Signs in Advanced Disease of the Heart.

It is necessary to keep this simple description of the essentials of heart failure in mind. Obvious symptoms, such as dropsy and enlarged liver, tend to divert attention from the subtler and more instructive signs. These obvious signs are late developments, and the mechanism of their production is fundamentally the same as breathlessness, in that they are due to the inability of the heart to maintain an efficient circulation in certain organs and tissues.

The Varied Symptoms of Heart Failure.

This presentation of the subject may seem so simple that it might be assumed that the recognition of heart failure is an easy matter. While the principle is simple its application is extremely difficult in the present state of knowledge. Seeing that the main symptoms of heart failure are of the nature of sensations of distress experienced by the patient on effort, we must know what questions to put to the patient, and we must be able to interpret his replies. The ability to do this can only be acquired after a long experience. Sensations of distress on effort may arise from many other conditions than a failing heart; those due to the heart must therefore be clearly distinguished from those due to other conditions. The sensations of distress are often brought out in response only to particular kinds of effort. Thus a mechanic with a damaged heart may be able to swing a forehammer all day, but is pulled up on going up a hill. On a warm day a man may walk ten miles, but he may be pulled up on walking a hundred yards on a cold day.

Identical heart symptoms may arise when the heart muscle is diseased or when it is temporarily weakened from some passing infection. It is necessary to differentiate between these conditions. The severity of the distress may bear no relation to the gravity of the condition. In one man a slight pain may be of ominous significance; in another, pain of an agonizing kind may not be a sign of danger.

The signs of heart failure being mainly sensations of distress, it is useless to seek for a knowledge of heart failure from laboratory experiments. No doubt experiments reveal certain features, but they cannot give us the information necessary for the intelligent practice of medicine. Nor can such information be obtained from those who specialize in heart affections. This will at once become evident when it is realized that the symptoms of cardiac inefficiency are to be found, not in the examination of the heart, but by the symptoms produced by organs which do not receive a sufficient blood supply. Moreover, the heart is so often disturbed or weakened by disease in other parts of the body that an examination limited to the heart would of a certainty mislead.

The organ which receives a diminished supply of blood will give rise to symptoms peculiar to its function. We thus get a diversity of symptoms depending on the organs which are most affected, or rather whose symptoms are most in evidence. Therefore, to understand the symptoms of heart failure it is necessary to understand the symptoms produced by other organs. This kind of knowledge will never be acquired until we have a better understanding of the principles concerned in the production of symptoms. I have repeatedly called attention to the fact that so long as symptoms are incoordinated the study of disease clinically will merely result in an addition to a mass of chaotic details. When it is recognized that though symptoms are infinite in variety and in number the vital processes concerned in their production are few in number, it will be seen that with the recognition of these vital processes the chaotic mass of symptoms will be capable of classification according to their affinity in nature. This has already been demonstrated in describing the reflex process concerned in the movements of the heart. In heart failure the process concerned is an insufficient supply of blood, and each organ which receives an insufficient supply will show symptoms peculiar to its impaired function.

SUMMARY.

1. Heart failure occurs when the heart muscle fails to supply the organs of the body with blood sufficient for the efficient performance of their functions.

2. The symptoms of heart failure are therefore to be found in the symptoms produced by the impaired function of those organs that do not receive sufficient blood.

3. In the first instance this will occur only when the heart is called upon to exercise its full powers; the early symptoms of heart failure will only be produced during some physical effort.

4. This limitation of the field of response to effort is revealed by sensations of distress.

5. When symptoms of heart failure persist when the patient is at rest (dropsy, enlarged liver, orthopnoea) the reserve force of the heart is exhausted and the rest force is being encroached upon.

6. The symptoms of heart failure are not to be found by the examination of the heart.

DRAINAGE IN ABDOMINAL EMERGENCIES.

BY

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VALUABLE papers have appeared from time to time in the *British Medical Journal* and *Lancet* emphasizing the importance of early diagnosis in acute abdominal crises. The responsibility for the heavy death rate of these conditions is in this way laid at the door of the medical attendant who is first called in to see the case.

It is an undoubted fact that the mortality amongst these patients increases in direct ratio to the time which has elapsed between the onset of symptoms and admission to hospital. Too often we have cases sent to the surgical wards which are more fit for the *post-mortem* room than for the operating table. Yet although so much depends on diagnosis, it is no use being blind to the fact that treatment in most of these cases is by no means a matter of universal agreement. Almost every step in our way of dealing with the commonest of abdominal emergencies is still open to controversy: the proper time for intervention, the site of incision, the mode of drainage.

Some surgeons advocate immediate operation as soon as a case of acute appendicitis is diagnosed; others prefer to wait until the crisis is over and operate *à froid*. McBurney's gridiron incision, Battle's incision, a paramedian incision with retraction of the rectus outwards, has each in turn been recommended as the incision *par excellence*. Last, but not least, drainage in the presence of free fluid in the abdominal cavity is a subject on which few agree. Swabbing the fluid out, flushing the peritoneal cavity with lotions, the use of tubes, have all been advocated by eminent authorities. On the other hand, a school of surgeons teaches that the peritoneum is well able to look after itself, and that the less it is interfered with the better. No more swabbing, no more flushing, no tubes, or only one where two or three were deemed necessary.

The 75 cases which form the basis of this paper seem to me to be of interest as having been treated on the lines of strictly limited interference. All the patients came from the working-class practice of a large industrial town, and the majority were not sent to hospital until several days after the onset of symptoms. They are thus anything but "picked" cases. I have purposely omitted four cases of general peritonitis who arrived moribund and died within twenty-four hours of their admission to hospital.

Technique.

The following rules were observed with regard to drainage:

- Drainage was only carried out in the presence of free pus or thick purulent fluid.
- The fluid was not swabbed.
- The peritoneal cavity was not irrigated.
- Not more than one tube was ever used, this in the great majority of cases being placed in Douglas's pouch.

As soon as the patients had recovered from the effects of anaesthesia they were put in the full Fowler's position, the upper end of the bed being raised on blocks three feet high.

Among those treated are included cases of general peritonitis and of perforation of the stomach or duodenum. At the present day in many teaching schools the routine methods of drainage for such cases are three tubes in the renal, right iliac, and pelvic pouches.

Incision.

The incision varies with the condition present. In doubtful cases a right paramedian incision with retraction of the rectus outwards. In perforations of the stomach or duodenum a paramedian incision above the umbilicus with retraction of the right rectus outwards. In cases of general peritonitis a similar incision below the umbilicus. In the majority of cases of acute appendicitis, McBurney's gridiron incision; this was used in forty-eight out of seventy cases. Battle's incision was only used twice. In a few cases an oblique incision going right through the thickness of the abdominal parietes; this gives excellent access, but doubtless the risks of hernia formation are increased.

Where the position of the appendix is known before operation to be abnormal, as in Case 49, a suitable incision is used.

Only one case of hernia has been recorded as a sequence of the operation. The following table shows why operation was undertaken and the result:

	Total.	Recoveries.	Deaths.	Mortality.
				Per cent.
Acute appendicitis without peritonitis	22	22	0	0
Acute appendicitis with pelvic peritonitis	29	27	2	6.8
Acute appendicitis with general peritonitis	5	4	1	20
Acute appendicitis with localized abscess	14	14	0	0
Perforation of the stomach or duodenum	5	5	0	0
	75	72	3	4

When there was a localized abscess the appendix was not removed in four out of fourteen cases. When the bowel was friable and the appendix difficult to reach it was thought safer to leave it behind. No. 37 was a child of 6, who had general peritonitis and died two days after the operation. No. 45 was a woman of 47, who died of portal pyaemia thirty-four days after admission. No. 58, a boy of 5, had a localized abscess and a gangrenous appendix. He died of intestinal obstruction. All these patients were operated on immediately after their arrival at hospital. It is open to question whether in No. 58 life might not have been saved by waiting until the acute condition was over before operating.

Complications.

These were: pneumonia, 1; pelvic abscess, 1; faecal fistula, 1; subphrenic abscess, 1; hernia, 1. The faecal fistula occurred in the case of a girl of 8 in whom the small intestines were matted together in such a way that the appendix had literally to be dug out of a mass of adherent bowel. During the process a loop of intestine was opened into. A faecal fistula developed which was successfully closed a month after the original operation.

Advantages of Limited Drainage.

The following advantages are claimed for the method of limited drainage:

- (a) Shock is diminished as time is saved, and the abdominal parietes are not interfered with to the same extent.
- (b) The after-treatment is less painful. Nothing is more nerve-shattering for a patient than the daily dressing with moving of three large tubes.
- (c) The formation of a faecal fistula is less frequent, most faecal fistulas being due to ulceration of the bowel by tubes.
- (d) Adhesions are not likely to form, and intestinal obstruction as an early or later complication is thus avoided.

Two of the perforation cases mentioned in this list were subjected six weeks after the first operation to a second laparotomy for gastro-jejunostomy. In both cases the only adhesions found were over the site of perforation just beneath the liver, and they did not interfere at all with the mobility of the stomach. Would this have been the case if several tubes had been used?

Swabbing the fluid out of the general peritoneal cavity or irrigating it with saline or antiseptics are procedures more likely to do harm than good by disseminating septic material and injuring the already inflamed peritoneum.

The objection which might be raised against the method of limited drainage is the additional risks it involves. As an answer to this it will be seen that out of 75 cases only two patients had secondary abscess formation.

The first patient (No. 34) had acute appendicitis of ten hours' duration, and very few people would have hesitated in closing the abdomen; the infection may have been very virulent. The other case (No. 75) had a very high gangrenous appendix just beneath the liver; the peritoneal cavity was drained, but contrary to rule the tube was not put in Douglas's pouch but behind the caecum, in the right renal fossa. A subphrenic abscess developed later. I am inclined to think that this complication would have been avoided by merely draining the pelvis, as we did in all our other cases. A tube often acts as a focus of infection; it irritates the neighbouring peritoneum and renders it less capable of self-defence. If placed at a spot where the peritoneum is not already inflamed it is more likely to act as a drain and not as an irritating agent. That is the reason why in most of our cases we drain not the appendix site but Douglas's pouch.

Amongst our other cases several were closed which had free turbid fluid in the pelvis. The majority healed by first intention. A few—amongst whom was No. 70, a perforated duodenal ulcer of twelve hours' duration—had a discharge

from their wounds a few days after operation. In other words, when there is an abdominal wound and fluid within the abdominal cavity, this fluid, if it does not become absorbed, finds its way out easily via the wound.

These considerations lead me to the belief that a more restricted drainage of the abdomen than has been practised in the past involves no additional risks, whilst it entails advantages which make it a definite improvement in the surgery of emergencies.

SPLENOMEGALY WITH PROGRESSIVE ASCITES AND LOUD VENOUS HUM:

SPONTANEOUS CURE OF ASCITES BY LEAKAGE THROUGH ABDOMINAL WALLS.*

BY

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The following case, in addition to having features of diagnostic interest, eventuated in such an unexpected way that it seems worthy of record.

History.

A single man, aged 25, was admitted to the Sheffield Royal Hospital on June 21st, 1916, suffering from haematemesis. He is a coal-miner by trade. Up to the onset of his illness he had always been actively athletic, playing football regularly. He is a life-long abstainer and non-smoker. He has not suffered from any previous illness except occasional attacks of "influenza."

On the day of onset, in April, 1916, he had worked for three consecutive "shifts" in the pit—that is, practically twenty-four hours without a break. During the third shift he felt pain in his stomach. For the next few days he was out of sorts, and then suddenly vomited about three pints of blood.

He was kept in bed for six weeks, feeling ill and weak. After this he began to improve, and was getting about, until the night of June 19th, when he felt sickly and restless. Next day he had another severe haematemesis in the evening, and again, on the morning of admission, a still larger one.

On admission (June 21st) he complied with all the characteristics of an early chronic splenic anaemia:

1. Spleen enlarged to below navel.
2. Absence of enlarged lymph glands.
3. Anaemia of chlorotic type: red cells 1,350,000.
4. Leucopenia (5,000).
5. Liability to copious gastro-intestinal haemorrhages from time to time.

At that time there seemed no reason to doubt the diagnosis of splenic anaemia. The question of splenectomy was considered, and my surgical colleague and I agreed to wait until the profound anaemia following haematemesis had passed off before advising operation. During the next few weeks he improved. There was no recurrence of bleeding.

About the middle of July, 1916, the abdomen was found to be somewhat fuller, and to contain free fluid. The quantity was not large and it produced no symptoms. It appeared to be the type of ascites not infrequently found in cases of splenic anaemia, without necessarily connoting cirrhosis of the liver.

A very loud venous hum was now detected for the first time over the lower half of the sternum. The area over which the sound was heard extended from the level of the third costal cartilage above to the tip of the ensiform cartilage below, and for a short distance on either side of the sternum. The sound at the upper level was a typical "bruit de diable," such as is heard in the neck of chlorotics. It became gradually louder as the lower end of the sternum was approached, and, suddenly, on reaching the ensiform cartilage, its intensity became extremely increased, so that it might be described as a continuous "roar." At this latter area a thrill could be felt on light palpation, disappearing on firm pressure. The sound was slightly increased during inspiration, but was continuous throughout the respiratory cycle. There were no visible enlarged cutaneous veins.

During this time the anaemia showed little improvement in spite of treatment, and he had one or two attacks of epistaxis. Towards October, 1916, the ascites began to increase very much, so as to necessitate tapping on October 20th. After this it refilled rapidly and the tapping had to be repeated nine times during the next three months, varying

* An account of this case was given at the meeting of the Association of Physicians held at Birmingham in May, 1921.