of:—

- Rupture of an ectopic gestation or ovary;
- Acute internal strangulation;
- Acute pancreatitis;
- Occasionally intussusception; or
- Strangulated ovarian cyst.