ORIGINAL ARTICLES

GALL-TRACT DISEASE—SOME CLINICAL FEATURES FREQUENTLY OVERLOOKED IN ITS DIAGNOSIS.*

By C. M. COOPER, M. D., San Francisco.

Gall-bladder or gall-duct colic is essentially epigastric in origin and radiates upwards. With a stone in the cystic duct, the intense pain may be referred to the right of the lower dorsal vertebræ, and since a block in the cystic duct does not cause jaundice, the colic may be wrongly considered of renal origin. When the pain is epigastric, it may occasionally radiate to the legs or to the left arm. In the former instance septic thrombi must be searched for in the leg veins, in the latter it is not improbable that the gall-bladder colic through an induced blood vessel constriction has led to an angina pectoris. Though the intense pain is the essential feature during the paroxysm, a temporary paralysis or an attack of tetany may occur, or death may take place from cardiac inhibition, or from rupture of the gall passages.

Occasionally in acute cholycystitis, the pain may shoot down into the right iliac fossa and be definitely localized there. Tripier and Parrot suggest that in these cases the local peritonitis set up by the infective process involves the serous coat of the appendix. Acute appendicitis and acute cholycystitis may occur together, and the unwary may ascribe all the symptoms to the involvement of one of the affected organs. When the right lobe of the liver is prolonged downwards into the iliac fossa, the gall-bladder approaches the appendix, and a gall-bladder infection may then strongly suggest appendicitis unless care is taken to determine the course of the lower liver border. Similarly when the appendix is situated high up, an appendicitis may similate cholycystitis, for in both anomalies the pain, tenderness and swelling are located at the unusual site of the involved organ.

In general enteroptosis when there is a descent and rotation of the liver carrying with it the gall-bladder, the common bile duct remains behind more or less fixed. Consequently a kinking of the cystic common duct junction may result, and thus gall-stone colic-like attacks occur, and it is not improbable that many of the epigastric pains complained of by enteroptotic patients thus originate. Such a hindrance to the bile outflow leads in its turn to calculi formation, so that in patients of this build calculi are common.

It is said a movable kidney may come to lie across the neck of the gall-bladder, and so be responsible for similar attacks, but it is a question whether this does not result from the enteroptosis of the gall-bladder rather than from the anomalous position of the kidney.

Gall-tract pain is sometimes spontaneously made worse by body movement or by coughing or deep breathing. The association of cholylithiasis with a movable kidney may be responsible in some instances, but more commonly peri-cholycystitic adhesions. When either the blood or bile outflow from the liver is hindered or prevented, a stretching of the liver capsule takes place, and pain and tenderness over the entire liver are common findings. Any movement that tends to produce dyponea, or to still further hinder the outflow of bile, may call forth or exaggerate the pain, and thus pleuritic changes or arteriosclerotic lesions be suspected when either the heart or gall-tract is primarily at fault.

We have spoken of the occurrence of pseudo gall-stone colic in enteroptotics and in people with a floating right kidney. Similarly histories seemingly typical of gall-stone colic may be related by patients in whom we can later find nothing wrong with their main biliary system. This may occur in patients with hydatid or pancreatic cysts, and in people who are habitual morphine users. Further tabetic pains may imitate in their intensity and location gall-stone colic.

Occasionally acute gall-tract colic may give rise to a clinical picture strongly suggesting the perforation of a hollow intra-abdominal viscus. Thus shock, intense pain, a board-like rigidity of the muscles of the anterior abdominal wall, vomiting and a stilling of all intestinal movements may occur, and twice in one patient I have recommended, as the safer procedure, an immediate opening of the abdomen when the later history showed that no perforation had occurred.

In gall-bladder and gall-tract infections, as in infections elsewhere, the resultant symptoms depend upon the nature and virulency of the infection, and the reaction of the patient.

The occurrence of malaria-like intermittent chills, fever and jaundice in gall-tract infections has long been a matter of common medical knowledge. Not so well recognized is the fact that the jaundice may be absent. But since no malaria parasites are to be found, and since quinine has no specific effect upon the fever, it should take little time to eliminate malaria as a possible cause. Mistaking malaria in its turn for a gall-tract infection is not so likely to occur. However, in one instance seen in consultation this had happened, though a stained film showed many plasmodia. The presence or absence of a leukocytosis must not in such cases be looked upon as a distinguishing diagnostic feature.

If ulceration through the gall-bladder has occurred with resultant formation of one or more abscesses, pyemic symptoms occur. The history is all important in determining the probable site of the initial infection.

Syphilis of the liver with perihepatitis may give rise to symptoms suggestive of a gall-tract infection, but a careful correlation of clinical and laboratory findings should prevent error.

An infection of the gall-bladder may give rise to a continued fever which in its course and duration may resemble a tubercular infection or septic endocarditis. This may occur with an almost complete absence of local symptoms as happened with one patient seen in repeated consultations with Dr. Jellinek in whom sub-hepatic tenderness intensified

* Read before the Forty-third Annual Meeting of the Medical Society, State of California, Oakland, April, 1913.

by inspiration gave a clue to the site of the infection. In such infections a slackening of the muscle rings round the heart-valves may occur, and so functional murmurs be produced, this still further increasing the diagnostic difficulties.

From the primary gall-bladder infection a true secondary endocarditis may arise, and the primary source repeatedly miss detection unless it be assiduously sought for.

Occasionally unusual infection symptoms may occur, thus in one patient marked delirium was an accompaniment of a gall-bladder infection; another patient seen in consultation with Dr. Harry Wiel had suffered from multiple attacks of marked angioneurotic edema, the causal infection seemed to be of gall-bladder origin, and since the removal of gall-stones and draining of the gall-bladder no such attack has occurred.

With much pain from a gall-tract infection, an inhibition of the movements of the right diaphragm may occur. This in its turn leads to a deficient entry of air into the lower right lung lobe with resultant dulling of the percussion note and lessened intensity of the respiratory murmur. Thus the presence of a supra-diaphragmatic lesion may be suspected when in reality the trouble is below.

A sub-diaphragmatic abscess may occur secondary to gall-tract infection and ulceration. This leads to a constant high position of the diaphragm. In my experience an edema over the lower right ribs has been of much assistance in the diagnosis of these abscesses. Not infrequently an effusion takes place into the pleural cavity above, and one may draw off serous fluid from the pleural cavity, whilst the real trouble is due to an abscess lying below the diaphragm. Such an abscess cavity does not usually contain air as often does a sub-diaphragmatic abscess secondary to perforation of a hollow intra-abdominal viscus.

As is well known, gall-tract lesions are usually associated with dyspeptic troubles and gastric distention, and this in turn may excite the appearance of cardiac extrasystoles. Further, since the gall-bladder receives nerve fibres from the vagus, it is quite possible that such extrasystoles may be more directly of gall-bladder origin, and my own observations would seem to show in a few instances a distinct connection between such heart irregularities and a faulty biliary apparatus.

A hyper or hypo-gastric acidity is a common accompaniment of a gall-bladder lesion. Occasionally a true achylia co-exists. If in such a case adhesions have formed between the pylorus and the gall-bladder, a delay in the stomach emptying time may be present. Thus a picture suggesting a pyloric carcinoma is produced. The history, the absence of occult blood from the excreta, and the dragged-over position of the pyloric portion of an otherwise undeformed gastric shadow as exhibited in a radiogram after a bismuth test meal will serve as helpful distinguishing features.

A history of gall-bladder trouble, a palpable gall-bladder and the absence of jaundice commonly signify a cystic duct block. However, a stone in the cystic duct may be so large as to compress the common duct, and thus produce jaundice, whilst quite a large stone may be present in the common duct, and no jaundice be present or ever have been noted. Not much dependence can be placed, however, upon the testimony of untrained observers. Thus a little while ago a mother brought to see me her markedly jaundiced son whom she thought had been a little sallow for a day or so. Though markedly jaundiced, the stools were well colored and no bile was present in the urine. I had no doubt that the boy was in the clearing-up stage of a well-marked catarrhal jaundice, and yet the discoloration had been noted only a day or so previously.

Very rarely a large stone in the common duct may compress the portal vein, and so lead to an ascites. The clinical picture then suggests malignancy. A significant history and the absence of palpable metastatic growths demands in such cases a diagnostic incision.

Courvoisier's law has in my experience so many exceptions that in the presence of conflicting symptoms, and in the absence of a palpable growth or of occult blood from the stools, it is much safer to advise a diagnostic incision. Thus in a lady lately seen, the history was so significant that in spite of jaundice plus the presence of a markedly distended gall-bladder, it was evident that we were dealing with one of the exceptions to the law as was proven at the operation.

Very rarely a displaced gall-bladder may compress or distort the duodenum, as lately reported by Voorsanger and Levison, so that duodenal stasis with backflow of duodenal contents into the stomach and repeated vomiting occurs. The duodenal stasis should be readily recognized. The other findings may suggest its cause.

The occasional combination of gall-tract pains with hematemesis or melena suggests either an ulcerative lesion near the papilla of Vater or an aneurism of the hepatic artery.

Only infrequently is an enlarged gall-bladder visible. This may occur, however, in those rare cases in which the gall-bladder or even the gall-duct is found to contain some pints of fluid, or with less enlargement when the anterior abdominal wall is much thinned.

A patch of circumscribed skin edema in the gall-bladder region may be present in cholycystitis. It suggests pus formation and the presence of adhesions.

Ordinarily the enlarged gall-bladder is somewhat difficult to palpate, and bimanual palpation is not of much assistance. The difficulty is in part due to the fact that the vesicle rests against soft structures which give to the palpating hand as does the gall-bladder itself, unless the walls be thickened, or its contents under tension.

In those patients in whom the lower chest margin flares out, and who at the same time have a rigid rectus muscle, palpation is exceedingly unsatisfactory. If the physician will forcibly depress with his left hand the flared-out thoracic margin, insertion and origin of muscles are approximated,

and palpation with the right hand is rendered considerably easier.

In constriction of the liver as by corsets, the gall-bladder is pushed out of its fossa, perhaps by the elongation of Spiegel's lobe. It then hangs within the abdomen, and when distended is felt almost in its entirety.

I have twice palpated a gall-bladder in which I felt convinced a part of the vesicle lay between the diaphragm and the upper surface of the liver. The sensation was as if a roll of soft tissue lay in that position, it slipping under the finger. Such a condition may perhaps exist as a congenital anomaly, but seems to occur as a resultant of its being thrust out of its bed whilst at the same time its descent is resisted by the intestine below.

The gall bladder may possess a mesentary. If this be a stout one, and an obstruction to the bile outflow occurs, the far side may enlarge to a greater degree than the fixed side, and so a somewhat curved, sausage-shaped tumor be produced which feels like a segment of the colon. Indeed when the abdomen is opened the imitation may be very striking.

If in a patient with gall-bladder symptoms one can feel a markedly hard, pear-shaped, non-fluctuant mass in the gall-bladder angle, one's first thought is of a malignant involvement. Twice, however, have I known this finding to occur associated with the presence of a single large gall-stone which was tightly embraced by the gall-bladder walls. In one instance the abdomen would have been immediately closed had not the physician, having previous knowledge of such occasional findings, insisted upon an incision being made into the hardened mass. The walls of the gall-bladder should, in such instances, be carefully scrutinized, since sarcoma of the gall-bladder, a rare lesion, occurs as an infiltration of the wall, the cavity itself often containing gall-stones.

A Riedel's lobe may be mistaken on palpation for a distended gall-bladder. One should remember that a Riedel's lobe, in addition to having an edge, commonly broadens from its free margin toward the liver attachment, whilst a gall-bladder narrows. The two conditions may co-exist.

When the liver is much shrunken, the gall-bladder may be as high as the eighth rib, and so even when distended escape palpatory detection.

Many observers have reported instances in which on palpation gall-stone crepitus could be elicited. Personally I have never felt it, and in instances in which it was said to be present, I have been able to determine that the so-called gall-stone crepitus was in reality rib or cartilage creaking.

Percussion is of little service as an aid in gall-bladder diagnosis. Very rarely a tympanitic note may be elicited even on the faintest percussion over a tumor which to palpation is of gall-bladder origin. In such a case one must think of the possibility of a fistula having formed between the vesicle and some part of the alimentary canal.

Auscultation may in cases of pericholycystitis, as in inflammation of the liver capsule, reveal a respiratory friction murmur, and occasionally an enlarged gall-bladder may be so displaced as to press upon the abdominal aorta, and thus in certain postures give rise to a systolic bruit.

In every case of internal intestinal obstruction, the possibility must be kept in mind that it may be due to the ulceration of a gall-stone into the duodenum or other part of the alimentary tract. If there be a previous history suggesting gall-stone disease, and more especially if there be pain and tenderness in the gall-bladder area which is suddenly relieved and then quickly followed by signs of obstruction, a diagnosis of gall-stone ileus is suggested.

That under such conditions such a diagnosis should be made, the patient relieved of her obstructive symptoms by medical treatment, a similar attack be prophesied, watched for, and again successfully treated, should be a source of pride to the physician conducting the case. Such a course of events took place in a patient under the care of Dr. Jellinek with the daily details of which I was familiar during its progress.

However, such a gall-stone ileus may occur in a patient from whom one can get no history suggestive of gall-stone trouble, and who at the time of its occurrence presents no tenderness or other evidence of gall-bladder involvement. Such a clinical picture was lately presented in a fat woman in whom the question of gall-stone ileus was considered, and in view of these negative findings deemed unlikely, yet the obstruction proved to be due to the impaction within the colon of a gall-stone which had ulcerated into the duodenum. In patients with a gall stone ileus, a leukocytosis occurs as it does with other forms of obstruction.

Bile peritonitis, a condition in which with seemingly intact gall-bladder and gall ducts peritonitis occurs, and free bile is found within the abdominal cavity, I have never seen, nor have I seen a case of true edema of the gall-bladder.

In examining the excretions of patients with gall tract disease it must be borne in mind—

That glycosuria of as yet unascertained origin sometimes occurs during an attack of gall stone colic.

That when bile is apparently absent from the stools, and yet little or no jaundice be present, we must suspect that the bile is being converted into the chromogen of urobilin by reduction rather than that no bile has been secreted. The corrosive sublimate test cannot be depended upon.

That when a combination of dark colored excreta and jaundice with bile in the urine exists, it must be remembered that a considerable degree of partial stasis of bile can occur without change of color of the evacuations, and it must not be assumed that an excess of bile is being manufactured.

That the occurrence of urobilin icterus is questionable, probably the described cases represent instances of mild bilirubin icterus.

On rare occasions a search of the bowel excreta has shown the presence of a membrane having the appearance of a gall-bladder cast. If such be found

associated with gall-bladder symptoms, membranous cholycystitis is suggested.

Similarly if in patients with gall bladder involvement, parasites or their ova be found a possible causal connection must be considered.

The examination of the gastric contents after an oliveoil test meal is in some cases of distinct value in differential diagnosis, and it may be that an examination of the bowel movements after an olive oil enema will be found to yield serviceable information.

It is only rarely that even technically good radiograms exhibit shadows of gall-stones. Thus an experimental radiogram technically satisfactory made of a patient who was considered to have a single large stone showed no shadow, though the stone as removed at operation was as large as a hen's egg.

In a small percentage of cases distinct shadows are found on the plate. The position they occupy is of no aid in distinguishing them from the shadows due to renal calculi. The gall-stone shadows commonly exhibit a curious ring effect, an annular denser shadow surrounding a lighter area, this effect being due to the deposit of calcium salts upon the surface of the gall-stone.

Indirectly, however, radiography is of much service in gall-bladder diagnostic work provided it be employed with an intelligent purpose in view rather than in a haphazard manner. Let us suppose that we are palpating a tumor mass which we regard as of either colon or gall-bladder origin. If a marker be placed over the mass, and a bismuth enema be given, and then a radiogram made, a separation of the colon shadow from the area of the marker gives valuable diagnostic information. Or let us suppose pericholycystitic adhesions are suspected. A bismuth test meal is administered, and the stomach radiographed in different postures. If the pyloric portion of the shadow be over in the gall-bladder area and remain there with varying content, we have obtained most helpful corroborative evidence.

In suspected gall-stone ileus I would suggest that the stomach be washed out, and a bismuth meal be administered. It is more than likely that the bismuth would enter the gall-bladder through the duodenal gall-bladder opening, and thus again a radiogram might be of considerable diagnostic service.

The same line of reasoning would suggest a similar procedure in those rare instances in which the gall-bladder seems pympanitic on percussion.

It is not in the province of this paper to deal with operative findings, but I desire to touch on some points over which I have had considerable discussion.

1. The normal gall-bladder can, I believe, be completely emptied by comparatively light pressure during an exploratory laparotomy. If it cannot it should be assumed that there is some hindrance to the outflow. If one ligatures the common bile duct in the dog, one can still completely empty the gall-bladder by comparatively light pressure, the bile filling up the hepatic ducts. It seems not improbable that the same might be possible in the human with an acutely developing common duct block. Whether with a block of some duration this would be likely to occur is another question, but it would seem wise for the surgeon in his gall-bladder work to see the course the bile takes when he squeezes the gall vesicle. I desire to emphasize the words "light pressure," since with a block at Vater's papilla it is possible that bile could be forced into the pancreatic ducts.

2. The outside of an organ is no real clue as to what is within. In the case of gall-bladder infection simulating malignant endocarditis that I have already alluded to, the gall-bladder was not enlarged, its outside seemed healthy to the surgeon, to Dr. Jellinek and myself, yet a drop of bile drawn off through a hypodermic syringe and examined microscopically was seen to teem with organisms, and the drainage of this healthy looking gall-bladder cured the patient.

3. In the angle between the body and neck of the gall-bladder is a lymphatic gland which when indurated feels not unlike a calculus. In cholycystitis the lymph glands up and down the common duct are found to be enlarged. Lymphatic gland enlargement then must not in doubtful cases be interpreted to mean a malignant condition.

SURGICAL TREATMENT OF GALL-BLADDER DISEASE.*

By WALLACE I. TERRY, M. D., San Francisco.

One need not look far back in medical literature to learn that gall-bladder operations were infrequent almost up to the beginning of this century. The foundation work laid by Courvoisier, Kocher, Langenbuch, Bobbs, Sims, Riedel, McBurney and others attracted more or less attention, but the realization of the importance of gall-bladder surgery came from the publication by Kehr of Halberstadt of some four hundred operations on the gall-bladder and bile ducts. Later Mayo Robson and the Mayos reported large numbers of operations and the various manipulative procedures were put on a firm basis.

The points I desire to bring up for discussion in this paper are: First, the advisability or necessity of operations on the gall-bladder; second, some of the technical procedures to be employed.

It was long held by many medical practitioners that operations on the gall-bladder were only justified in the presence of serious complications, such as acute cholecystitis, profound jaundice, perforation or gangrene of the gall-bladder. This opinion was largely based on the fact that the mortality of gall-bladder operations was high, even in the simple cases; and also on postmortem statistics, which showed that in approximately 10 per cent. of the cases gall-stones existed and that symptoms due to them were apparently lacking during life. I use the word "apparently" because I believe that in the vast majority of such cases, symptoms which were either overlooked or ascribed to other condi-

* Read before the Forty-third Annual Meeting of the Medical Society, State of California, Oakland, April, 1913.