

CYSTIC DILATATION OF THE COMMON BILE DUCT

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THE literature records but thirty-six cases of cyst of the common bile duct. The condition must indeed be rare since McConnell (Dublin) in a review of the literature covering the past one hundred years states: "It is of interest, however, to note that the first case resembling the one described was a patient in Whitworth Hospital in 1817." The marked progress of abdominal surgery during the past few decades does not seem to have increased the frequency of cystic changes found in the biliary passages. The term cyst in its true sense, when applied to the common bile duct, is descriptive but does not adequately convey the nature of the anatomic pathology found present. In all probability the condition is not a cyst but a diverticulum of the duct and should be so designated.

In reviewing the cases reported we were impressed with the fact that some of these may also have involved biliary passages other than the common bile duct. This factor may be applied to the case under discussion, but inasmuch as we cannot definitely prove or rule out either, it might be well to include this case under the classification of the cyst or diverticulum of the common bile duct.

In consideration of the rare occurrence of this condition it would seem advisable to report each case encountered, with the hope that repeated investigation will cast more light upon its pathogenesis.

Mrs. E. E., white, aged fifty-six years, nativity American, and occupation a domestic, was admitted to the service of Doctor Rind of the City Hospital, Springfield, Ohio, April, 1920. Her chief complaint consisted in an enlargement of the upper abdomen, associated with a dull aching pain which radiated to the back. Her family history was negative. The patient stated that she first noticed a slight swelling in the epigastrium at the age of twenty years which increased steadily but very slowly in size for twenty-eight years or until 1912. There had been no pain up to this time, when upon undue exertion she felt a "giving way" sensation in the region of the swelling, and states, that since that time, the tumor has increased rapidly in size, and has been accompanied by pain. She has had marked intermittent jaundice during the past four years. The patient has a poor appetite and states that practically all food "sours" in the stomach, producing a large amount of gas.

Physical examination revealed a middle-aged female first seen lying in bed and apparently suffering no acute distress. Her complexion was "muddy" or turbid. Nothing of note was found in the head, neck, or chest. The abdomen was greatly distended. This enlargement was more prominent than is usual in a full-term pregnancy. The disten-

tion could be palpated as a non-movable tense mass. Manipulation did not produce pain. The mass was distinctly dull upon percussion and transmitted a "muffled" wave of fluctuation. In general outline the enlargement seemed to occupy the entire upper abdomen with considerable extension below the umbilicus.

X-ray examination revealed a large shadow extending upwards, pushing the diaphragm and liver as high as the eighth interspace. The urine showed an abundance of albumin with a few hyaline and granular casts and a trace of bile.

Operation revealed an enormous cyst, practically extending as far as the examining hand could reach. The cyst wall was found to be adherent to every adjacent organ including the stomach, pancreas, liver, intestine, and portions of the parietal peritoneum. During the necessary manipulation in an attempt to discover the origin of the cyst the wall was accidentally ruptured, allowing a sudden gush of approximately eight litres of a thin greenish-yellow fluid. The sudden release of intra-abdominal pressure caused quite a marked reaction in the patient's condition and necessitated a rapid examination of the abdomen which revealed dense adhesions between the cyst, the aorta and vena cava. This prohibited a possible chance of complete dissection at this time. While the other abdominal viscera were displaced they were apparently normal in so far as could be determined by a rather hurried examination. A considerable portion of the anterior wall of the cyst was removed. A large rubber drainage tube was sutured in the remainder and the abdomen was closed.

The immediate post-operative convalescence was uneventful. The patient continued to drain a large amount of the cystic fluid for three weeks when the wound healed. Shortly after this she developed a small abscess to the right of the incision, which was drained with immediate relief of the local reaction. This opening persisted through January, 1921, draining a small amount of clear straw-colored fluid. The patient was at that time other than for the presence of the draining wound enjoying excellent health, having been freed entirely from her symptoms prior to operation.

Gross examination of the portion of the cyst wall excised reveals a thin sheet-like mass of tissue varying from 0.25 cm. to 1 cm. in thickness, averaging approximately 0.5 cm. One surface is covered with peritoneum scattered over which is found evidence of old adhesions. The opposite or inner surface is wrinkled, soft and dull in appearance, presenting numerous areas which are brownish in color. These areas appear and feel velvety. In its general consistency this portion of the cyst wall seems fibrous and strong.

Microscopically the inner surface is composed of a single layer of well-defined columnar epithelium resting upon a rather substantial submucous coat of connective tissue. Within this fibrous wall are found occasional cross-sections of small openings lined with a single layer of columnar cells resembling very closely the structure of the smaller bile ducts found within the liver. Here also are encountered occasional areas of liver substance, and what appear to be perfectly normal liver lobules can be demonstrated.

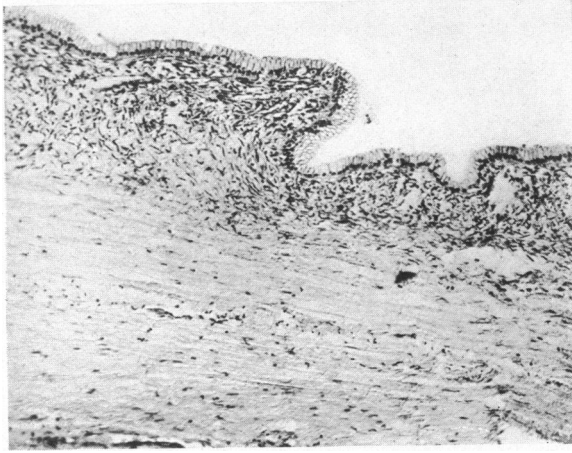


FIG. 1.—Low power photomicrograph showing lining membrane of cyst wall composed of columnar epithelium.

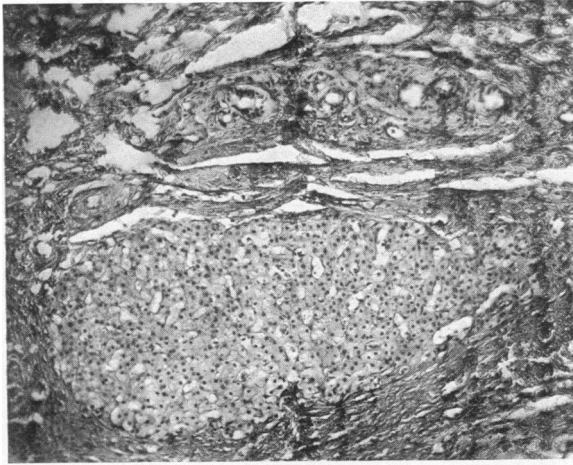


FIG. 2.—Low power photomicrograph showing portion of liver tissue within wall of cyst.

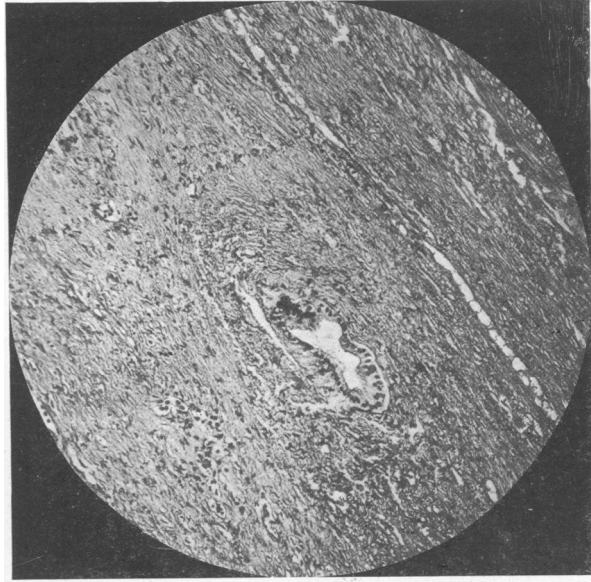


FIG. 3.—Low power photomicrograph showing cross section of what appears to be a slightly dilated biliary duct.

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It would seem that the cyst either had its origin within the liver or the enlargement having been primarily periglandular had encroached upon the liver substance and thinning it out by pressure until this excised portion at least contained some much thinned out liver tissue.

Waller, in a recent discussion of this condition, mentions as a possible etiological factor, the presence of a valve-like fold in the mucous membrane associated with a kink in the lower end of the duct. This remains closed until sufficient intra-cystic pressure is accumulated by the secreted bile to force the fold to one side or obliterate it. This temporarily releases the pressure contained within the walls of the cyst to the point when the valve-like arrangement can reform. He states that "the above-described valve formation gives sufficient explanation of the question, why the fully formed cyst cannot empty itself, and why it undergoes an ever increasing enlargement of volume. But it is impossible to suppose that the valve can be developed until a part of the duct has widened into a sac-like cavity and the existence of the valve is therefore not sufficient to explain what causes the first enlargement."

Congenital malformation of the duct would seem to be a plausible explanation. Heiliger in 1910 found a decided distention in an almost mature foetus at autopsy. With the exception of our case, the condition has always been found in childhood or young adult life. Of the thirty-six cases reported the youngest was two years and the oldest twenty-five years of age. Our patient, although fifty-six years of age, first noticed the swelling of the epigastrium thirty-six years before, or at the age of twenty. In analyzing the reported cases it is evident that should the condition exist from the time of birth it does not necessarily follow that it should show immediate symptoms. "On the contrary, all observations seem to indicate that it is in the beginning absolutely latent to its owner." This period of latency varied with different individuals, and coupled with the fact that the cyst is apparently ever increasing in size, it would seem that the first symptoms would in the main depend upon not only its anatomical arrangement, but the size of the foetal diverticulum. If at the time of birth the sac is well developed, the symptoms may arise in the very young, otherwise it would seem the patient may be free from any disturbance until sufficient dilatation of the cyst is reached to seriously interfere with biliary function and drainage.

The not infrequent dilatations of the common duct occurring secondary to purely mechanical diseases of the gall-passages or pancreas, as a rule convert the duct into a cylindrical tube, retaining its original shape, and even when of long standing seldom if ever exceeding the diameter of the small intestine. The conditions presenting in the subject under discussion differ markedly in that the enlargement involves only the upper and middle thirds of the duct. In most instances the cases reported record enlargements of about the size of a child's or man's head. In our case the cyst was much larger, containing approximately 7 or 8 litres of fluid.

With regard to the treatment, an investigation of the reported cases would

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seem to indicate that simple drainage of the cyst is inadequate. Twenty-one out of thirty-two cases treated by drainage with the production of an external fistula died following operation, the time elapsing between operation and death in most instances being but a few days. Three of these cases lived from one to three months after operation. The cause of death in these cases was the development of an acute purpuric condition or a sudden fatal hemorrhage. One case recurred three years after operation with the formation of a fistula; the patient, however, dying of tuberculosis. McConnell reports in his table a case having been drained on two separate occasions with the patient living three years and eight months after the last operation, the fistula closing two years and eight months after the second drainage.* The conditions met at the time of operation of our case necessitated the institution of drainage in order to shorten the operation because of the sudden collapse of the patient while on the table. Here instead of suturing the cyst wall to the abdomen as had been practiced in the above cases, a large rubber tube was inserted within the cavity and brought out through the incision. The uneventful convalescence in this case was an agreeable surprise.

In the remaining eleven cases treated surgically, three of these in which drainage was followed by an attempt at choldochenterostomy resulted fatally. Three of these in which drainage was followed by successful choldochenterostomy recovered. Extirpation of the cyst was performed in three cases, all of which died. Two cases in which primary operation consisted of choldochenterostomy have lived.

1st Op.	2nd Op.	No. of cases	died	Recurrences and Remarks
Drainage		19	18	One recurred 3 yrs. with fistula and died with tbc. One case with fistula at end of 9 months.
Drainage and Choldochenterostomy		1	1	
Drainage	Drainage	1	0	Living 3 years 8 months, fistula closed 2 yrs. 8 months.
Drainage	Attempt at Choldochenterostomy	3	3	0
Drainage	Attempt at Choldochenterostomy	3	0	3
Extirpation		3	3	0
Choldochenterostomy		2	0	2
Unoperated		4		
Fœtus		1		
Totals		37	25	7

* McConnell (British Journal of Surgery, April, 1920, p. 523). Our case has been added to the list of patients having had drainage in first operation, making the total number of cases recorded to date 37.

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SUMMARY

By the way of summary it is of interest to note that during the past century with its phenomenal development of abdominal surgery there has been no apparent increase in the percentage of the occurrence of this condition. The preoperative diagnosis has never been recorded due no doubt to its rare incidence. The striking clinical feature present in practically each case reported has been intermittent jaundice in the child or young adult usually associated with some form of palpable tumor mass in the upper right quadrant of the abdomen. It would seem that cystic dilatation of the bile passages should be considered in the differential diagnosis when the above-mentioned clinical symptoms are encountered.

The case serving as a basis for this discussion is a female, aged fifty-six. Her symptoms, however, were noticed at the age of twenty. Since this time her main discomfort having been gastric disturbance, intermittent jaundice, pain, and tumor formation. So far as we have been able to determine, this is the oldest patient reported in the literature with this condition. The cyst containing approximately 8 litres is in all probability the largest on record. The patient at the present time (September 1, 1921) is enjoying good health and is able to attend to her household duties, the wound having healed.

We wish to express our appreciation to Doctor Rind for the privilege of studying this most interesting case.

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