

## CHOLECYSTITIS DUE TO GIARDIA LAMBLIA IN A LEFT-SIDED GALLBLADDER\*

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THERE HAVE ONLY BEEN seven reported cases of infection of the gallbladder due to giardia lamblia in the literature to date. However, there is increasing evidence that this protozoa is the causative factor in cholecystitis more frequently than the rarity of reports would indicate. The case herein reported was one in which giardia were proven to be the cause of infection in a gallbladder. It is all the more unusual since the gallbladder was found to be situated on the left side. The giardia lamblia was found repeatedly on duodenal drainage. The organism promptly disappeared under treatment with atabrine. The cystic form was recovered from the gallbladder after surgical removal. This is the eighth reported case of giardiasis of the gallbladder, and probably the second in which cysts were found in the gallbladder.

Leuwenhoek<sup>10</sup> first discovered giardia in 1681, in a specimen of his own stool. The organism was rediscovered and named by Lamb<sup>5</sup> in 1859. It is a protozoa measuring 8 to 20 mu. long and 5 to 12 mu. wide. In other words, it is larger than a red blood corpuscle, and smaller than an epithelial cell. It contains four ventrally placed flagellates, and is actively motile. It is a common inhabitant of the gastro-intestinal tract, and was formerly considered non-pathogenic. Its pathogenicity, particularly in the case of diarrhea, has been definitely established. Berberian<sup>1</sup> reviewed the reports of 15 authors on the pathogenicity of giardia lamblia with reference to diarrhea. Several of these authors definitely established it as the causative organism in epidemics of diarrhea, particularly in the Middle East. Routine examination of stool specimens in this country and abroad showed that the highest incident of giardia lamblia occurred in areas where sanitation was at its lowest. In Puerto Rico, 48 per cent of the population were found to be infested. A study of Chicago dispensary patients revealed a rate of only 1.66 per cent; while in Tennessee the rate was much higher at 14.7 per cent.

While proven cases of infection of the upper gastro-intestinal tract with this parasite have not been so common as those in connection with diarrhea, there is increasing evidence that the organism produces gallbladder disease,

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\* Submitted for publication, May 1948.

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and probably more frequently than has been supposed. Smithies<sup>11</sup> claimed to be the first to report a case of giardiasis of the gallbladder. He found the protozoa in a gallbladder which had been removed by the late Dr. A. J. Ochsner of Chicago in December, 1917. He later reported a second case.

Keyes<sup>9</sup> reported two cases of cholecystitis, in one of which he found cysts of giardia in the gallbladder. Hartman,<sup>8</sup> in 1942, in a review of the literature, found reports of only four cases of giardiasis of the gallbladder. He added a case of his own, however, he omitted the two cases of Keyes. Search of the literature since that date has failed to reveal any reports of proven cases. Reported cases to date of cholecystitis due to giardia lamblia may be summarized as follows:

Smithies.....	2 cases
Westphal and Gerogil <sup>13</sup> .....	1 case
Calder and Ridgon <sup>3</sup> .....	1 case (autopsy)
Hartman.....	1 case
Keyes.....	2 cases
Total.....	<hr/> 7 cases

Another indication of the pathogenicity of the giardia lamblia in relation to the upper gastro-intestinal tract is the increasing number of reports in the literature showing the frequency with which it is found in duodenal drainage in association with symptoms simulating disease of the gallbladder or duodenum. Wesselman<sup>12</sup> reported two cases presenting symptoms simulating cholecystitis in which giardi were found on duodenal drainage. Prompt and complete relief was obtained by administration of acranil. DeMuro<sup>4</sup> reported a series of 45 cases in which he recovered giardia from the bile obtained on duodenal drainage. Of these, 31.1 per cent suffered from upper gastro-intestinal symptoms which he referred to as "entero-hepato-biliary syndrome." Goss<sup>5</sup> examined the stools of 300 patients for giardia, and found this protozoa to be present in 9 per cent. However, more interesting is the fact that in those suffering from symptoms simulating ulcer or gallbladder disease, the instance was 34 per cent. He believes that giardiasis leads to vitamin deficiency.

For the treatment of giardiasis, atabrine is a specific; although good results have been reported with other forms of therapy. Boros<sup>2</sup> treated a case of giardiasis of the duodenum simulating ulcer with five injections of 0.45 Gm. neosalvarsan at five-day intervals with good results. Goss<sup>5</sup> recommends, among other things, carbarson. Berberian<sup>1</sup> found acranil 100 per cent effective in eliminating this infection in cases of stool contamination. The recommended dosage is as follows:

Age 3-6	0.1 Gm. per day for five consecutive days
7-12	0.1 Gm. twice daily for five consecutive days
13-16	0.1 Gm. three times daily for five consecutive days
Over 16	0.5 Gm. per day for the first day, and then 0.1 Gm. three times daily for four more days.

Hartman<sup>8</sup> and associates obtained a cure in their case of giardiasis of the gallbladder with atabrine in doses of 0.1 Gm. three times daily for five days.

Gross<sup>6</sup> reviewed the literature on *gallbladder anomalies* thoroughly in 1936, and was able to find only seven cases of left-sided gallbladder. In each case the vesicle was situated in the under surface of the left lobe of the liver. The gallbladder was usually found to be normal in size. The cystic duct joined the common hepatic duct in the normal manner and position in three cases, the left hepatic duct in one and unrecorded in three. The embryologic development of this anomaly may occur in one of two ways. The gallbladder anlage begins as a normal embryologic bud from the hepatic diverticulum and migrates to the left where it becomes fixed by the developing peritoneum to the under surface of the left lobe of the liver. This accounts for the normal entrance of the cystic duct into the hepatic duct. This was the situation in cases described by Harris and Walton.<sup>7</sup> They described the cystic duct as coming off at the normal site extending forward and to the right in the direction of the normal site of the gallbladder and then making a sharp hairpin turn to join the fundus under the left liver lobe. The second way in which this anomaly may develop is as follows: A gallbladder develops on each side with one persisting on the left and the right-sided one becoming atrophic and disappearing. In such a case one would expect the cystic duct to drain into the left hepatic duct as has been reported in one case.

### CASE REPORT

W. E. S., a white male, age 18, was admitted to Regional Hospital, Camp Joseph T. Robinson, on February 15, 1946. His *chief complaint* was pain in the right side of the abdomen of three days' duration. His *past history* was irrelevant, except for an appendectomy in 1944. He had not seen tropical service.

*The history of the present illness* revealed that three days prior to admission he developed pain in the right upper quadrant of the abdomen in the subcostal region. Pains had been sharp enough to "shut his wind off." Pain radiated to the left side, but not to the shoulder or directly to the back. He vomited twice. Vomitus contained food which he had previously eaten. Stools were normal in appearance and contained no evidence of blood. There was no history of intolerance to food.

*Physical examination* revealed a white male in a good state of nutrition. The temperature was 98; pulse 84; and respiration, 22. The abdomen was tender on palpation in the right upper quadrant. The liver was not palpable. The blood pressure was systolic 110, diastolic 60. Physical examination was otherwise negative.

*Laboratory Tests and Special Examinations:* Routine blood tests and urinalysis were within normal limits. The serum protein was 7.5; blood cholesterol, 1.36; and the blood Kahn was negative. The sedimentation rate was 7; hematocrit, 44; icteric index, 10.2. Examination of the bile obtained on duodenal drainage on March 8, 1946, showed *numerous giardia lamblia* present. These protozoa were clumped together in small rod-shaped structures, as if they had formed casts of the small radicles of the biliary tree. They were packed solid in these casts and occasionally one would break away from the general mass and swim in the fluid media.

*X-ray examination* of the gallbladder (Graham series) taken on February 20, 1946, showed no evidence of filling. Both kidneys appeared normal, and intravenous pyelograms were within normal limits. Roentgen examination of the upper gastro-intestinal tract failed to reveal any other pathology.

*Course in Hospital:* On March 7, 1946, the patient was put on daily duodenal drainage. Because of the repeated finding of *giardia* in the bile, administration of atabrine was begun, on March 16, 1946, in doses of 0.1 Gm. three times a day. This therapy was

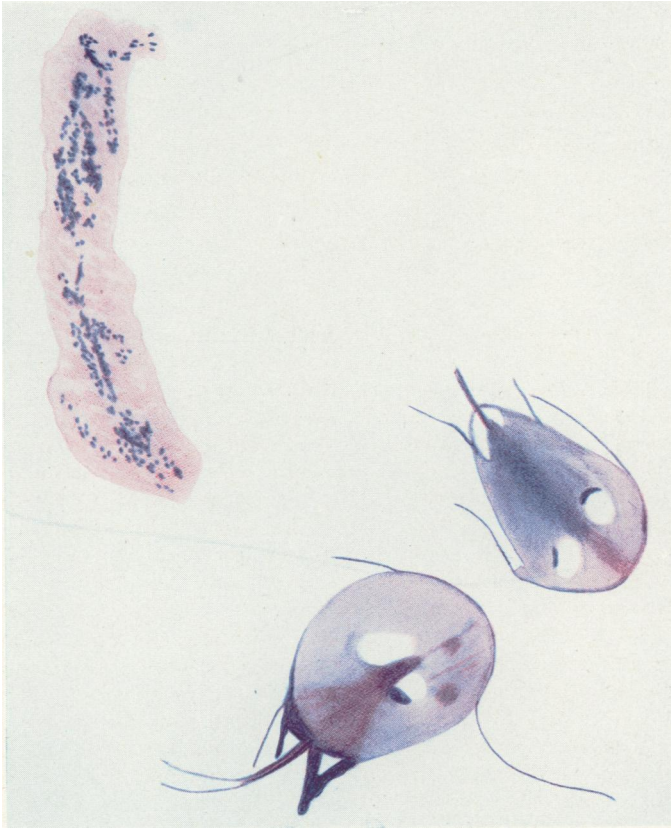


FIG. 1.—This is a drawing from the microscopic examination of the bile obtained on duodenal drainage. In the upper left-hand corner is a mucous cast containing numerous giardia. This cast probably came from one of the small radicles of the biliary tree. In the lower right-hand corner is a high power of the organisms.

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continued for one week at the end of which time the giardia had disappeared from the duodenal drainage. None were found subsequently from repeated drainages taken almost daily between March 26 and May 9. A second roentgenogram of the gallbladder showed no evidence of filling with the contrast media (Priodax). The cephalin flocculation test on March 5 was as follows: 24 hours plus and minus; 48 hours plus and minus. Examination of the feces on three successive days, starting on March 25, showed no evidence of parasites. The patient was operated upon April 5, 1946, at which time the gallbladder was removed and the common bile duct explored and drained.

*The operative findings* were as follows: Gallbladder was situated under the left lobe of the liver. The fundus was the same distance to the left of the falciform ligament as the

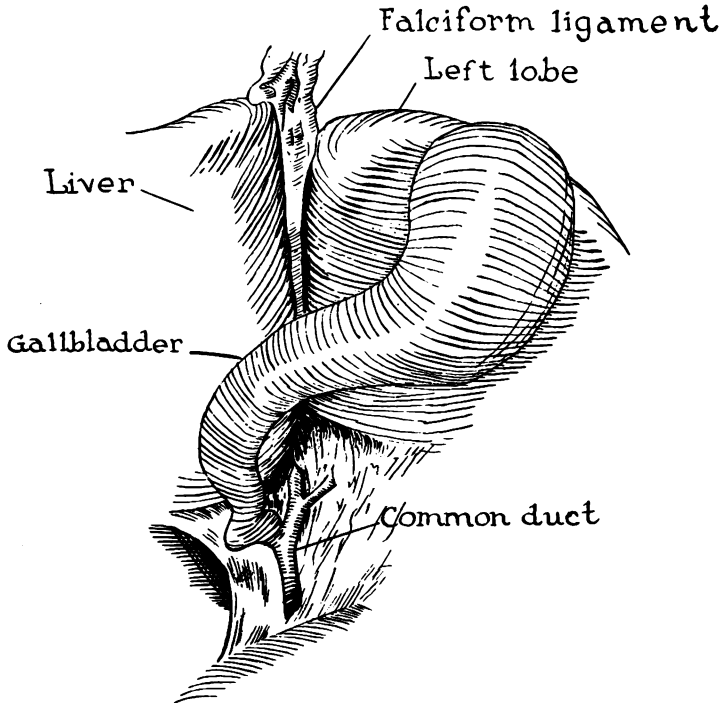


FIG. 2.—This is a diagram of the anomalous gallbladder in which the fundus was situated in the left lobe of the liver. The neck of the gallbladder crossed over to the right crossing the longitudinal fissure near its posterior end. The cystic duct joined the common duct on the right side.

normal gallbladder is usually to the right. The neck of the gallbladder crossed over to the right, crossing the longitudinal fissure near its posterior end. The cystic duct joined the common hepatic duct on the right side. The common bile duct, pancreas and other organs were essentially normal. The liver showed evidence of considerable hepatitis. It was moderately swollen and there were visible areas of fibrosis. These areas of fibrosis radiated over the surface of the liver substance from the gallbladder. There was further evidence of cholecystitis in the form of edema about the cystic duct and adhesions to the duodenum. No stones were found in the gallbladder or common bile duct. A T-tube was placed in the common bile duct for the purpose of subsequent study of the bile for evidence of giardia infection.

*Pathologic Examination* of scrapings of the gallbladder mucosa showed the presence

of giardia cysts. There was also evidence of ulceration in the mucosa of the gallbladder extending into the submucosa.

*Postoperative Course:* Patient made an uneventful convalescence. Repeated examinations of T-tube bile and also of duodenal drainage postoperatively were negative for giardia. The T-tube was removed at the end of six weeks. Patient has since been symptom free. Cholangiograms taken on May 1, 1946, showed the common duct and biliary tract to be normal.

*Comment.* This is a case of a man with left-sided gallbladder with typical symptoms of cholecystitis in whom giardia lamblia were found in large quantities in the bile obtained on duodenal drainage. These protozoa promptly disappeared following administration of atabrine as did the symptoms. Besides roentgen evidence, the gallbladder showed signs of inflammation at the operating table and giardia cysts were found in the gallbladder wall after surgical removal.

#### DISCUSSION

The evidence in favor of this being a giardia infection rather than an infestation is: (1) typical symptoms and physical signs of cholecystitis relieved by atabrine; (2) failure of the gallbladder to cast a shadow on the x-ray film after a Graham series on two occasions both before and after repeated duodenal drainages; (3) findings at the time of operation of streaks of fibrosis on the liver surface extending from the gallbladder and inflammatory reaction around the cystic duct; (4) pathologic study of the gallbladder showing ulceration in the mucosa and submucosa and the finding of giardia lamblia cysts in the scrapings of the mucosa.

#### SUMMARY AND CONCLUSIONS

1. While giardia lamblia in the past has been considered harmless there is increasing evidence that it is capable of producing gastro-intestinal disease.
2. Only seven proven cases of gallbladder disease from giardia have been previously reported in the literature; however, there have been instances of cases with symptoms simulating gallbladder disease or duodenal ulcer in which giardia lamblia were found in the bile obtained by duodenal drainage. Alleviation of symptoms was obtained by elimination of the protozoa by therapy.
3. Although various forms of therapy have been recommended, atabrine appears to be the drug of choice. The recommended adult dose is 0.1 Gm. three times daily for five days.
4. A case of giardiasis in a patient with a left-sided gallbladder is herein reported. In this instance the giardia were found in the bile obtained by duodenal drainage. They were eliminated by administration of atabrine and symptoms promptly subsided. When the gallbladder was subsequently removed, giardia cysts were found in the gallbladder wall.

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State of Pennsylvania }  
County of Philadelphia } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared J. R. Arnold, who, having been duly sworn according to law, deposes and says that he is the Treasurer of the ANNALS OF SURGERY and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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[Signed] J. R. ARNOLD.

Affirmed to and subscribed before me this 7th day of October, 1948.

[Seal]

HARRY J. BEARD.

(My commission expires March 5, 1949.)