BILIARY ASCARIASIS

REPORT OF 19 CASES

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ASCARIASIS is one of the most common, if not the most common, helminthic infestation of man. In Szechuan, Chang and Ch'in[1] found 90 per cent of seven different rural population groups infested. In the Philippines various groups range from 40 per cent to 83 per cent infested.[5] It is widespread in many tropical, subtropical, and even temperate zones. Accordingly, ascariasis, as such, has received considerable attention. Yet its very commonness has led to a certain attitude of benign tolerance and even indifference on the part of the medical profession. It is all too rarely realized that ascariasis is a dangerous disease. Even in comprehensive works on tropical disease its dangers are not emphasized. For example, reference to biliary ascarides, by Stitt and Strong,[2] is limited to the following: "They may penetrate into any accessible passage or space and cause bizarre and sometimes serious local disturbances; *e.g.,* into the appendix, bile ducts, gallbladder, pancreatic duct, nose, sinuses, middle ear and larynx. . . . Rajahram has reported the case of a girl of six who died with five ascaris-containing abscesses in her liver." Manson-Bahr[3] dismisses biliary ascarides with: "They have been known to enter the bile ducts and give rise to jaundice and abscess of the liver."

That ascarides can invade many diverse organs and areas of the body, giving rise to many diverse and at times fatal conditions, is attested by isolated reports which can be found in the literature. A survey of the Quarterly Index Medicus from 1930 to 1943, inclusive, reveals 30 articles on the subject of biliary ascariasis from all parts of the world. All but Crowell's[5] report concern only isolated instances of one or two cases.

Muir[6] reported a Chinese case of an ascaride in the common bile duct and gallbladder. He quotes Aviles as having collected 90 cases of ascariasis of the common duct from the literature up to 1918. A more comprehensive report on the dangers of ascariasis was made by Crowell[5] in 1920. He states "migration of the ascaris into the common bile duct and thence into the gallbladder or into the intrahepatic bile ducts is a frequent occurrence, and must be much more frequent than is indicated by the reported cases, as the diagnosis is made only at operation or at autopsy." He reports 12 autopsy cases of ascariasis of the bile ducts and liver, six of them associated with liver abscess and two with pancreatic duct obstruction and pancreatitis. These cases were observed in the Philippines.

In 1928, Morton[8] found eight reports of ascariasis of the gallbladder and

reported one case from Virginia. He emphasized two features: First, an history of ascariasis; and second, biliary tract disease.

In 1933, Ch'in[7] reported a case of acute hemorrhagic pancreatitis due to ascaris lumbricoides impaction in the ampulla of Vater, and listed 28 references to biliary or pancreatic ascariasis. In 1936, he reported a case in which ascariasis of the liver caused fatal hemorrhage both into the biliary tract and thence into the gastro-intestinal tract, and directly into the free peritoneal cavity.

Three cases of biliary ascariasis were reported from Szechuan by Chen,[4] in 1943. Two of these were autopsy cases, one presenting purulent cholangitis with liver abscess, the other showing fossilization of ascarides in the liver. The third case was a clinical case which we report here in further detail as Case No. 1.

The present communication deals with 19 cases of biliary ascariasis observed in the United Hospitals of Chengtu during the past three years. Twelve of the 19 cases have been seen in the past 18 months, suggesting perhaps that as the condition is more carefully sought for it may prove to be even more common than herein indicated.

CASE MATERIAL

Table I provides a brief abstract of 14 of our cases. All but one were under 28 years of age. All but two were Szechuanese, and those two had lived in Szechuan for over two years. Four were males, ten female. All complained of rather severe epigastric and/or right upper quadrant pain except one (No. 9) who had severe epigastric and left upper quadrant pain. As more of these cases were seen we came to feel that there might be a characteristic distending type of pain present in contrast to the stabbing, knife-like pain of cholelithiasis. One patient (No. 8) even stated that he thought something was crawling around inside him. All but three complained of vomiting. The symptomatology in general suggested cholecystitis. Five were jaundiced, although those seen early in their illness tended not to be jaundiced. Epigastric and right upper quadrant tenderness and spasm were common, although the one (No. 9) who had left upper quadrant pain also had left upper quadrant tenderness. The temperatures tended to be low, especially in the cases seen during the first day or two of illness. All but Cases 9 and 12 had stools positive for ascaris ova. Eleven had a past history of ascariasis. Ten had had previous similar attacks. All underwent operation, four with the correct preoperative diagnosis, and three with biliary ascariasis as a suggested possibility. The remainder were diagnosed cholecystitis and/or cholelithiasis, except for one case diagnosed liver abscess. Three had acute cholecystitis. Four had distended gallbladders. Five had tense, firm common ducts with a typical catheter-like consistency. Through the wall of the tense duct the white ascaride could be visualized as a light streak. In these cases aspiration yielded only a few drops of bile, if any, and even on incising the common duct no bile escaped in several instances. Six had

dilated common ducts, and in the rest the operative descriptions were inadequate. All had ascarides in the common duct. Typically, about one-third of a 20-cm. ascaride projected into one of the hepatic ducts from the site of choledochotomy, while the remaining two-thirds of the ascaride, the caudal two-thirds, extended down the common duct into the duodenum. In Cases 5, 7, and 14 ascarides were also partly, or completely, in the gallbladder. All had choledochotomy except in the liver abscess case, who had incision and drainage only, and Case 5 in whom the worm was manually expressed out of the common duct during celiotomy. Seven choledochotomies were used as choledochostomies by T-tube drainage, while choledochotomies were primarily closed without drainage in four instances. In Case 2 an additional ascaride crawled out alongside the T-tube on the tenth postoperative day. In Case 8 a ring-like impression was noted at about the junction of the middle and caudal thirds of the ascaride suggesting the impress of a spastic sphincter of Oddi. In Case 2 the doubling-up of the worm in a dilated common duct, with head and tail in the lower duct, suggests that at times the worm may enter and leave the duct spontaneously. Two deaths occurred, one due to pericholecystic abscess, peritonitis, and *Friedländer bacillus* septicemia; another due to multiple liver abscesses. All other patients were treated with anthelmintics as soon after operation as their conditions permitted.

COMMENT: The predilection for ascarides to enter any available aperture is well known. At times they have been found projecting through holes in glass beads or buttons inadvertently swallowed. In other instances the appendix may harbor the worm. Crowell[5] reports a case in which an ascaride burrowed between two adjacent tuberculous intestinal ulcers.

When apertures are not available the adult worm may burrow through tissues to the free peritoneal cavity, into the urinary bladder, or elsewhere. In one local case a deep thigh abscess harbored an ascaride, while in another instance an orbital abscess contained an ascaride.

In this report attention is called to the relative frequency of ascarides in the bile ducts and gallbladder, and to the serious consequences which ensue. It is urged that the disease be regarded with greater respect, and that its dangerous potentialities be recognized. Patients known to harbor the parasite should be vigorously treated before complications develop. Where infestation is widespread, mass therapy is indicated.

In such areas the condition should be suspected in patients presenting symptoms of cholecystitis or common duct obstruction. In these cases adequate preoperative preparation followed by surgical intervention is indicated. Such cases also would seem to be further justification for early surgical treatment as opposed to conservative therapy.

SUMMARY AND CONCLUSIONS

Nineteen cases of biliary tract ascariasis are presented and discussed,

together with excerpts from the literature, to lend support to the contention that ascariasis is a dangerous disease.

If in an endemic area a young person below the usual age for cholelithiasis presents symptoms and signs of biliary tract disease, biliary ascariasis should be suspected. If, in addition, the stool is positive for ascaris ova; there is a recent past history of ascariasis; the patient has recently vomited ascarides; there is an history of previous similar attacks; and the pain has a peculiar distending quality—then the diagnosis of biliary ascariasis can be made with reasonable certainty.

Since the submission of this article for publication, five more instances of biliary ascariasis have been operated upon, and may be added to the 14 summarized in Table I.

FIVE ADDITIONAL CASE REPORTS

Case 15.—Hosp. No. 5012—1945: A 35-year-old Szechuanese woman complained of right upper quadrant and epigastric pain of colicky nature for 18 hours preceding admission. Vomited undigested food several hours after onset of pain, but no ascarides. Past history of vomiting ascarides two years before, but no previous similar attacks. Acutely ill, writhing with pain. No jaundice. Epigastric and right upper quadrant pain and tenderness, with spasm. Temperature 100.4° F.; W. B. C. 12,000. Stool positive for ascaris ova. *Preoperative Diagnosis:* Biliary ascariasis.

Operative Findings: G. B. hugely distended, thickened, neck bound down by adhesions to omentum and duodenum. C. D. dilated to 1.5 cm., not thickened, but two cord-like ascarides palpable in C. D. Two adult ascarides removed through choledochotomy incision, one worm being doubled upon itself. Cholecystectomy and choledochostomy. Uneventful recovery.

Case 16.—Hosp. No. 5193—1945: A 40-year-old Szechuanese woman complained of epigastric pain, severe and colicky, for four days preceding admission. Vomited undigested food, but no ascarides, the day of admission. Past history of vomiting ascarides several years previously, and repeated similar attacks of epigastric pain for 20 years. Acutely ill, doubled-up with pain. No jaundice. Epigastric and right upper quadrant tenderness and spasm. Temperature 99.4° F.; W. B. C. 4,700. Stool positive for ascaris ova. *Preoperative Diagnosis:* Chronic cholecystitis, with cholelithiasis. Suspected biliary ascariasis.

Operative Findings: Greatly dilated G. B., measuring 12 x 13 x 7 cm. Wall somewhat thickened. No stones palpable. C. D., 1 cm. in diameter, not thickened. An ascaride was seen wriggling within the C. D. It was also palpated. Another was palpated in the duodenum. The C. D. was opened and the ascaride previously seen and palpated had disappeared. After some investigation it was found high in the hepatic ducts and withdrawn. It measured 19 x 0.3 cm. During this period the patient vomited a 28-cm. ascaride, after which the duodenal ascaride was no longer palpable. Cholecystectomy and choledochotomy. Death on fourth postoperative day—clinically due to bilateral pneumonia. Autopsy permission refused.

Case 17.—Hosp. No. 5509—1945: The patient was a 40-year-old Szechuanese woman, complaining of severe colicky epigastric and right upper quadrant pain radiating to the right scapula, for four days. N and V present, but no ascarides vomited. No jaundice. Had repeated similar attacks for 20 years, with jaundice. Had ascarides in stool within past six months. Acutely ill, doubled up with pain. No jaundice. Direct tenderness epigastrium and r. u. q., no rebound tenderness, gallbladder questionably palpable, Murphy's sign positive. Moderate r. u. s. spasm. Temperature 99° F.; W. B. C.

TABLE I

BRIEF ABSTRACT OF 14 CASES OF BILIARY ASCARIASIS

Case No.	Hosp. No.	Age	Sex	Province	Onset of Illness	First Symptoms	Other Symptoms	History of Ascariasis	Other History	Jaundice	Other Physical Signs	Preoper. Temp., Fahr.	W.B.C.	Ascaris Ova in Stools	Preoper. Diag.	Operative Findings	Operation	Course
1	15429 '42	18	M	Szechuan	12 hours	Severe epigastric pain; n & v	Paroxysmal colicky pain radiating to the r.u.q.	Vomited ascaride 4 yrs. prev.	3 similar prev. attacks	+	Acutely ill; epigastric and r.u.q. tenderness and spasm	97.4–98.6	10,000	++	Cholelithiasis	Congested and distended G.B.; C.D. tense and firm; 20-cm. ascaride removed, cephalad one third above, caudad two thirds below incision	Cholecystectomy; choledochostomy	Uneventful recovery
2	18593 '43	19	F	Szechuan	26 hours	Severe epigastric pain; n & v	Paroxysmal colic, sweating and dizziness	Passed ascarides repeatedly	1 similar attack 3 mos. prev.	O	Slightly ill; epigastric and r.u.q. tenderness and spasm; Murphy's sign positive	98–100	12,000–21,000	++	Acute cholecystitis with cholelithiasis	Distended noncompressible G.B.; C.D. distended; large ascaride doubled up in C.D., head and tail toward duodenum	Cholecystectomy; choledochostomy	Adult ascaride crawled out along T-tube 10th p.o. day; recovery
3	18938 '44	18	M	Szechuan	19 days	Fever and chilly sensations	Severe epigastric and r.u.q. pain, n & v, 5 days	Not recorded	Recurrent abd. pain since age 6	+++	Dehydrated, acutely ill; moderate epigastric tenderness and spasm	101	13,500–10,000	++	Cholecystitis	Acute phlegmonous cholecystitis with gen. peritonitis; pericholecystic abscess; C.D. dilated and contained one ascaride	Ditto, + drainage cholecystic abscess	*Friedländer bacillus* septicemia; death
4	2840 '44	23	F	Szechuan	4 hours	Severe epigastric and r.u.q. colic	Radiation to rt. back; n & v	Passed ascarides several months previously	Neg.	O	Acutely ill; tenderness and rigidity r.u.q.; Murphy's sign positive	95.6–99	15,000	+	Acute cholecystitis with ? biliary ascariasis	G.B. mod. dilated; C.D. tense and catheter - like; ascaride visible through C.D. wall; 27-cm. female ascaride removed	Cholecystectomy; choledochotomy	Ext. biliary fistula 4 mos.; recovery
5	19178 '44	46	F	Szechuan	3 days	Severe r.u.q. colic	Vomited 20 ascarides; chilliness and fever	Vomited ascarides many times in past	Many similar prev. attacks, with jaundice	+	Acutely ill; tenderness and spasm r.u.q.	98–98.2	7,000–10,000	+++	Cholecystitis	Acute cholecystitis; cholangitis; 4 ascarides in G.B., 2 in C.D.	Cholecystectomy; choledochostomy	Mild p.o. atelectasis; recovery
6	19839 '44	26	M	Szechuan	4 days	Fever and headache	Severe epigastric and r.u.q. pain 20 hours	Ascarides passed in childhood	One similar prev. attack	O	Acutely ill; r.u.q. tenderness and spasm	101–102	14,700–19,000	++	Cholecystitis with cholelithiasis	G.B. normal; ascaride palpated in stomach, duodenum, and C.D., removed by manual expression	Expl. celiotomy; manual expression ascaride	Mild p.o. atelectasis; recovery
7	20128 '44	15	F	Szechuan	40 days	Epigastric pain; vomited ascarides	Subsidence after 6 days; recurrence 10 days prev. to adm.	Neg.	Occ. prev. attack	+	Acutely ill; tenderness and spasm r.u.q. with egg-sized mass	102	23,000	+++	Cholecystitis	G.B. normal; C.D. dilated; 7 ascarides removed from C.D. including 1 which extended into G.B.	Choledochostomy	Uneventful recovery
8	4095 '44	22	M	Hunan; 2 yrs. in Szechuan	2 days	Severe epigastric and r.u.q. pain	Vomiting; fever	Passed ascarides in recent years	Neg.	O	Acutely ill; tenderness and spasm r.u.q.; Murphy's sign positive	100.2	14,000–21,000	+	Biliary ascariasis	G.B. acutely inflamed and distended; C.D. tense, firm, 8 mm. in diam., catheter-like; no bile from choledochotomy; 25 x 0.5 cm. female asc. removed	Cholecystectomy; choledochotomy	Transient p.o. jaundice; recovery
9	4600 '45	19	F	Hupei; 6 yrs. in Szechuan	20 hours	Chill followed by fever	Severe epigastric and l.u.q. pain, vomiting, 1 hour	Neg.	Neg.	O	Acutely ill; cyanotic; drowsy; epigastric and l.u.q. and bilat. C.V.A. tenderness	95–100	15,000	O	Acute pancreatitis? biliary ascariasis?	G.B. normal; C.D. tense, firm, 8 mm. in diam., catheter-like; no bile on incision; ascaride visible through wall, removed, 20 cm. long	Choledochotomy	Intestinal obstruction 14th day due p.o. adhesions; lysis, rec'y
10	4696 '45	24	F	Szechuan	10 days	Nausea and vomiting of ascaride	Epigastric and r.u.q. pain, 5 days	Passed and vomited ascarides many times prev.	Many similar prev. attacks	O	Acutely ill; epigastric and r.u.q. tenderness and spasm; Murphy's sign positive	97.4–103	13,000	+	Biliary ascariasis	G.B. sl. distended; C.D. distended to 1.5 cm.; ascaride palpable in C.D.; 20 cm. long on removal, upper two thirds in hepatic duct	Choledochostomy	Mild p.o. atelectasis; recovery
11	4794 '45	13	F	Szechuan	1 day	Severe epigastric pain	Vomiting 6 hrs.	Passed and vomited ascarides many times	Many similar prev. attacks	O	Acutely ill; epigastric and r.u.q. tenderness and spasm	99	15,000	++	Biliary ascariasis	G.B. distended, not inflamed, noncompressible; C.D. tense, catheter-like; 10-cm. ascaride removed	Choledochotomy	Uneventful recovery
12	21939 '45	23	F	Szechuan	2 mos.	Acute epigastric colic; chills, fever; productive cough	Severe vomiting 2 mos. Distension, edema. Epigastric mass	Repeatedly passed ascarides	Occ. prev. attacks	+	Acutely and chronically ill; 3+ distended; pus discharging from epigastric sinus; r.u.q. and and epig. tenderness	99–102	11,000–22,000	O	Liver abscess? due to ascariasis	Incision into spontaneous sinus tract and ruptured liver abscess; autopsy: multiple liver abscesses, ascariasis of hepatic ducts, intrahepatic calculosis	Incision and drainage	Death
13	22240 '45	11	F	Szechuan	3 days	Epigastric and r.u.q. colic	Vomited 20 ascarides	Repeatedly vomited ascarides	Occ. prev. attacks	O	Mod. ill; epigastric and r.u.q. tenderness; distended; L & S 4 cm. below costal margin	99–100.2	13,000–25,000	+	Biliary ascariasis	B.G. slightly congested, compressible; C.D. sl. dilated; 2 ascarides palpable and removed through choledochotomy	Choledochotomy; cholecystostomy	Uneventful recovery
14	22324 '45	27	F	Szechuan	8 hours	Severe r.u.q. colic radiating to rt. back	Chilliness and headache for 5 days	Passed ascarides repeatedly	Neg.	O	Mod. ill; r.u.q. spasm and tenderness; 4- x 5-cm. mass in r.u.q.; Murphy's sign positive	98	14,000–16,000	++	Acute cholecystitis with cholelithiasis	G.B. distended; C.D. dilated to 1.8 cm.; ascaride felt in G.B. and C.D.; on removal 30 cm. long, with cepalad one third in G.B.	Cholecystectomy; choledochostomy	Uneventful recovery

9,000. Stool 1+ for ascaris ova. *Preoperative Diagnosis:* Cholelithiasis, with chronic cholecystitis and hydrops of gallbladder. Suspected biliary ascariasis. *Operative Findings:* G. B. greatly dilated 15 x 9 cm., not acutely inflamed. C. D. dilated, 2 cm., not thickened. Ascaride palpable in upper C. D., on choledochotomy, found doubled up with both ends extending into hepatic ducts, central portion just above choledochotomy incision. On removal measured 26 x 0.5 cm. Also some cystic and C. D. sand. *Operation:* Cholecystectomy and choledochostomy. Uneventful recovery.

Case 18.—Hosp. No. 23167—1945: The patient was a 14-year-old Szechuanese boy, complaining of severe colicky epigastric and right upper quadrant pain of eight hours duration. N and V present, patient vomited three times, but no ascarides were noted. No jaundice. Had repeated similar previous attacks for two years. No ascarides had been passed previously. Moderately ill. Direct tenderness in epigastrium and r. u. q., with positive Murphy's sign. Temperature 100° F.; W. B. C. 10,450. Stool 2+ for ascaris ova. *Preoperative Diagnosis:* Biliary ascariasis. *Operative Findings:* G. B. normal. C. D. 1 cm. in diameter, and containing an adult ascaride, about 20 cm. in length. *Operation:* Choledochostomy. Uneventful recovery.

Case 19.—Hosp. No. 5600—1945: A 26-year-old Szechuanese male entered complaining of severe epigastric pain, cramp-like and colicky, of 16 hours duration. Vomited eight times, but no ascarides noted. No jaundice. Similar attacks in childhood. Ascariasis in childhood. Moderately ill, occasionally doubling-up with severe pain. Right epigastrium tender. Liver edge descends 1.5 cm. on inspiration, and is tender. No rebound tenderness or spasm. Temperature 98.6°–100° F. Stool negative for ova. W. B. C. 10,700. *Preoperative Diagnosis:* Suspected biliary ascariasis. Observed and rehydrated for 18 hours, during which time there was no improvement in symptoms. *Preoperative Diagnosis:* Biliary ascariasis. *Operative Findings:* G. B. moderately dilated to 10 x 6 cm. G. B. wall somewhat thickened. C. D. normal in appearance, about 1.0 cm. in diameter; but an ascaride was palpable and faintly visible therein. On removing the ascaride, the head was found projecting into the hepatic ducts, the tail down toward the sphincter of Oddi. The ascaride measured 20.5 x 0.3 cm. *Operation:* Choledochotomy, cholecystectomy. Uneventful convalescence.

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