

Biliary Ascariasis in Region 1 Medical Center from January 2001 - June 2010

**Mayeen D. Fernandez, M.D.; Alexander S. Quilaton, M.D., F.P.C.S.;
Anita C. Tarectecan, M.D., F.P.C.S. and Vivencio Jose P. Villaflor III, M.D., F.P.C.S.**

Department of Surgery, Region 1 Medical Center

Ascariasis is a common parasitic infestation occurring mostly in developing countries. Its most serious presentation is biliary obstruction. This is a case series of biliary ascariasis in Region 1 Medical Center. Clinical presentation, diagnosis and management are presented.

This is a retrospective, descriptive study of 43 cases of biliary ascariasis admitted at the Region 1 Medical Center from January 2001-June 2010. Majority of the patients were in the fifth decade of life with noted preponderance among the females. The most common presentation was upper abdominal pain with vomiting. Tenderness in the right subcostal region was noted in 70 percent of the cases. Twenty - six patients were managed conservatively while 17 underwent surgical intervention. Common bile duct was the most common site of ascaris migration. Most patients with biliary ascariasis responded to conservative management. Early surgical intervention is advisable to patients not responding to conservative management to avoid serious complications.

Key words: biliary ascariasis, *Ascaris lumbricoides*

Ascariasis is a common problem in developing countries. Poor hygiene and low socioeconomic conditions have been incriminated as the main factors. In the Far East alone, it is estimated that about 90 percent of the population is infected.¹ In the Philippines, *Ascaris lumbricoides* is by far the most common intestinal parasite.²⁻³

The normal habitat of the adult worm is the human small intestine, but its desire to travel and propensity to explore the cavities, ducts and orifices that communicate

with the gastrointestinal tract has been well documented in the literature. The adult round worm through its own writhing movements can reach the duodenum against peristalsis. Overcrowding of these parasites in the duodenum predisposes entry to the common bile duct via the Ampulla of Vater leading to biliary ascariasis. At present, biliary ascariasis still poses diagnostic and management challenge to the general surgeons.

In the Philippines, initial local reports on biliary ascariasis were done by Maki and Horilleno, et al. in the 1960's followed by an update conducted by Hilvano, et al. in 1996 at the Philippine General Hospital.^{3,4,5} From a retrospective review of diagnosed cases of biliary ascariasis admitted at the Region 1 Medical Center, this study aimed to present its clinical presentation and management.

Methods

For the period of January 2001-June 2010, medical records of patients who were admitted and diagnosed as cases of biliary ascariasis in the Department of Surgery at Region 1 Medical Center were reviewed.

Data were analyzed retrospectively for age, gender, clinical presentation and management.

Patients who underwent operation were further analyzed as to their operative findings (the site of obstruction in the biliary tree and the number of ascaris extracted) operation performed and surgical outcome.

Results

Forty three patients with biliary ascariasis were treated in the past ten years at RIMC. There were 33 (76.7%) females and 10 (23.3%) males.

Majority of the patients were in the fifth decade with a mean age of 44.5 years (Table 1).

The youngest case was an 8-year-old girl and the oldest was a 67-year-old woman. Biliary ascariasis was found to be more common (33 out of the 43) in females.

Table 1. Age distribution of patients.

Age (years)	No. of Cases	Percentage
<10	1	2.3%
11-20	2	4.7%
21-30	6	14%
31-40	10	23.2%
41-50	18	41.9%
51-60	4	9.3%
>60	2	4.6%

Of the 43 cases, 26 patients (60.5%) responded favorably to conservative management and passed out worms thereafter while 17 of patients underwent surgical management.

Of the 17 patients who were operated, only 8 had charts available for analysis.

The most common presentation was upper abdominal pain followed by an epigastric pain associated with vomiting. Tenderness in the right subcostal region was noted in 70 percent of cases. In 15 (44%) patients, there was a history of passing out worms per orem or in stools. Fever was present in 23 (67.6%) patients while jaundice was documented in 12 (41.9%) cases (Table 2).

All patients reviewed in this study showed normal hemoglobin levels. Leukocytosis was noted in over two-thirds of cases (76%). Eosinophilia was noted in 2 patients. Six out of the 43 patients had abnormal liver function test and 12 patients had deranged protime levels.

Table 2. Clinical presentation of biliary ascariasis among 43 patients in Region 1 Medical Center, January 2001- June 2010.

	No. of Cases	Percentage
<i>Symptoms</i>		
Abdominal pain	34	100%
RUQ	22	64.7%
Epigastric	12	35.3%
Vomiting	28	82.4%
Fever	23	67.6%
<i>Signs</i>		
Abdominal tenderness	24	70.1%
Jaundice	12	35.3%
Tea colored urine	11	32.3%
Worm emesis	15	44.1%

Ultrasonography was the diagnostic tool used in all cases (100%) which showed presence of tubular structure in intrahepatic and common bile duct.

Of the 8 patients who underwent surgery, 2 underwent cholecystectomy, common bile duct exploration, intra-operative cholangioram and t-tube choledochostomy while in 6 patients, cholecystectomy, common bile duct exploration, choledochoscopy and t-tube choledochostomy were done.

Intra-operative findings showed the presence of ascaris worms associated with bile duct stones in 4 patients and ascaris alone in 2 patients while 2 patients who were diagnosed having biliary ascariasis pre-operatively were found out to have stones in the common bile duct. The most common site of migration of the ascaris worm was the common bile duct in 5 cases, and the intrahepatic ducts in 1 case. An unusual instance of postoperative migration of ascaris worm was observed through the T-tube in one patient.

In terms of numbers of ascaris worms noted in the biliary tract, only one case presented with single ascaris worm while the remaining cases showed multiple worms (Table 3).

Discussion

Ascaris lumbricoides is the largest intestinal roundworm and the most frequent of human helminthic parasite. It is

Table 3. Number of worms found in the biliary tract in 6 cases, January 2001 - June 2010, Region 1 Medical Center.

Case No.	No. of Worms		Total
	Alive	Dead	
1	1	0	1
2	1	2	3
3	5	0	5
4	2	2	4
5	2	0	2
6	1	1	2

endemic in third world countries, including the Philippines, where poor health standards, low socioeconomic status and geoclimatic conditions influence the parasite prevalence.^{6,7} In humans, the usual habitat of *Ascaris lumbricoides* is the small intestine.⁶ When a heavy infestation occurs, the worms tend to migrate away from the usual site or habitat and the most common extraintestinal manifestation of the worm is in the biliary system.

A 1946 report on biliary ascariasis by Stephen Yang and Paul Laube concluded that diagnosis of biliary ascariasis can be made with certainty in young patients living in endemic areas, who are stool positive, who have past history of ascariasis, who passed out ascaris per orem and to those with history of previous similar attacks.⁸ Local reports on biliary ascariasis including a report in the 1960's by Maki and Horilleno, et al.^{4,5} and one done by S Hilvano, et al. in 1996³ concluded the same.

A retrospective review of 43 diagnosed cases of biliary ascariasis admitted at R1MC revealed that majority of patients were in the fifth decade with a mean age of 44.5 years in contrast with most reports showing that the highest incidence of ascaris infestation was among children 2-10 years of age.⁹ The youngest case was an 8-year old girl and the oldest was a 67-year-old woman. This study also showed a higher incidence among women which is in accordance with the findings in previous studies.¹⁰

A review of the clinical presentation in all of the cases showed that upper abdominal pain is the main complaint, usually severe in onset, associated with vomiting and fever. Jaundice and tea colored urine were

noted in 33 % and 35% of patients, respectively. These signs and

symptoms appear when the worms migrate across the ampulla of Vater. If the worm remains in the bile ducts, acute and chronic complications like cholangitis, strictures, calculi, cholecystitis and pancreatitis may occur.¹¹

Ultrasound was used as the diagnostic tool in all cases. In the literature, diagnosis of biliary ascariasis usually depends on the demonstration of worms in the biliary tract by different imaging techniques. Sonography has been shown to have a high diagnostic accuracy as non-invasive procedure in the diagnosis of biliary ascariasis.

Furthermore, real time sonography may demonstrate mobility of the worms in the gallbladder and biliary passages and is helpful in monitoring the exit of worms in the common bile duct.^{12,13}

Conservative management is the mainstay therapy of biliary ascariasis consisting of gastrointestinal decompression, intravenous fluids, analgesics, antibiotics and repeated deworming.¹⁴ In this case, 26 patients were managed conservatively while 17 patients were operated on. Indications for operative management based on the study were unrelieved clinical condition and presence of cholangitis.

Endoscopic retrograde cholangiopancreatography (ERCP) is a useful diagnostic and therapeutic tool. Endoscopic extraction of the worms from the bile ducts gives immediate relief.¹⁴ In this study, patients were advised ERCP but due to its unavailability at R1MC, some patients who underwent such procedure were done outside and results were not documented.

In cases where conservative management fails or in the presence of complicated biliary ascariasis, an early operative treatment avoids fatal outcome.¹⁶ Overall, 8 patients who underwent surgical management recovered from operation.

Conclusion

Biliary ascariasis is a frequent diagnosis in patients presenting with symptoms of biliary colic. It is common among female adults. Most patients with biliary ascariasis respond to conservative treatment. Early surgical

intervention in patients not responsive to conservative treatment is needed to avoid serious complications.

Recommendation

It is recommended that a registry of cases of biliary ascariasis be made at RIMC to monitor the magnitude of this health hazard. It is also recommended that implementation of the government's national program for worm eradication be enhanced to prevent occurrence of such cases.

References

1. WHO. Control of ascariasis. A report of the WHO Expert Committee. WHO Technical Rep Ser. No. 379, Geneva, 1967
2. Sy F. Biliary ascariasis; A ten year clinicopathological study from 1969-1978. UP-PGH, Manila, 1980.
3. Hilvano C, Rodney D, A' Enesm B. Biliary ascariasis. Division of Gastrointestinal Surgery, Department of Surgery, PGH, UP Manila, 1996.
4. Maki T. Surgical diseases due to ascaris lumbricoides Report 1961.
5. Horilleno EG, Limbo DM, Eufemio GG, Silao JV, Garcia AH. Hepatobiliary ascariasis. J Phil Med Assoc 1964; 40-76.
6. Relding DL. Textbook of Parasitology, 3rd Ed. New York: Appleton-1965; 1374.
7. Gabaldon A, Mofida C, Monshita K, et al. Control of ascariasis. Report of WHO Expert Committee. WHO Tech 1967; 379: 6-7.
8. Yang SC, Laube PJ. Biliary ascariasis: Report of 19 cases. Ann Surg 1946; 123: 299-303.
9. Mishra PK, Agrawal A, Joshi M, Sangvi B. Intestinal obstruction in children due to ascariasis. African J Ped Surg 2008; 2: 65-70.
10. Everson GT, McKinley C, Lawson M, Johnson M, Kern F Jr. Gall bladder function in human female: Effect of the ovulatory cycle, pregnancy and contraceptive steroids. Gastroenterology 1982; 82: 711-719.
11. Lloyd DA. Massive hepatobiliary and pancreatic ascariasis. Indian J Gastroenterol 2001; 20: C28-32.
12. Gomez NA, Leon CJ, Ortiz O. Ultrasound in the diagnosis of round worms in gallbladder and common bile duct. Surg Endosc 1993; 7(4): 339-342.
13. Cerri GG, Leite GJ, Simoes JB, et al. Ultrasonographic evaluation of ascaris in biliary tract. Radiology 1983; 146: 753-754.
14. Shalinul A, Golam M, Salimur R. Comparative study on presentation of biliary ascariasis with dead and living worms. Saudi J Gastroenterol 2010; 16: 203-206.