A Post-Graduate Lecture

ON

ACUTE OBSTRUCTIVE CHOLECYSTITIS.

DELIVERED AT THE MANCHESTER ROYAL INFIRMARY

BY

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ACUTE obstructive cholecystitis results from the impaction of a gall stone in the neck of the gall bladder or in the cystic duct, and presents a clinical picture which is quite different from the other manifestations of gall stones. It deserves attention and study on account of its frequency, and of the catastrophes to which it may give rise.

ANALOGY WITH APPENDICITIS.

It is a condition which bears a somewhat striking analogy to acute appendicitis. Wilkie¹ has drawn attention to the obstructive factor in acute appendicitis, and has differentiated acute appendicular obstruction quite clearly from acute primary non-obstructive appendicitis. In acute appendicular obstruction the primary event is occlusion of the lumen of the appendix, and this is most commonly caused by the impaction of a concretion in a stricture left by some previous inflammatory attack. There follows a rapid increase of tension distal to the obstruction. The outcome of this distension depends upon the number and virulence of the organisms trapped in the appendix. Where the appendix at the onset of the obstruction is empty and relatively sterile a chronic mucocele may result, but where, as usually happens, putrefactive organisms and faecal matter are present the tension increases with great rapidity and causes gangrene of the appendix. This is undoubtedly the chain of events in the most fulminating cases of acute appendicitis.

Most of the cases of acute inflammation of the gall bladder with which we have to deal are associated with gall stones, and in nearly all the worst cases of inflammation obstruction of the outlet by a stone is a mechanical factor as vital as the activity of pathogenic organisms in the gall bladder, which it helps to excite. That very acute inflammation of the gall bladder may occasionally occur in the absence of gall stones cannot be denied, and I have reported a case of gangrenous cholecystitis due to *B. paratyphosus* B, occurring in the Gallipoli epidemic of jaundice,² but such a case is a great rarity as compared with obstructive cholecystitis.

Though similar in essentials to obstructive appendicitis, obstructive cholecystitis differs from it in certain particulars. The obstructed gall bladder shows less tendency to gangrene and perforation than the obstructed appendix, and perforation, when it occurs, is a rather slower process. This is no doubt due in part to the fact that in the upper reaches of the small intestine the bacterial flora are fewer in number and less virulent than in the ileo-caecal region, but other factors are the plentiful blood supply of the gall bladder wall and its exceeding toughness. Even after a patch of gangrene has formed, involving the whole thickness of the wall, perforation is delayed for some time by the tenacious tough consistency of the slough and its relatively slow separation from the living vascular wall around it. More commonly, however, areas of sloughing mucosa or submucosa are found, without extension of the gangrene through to the serous coat of the gall bladder.

FREQUENCY.

We may now inquire as to the relative frequency of obstructive cholecystitis, as compared with other manifestations of gall stones. For this purpose I have analysed 100 consecutive cases of gall stones on which I have operated, and find that they are grouped as follows:

TABLE I.—Analysis of 100 Consecutive Cases of Gall Stones.

Stones in gall bladder alone without obstruction	42
Stones in common and hepatic duct (and usually in gall bladder)	20
Impacted stones in gall bladder with obstructive cholecystitis	38

Of the 38 cases in the third group, 26 were females and 12 males. Clinically these 38 cases fall into certain groups according to the extent and severity of the inflammatory process. These groups may be tabulated as follows:

TABLE II.—Clinical Classification of 38 Cases of Obstructive Cholecystitis.

	Cases.	Died.
Acute non-perforative obstructive cholecystitis	18	2
Acute cholecystitis with gangrene, perforation, and localized subphrenic abscess	2	1
Acute cholecystitis with gangrene, perforation, and diffuse peritonitis	2	1
Recurrent cases, with operation in intervals of attacks	16	0

In the acute non-perforating group, 7 showed patches of gangrene involving the whole thickness of the wall, usually situated at the fundus. Many others showed extensive sloughs in the mucosa, or in the thickness of the wall, but without extending through to the serosa. Others, again, showed merely deep purple congestion of the mucosa, with distension by mucus and infiltration of the walls. In the recurrent group an acute attack had usually subsided some weeks before, leaving a chronically distended gall bladder, in some cases containing pus, in others mucus, with marked scarring of the mucosa and fibrous thickening of the wall.

The type of patient who develops obstructive cholecystitis is usually over 50, and decidedly stout.

SYMPTOMS OF AN ACUTE ATTACK.

The onset of an attack of obstructive cholecystitis is usually sudden. The patient may give a long history of painful flatulent dyspepsia, or may have had previous attacks of obstructive inflammation with intervals of good health. The pain in the first few hours is indistinguishable from biliary colic, caused by the passage of a stone down the duct—in fact, it is biliary colic. But instead of passing off after two to eight hours, as does the ordinary attack of gall-stone colic, it persists, and the original agonizing deep colicky pain, vaguely felt over the epigastrium and through to the back, takes on a sharp stabbing character, clearly localized in the right hypochondrium and accentuated by deep breathing or coughing. At the same time there develops an exquisite tenderness on palpation, and with it rigidity of the muscles overlying the gall bladder—a signal that the inflamed fundus of the gall bladder is now irritating the sensitive parietal peritoneum. As the gall bladder grows more distended and enlarges downwards, this area of maximum tenderness creeps down until in some cases it lies almost in the right iliac fossa, while the reflex muscular rigidity makes it exceedingly difficult in some cases to palpate the enlarged gall bladder. Shoulder tip pain, in the area supplied by the third and fourth cervical nerves, the phrenic area, is much less common than the textbooks would have us believe, and it was only noted twice in these 38 cases. Ten years ago I described a case³ in which, on ligaturing the cystic duct under spinal anaesthesia, the patient complained of a sharp pain on the tip of the right shoulder. I attributed this to an occasional aberrant branch of supply from the right phrenic to the cystic duct and neck of the gall bladder. I think this is the only possible explanation, but on clinical grounds it would seem to be a very uncommon abnormality, and shoulder tip pain is certainly not a symptom to rely on here, as we may rely on it in perforation of a gastric or duodenal ulcer. In those conditions it is seldom absent.

Vomiting is a variable feature. It may be repeated and become bilious in character, or there may be only one act of vomiting. But seldom is vomiting completely absent. The bowels are usually constipated during an attack owing to reflex splanchnic inhibition, though diarrhoea occurs in a few cases.

The temperature is usually raised to 100° or 102° F. I think the degree of pyrexia is a valuable indication of the severity of the inflammatory process in the gall bladder and consequently of the risk of gangrene and perforation. In the milder cases there is little or no rise of temperature. The pulse is somewhat increased in rate, but not as a rule in proportion to the temperature unless there has been persistent vomiting. The tongue is commonly dry and

brownish. There is usually throughout the attack a complete absence of jaundice, or of bile in the urine. A stone impacted in the neck of the gall bladder or cystic duct can hardly obstruct the hepatic or common duct, and it is only in those rare cases where obstructive cholecystitis is associated with calculi in the common duct that jaundice may be present. I find that students and even qualified medical men tend to rely too much on a history of jaundice in the diagnosis of gall stones, and on this account I should like to emphasize the fact that in the large proportion of all gall stone cases which comprise the group now under discussion jaundice is an event of very considerable rarity. The enlarged tender gall bladder may usually be felt on careful palpation, but where a fat abdominal wall is reinforced by tense muscular rigidity palpation of the gall bladder may be difficult or impossible.

DIFFERENTIAL DIAGNOSIS.

Of the various conditions which may simulate acute obstructive cholecystitis we need only consider three—namely, acute appendicitis, acute haemorrhagic pancreatitis, and acute infections of the right kidney.

The differentiation from acute appendicitis is often a matter of some difficulty. Both conditions start with a pain referred vaguely to the centre of the epigastrium, and should a patient be seen first when the fundus of the obstructed and inflamed gall bladder has descended, as its distension increases, towards the right iliac fossa, the area of maximum pain, tenderness, and rigidity will be found at or about McBurney's point. In such cases I have on more than one occasion only been able to make sure of the diagnosis when the patient was under the anaesthetic, and the consequent relaxation of the abdominal muscles allowed the enlarged gall bladder to be palpated. Another source of confusion arises in those rare cases in which acute appendicitis is associated with an undescended caecum, and the appendix lies immediately under the liver in close relation with the gall bladder.

Acute pancreatitis is even more difficult to differentiate from acute obstructive cholecystitis, particularly in the early hours of an attack. In this condition, however, the patient is more collapsed, there is a rapid increase in the pulse rate hour by hour and a striking deterioration in its volume, while a slight cyanosis is usually apparent in the lips and tips of the ears. In some cases, though by no means invariably, glycosuria is present, and a slight tinge of jaundice in the sclerotics may be observed.

An acute pyelo-nephritis affecting the right kidney should rarely be confused with acute cholecystitis. Pain is felt in the right loin radiating down to the groin, and not at all in the mid-epigastrium; there is usually some associated increased frequency of micturition; and examination of the urine shows the presence of pus cells and micro-organisms.

COURSE OF AN ATTACK: PROGNOSIS.

Before considering the principles which should guide us in the treatment of obstructive cholecystitis it is necessary that we should be able to form some idea of the probable result if the case is left to the *vis medicatrix naturae*. Bearing in mind the relative numbers in the various clinical groups of my series (Table II), it may be stated with confidence that an acute attack is more likely than not to subside. Of the 18 acute non-perforated cases, however, 7 revealed patches of gangrene extending through the whole wall of the gall bladder, and were only saved from perforating by a timely operation. Adding these 7 cases to the 4 which had already perforated, we find that 11 of the series of 38 cases either had already perforated at the time of operation or would surely have done so if left. These figures give us a rather exaggerated notion of the risk of perforation, however, since about half of the acute cases had suffered from at least one previous attack. The difficulty lies in assessing the probability of gangrene and perforation in a given attack. My own experience leads me to believe that a considerable degree of distension of the gall bladder, and particularly a rapid increase in its size, combined with a temperature of over 101° F., afford an imperative warning that delay may involve gangrene and perforation. Perforation rarely occurs before the fourth or fifth day of the attack.

TREATMENT.

The surgical problem that confronts us in dealing with a patient suffering from acute obstructive cholecystitis is in the first place to decide whether to operate during an attack or to temporize in the hope that the attack will subside, and allow us to operate later in more favourable circumstances. I need hardly say that where symptoms threaten gangrene of the gall bladder and the general condition of the patient is fairly good, the earlier the operation is undertaken the better will be the prospect of a favourable result. Where, however, the patient is very stout, elderly, and suffers from chronic bronchitis or a cardiac lesion, the decision involves as anxious an exercise of surgical judgement as we can be called upon to make. In such a case generalization is futile, and the matter can only be decided on the clinical details that confront us.

When operation has been decided upon, the next problem is the choice between cholecystectomy and cholecystostomy. The thickened, infiltrated walls of the distended gall bladder, with tenacious sloughs extending from the mucosa into its muscular coat, and teeming with pathogenic organisms, provide a very convincing reason for cholecystectomy. By mere evacuation of the contents of the gall bladder and drainage, though we shall relieve the tension and avert the risk of gangrene, we shall not secure the immediate and complete relief from septic absorption that removal of the inflamed organ will provide. Cholecystectomy then is the operation of choice, but its performance should be subject to one condition. The cystic duct and its junction with the hepatic duct must be clearly defined, as must the common bile duct, and it is only after this exposure has been scrupulously carried out that the clamps should be applied and the cystic duct divided. The active engorgement of blood vessels in the swollen gall bladder is so great that haemorrhage is often a considerable difficulty. It is of the utmost importance that there should be no blind application of clamps in a swamp of blood to an imperfectly revealed cystic duct, for it is in these acutely inflamed cases that the risk of damage to the common or hepatic duct or to the hepatic artery is greatest. In certain cases previous acute attacks may have left adhesions of almost cartilaginous density round the neck of the gall bladder, rendering the exposure of the ducts a most difficult and hazardous procedure. In these circumstances it is wiser to be content with drainage of the gall bladder, though any patches of gangrene at the fundus should be excised.

A Remote Danger of Obstructive Cholecystitis.

The obstructive agent is not uncommonly a solitary gall stone with the size and shape of a walnut, impacted more or less tightly in Hartmann's pouch at the neck of the gall bladder. The gall bladder here lies in close relation with the duodenum at the junction of its first and second parts. Should recurrent attacks of inflammation occur, they first cause fibrous adhesions which bind the neck of the gall bladder to the duodenum, and then, by a gradual process of ulceration, the slowly enlarging stone may be extruded through the walls of the gall bladder and intestine into the duodenal lumen. This is Nature's surgery, and it is crude, slow, and disastrous in its consequences. The small intestine, which is only adapted for fluid contents, is unable to propel a solid mass of such considerable size, and its efforts to do so result only in spasm round the stone and acute intestinal obstruction. After some hours of griping pain and urgent vomiting, the spasm may relax, and the stone moves on some distance with a remission of symptoms that "flatters only to deceive." For somewhere, it may be in the lower ileum, where the lumen of the bowel grows smaller, the impaction is repeated, the signs of acute intestinal obstruction return, and the vomiting grows rapidly stercoraceous. This intestinal obstruction due to a solitary gall stone, happily not common, owes its sinister mortality to the difficulty of early diagnosis. It should be the aim of surgery, by timely intervention while the stone is merely obstructing the neck of the gall bladder, to render such a catastrophe still more uncommon.

REFERENCES.

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- ³ J. Morley: *Clinical Journal*, 1914, xliii, 556.