STUDY ON CLINICAL MANIFESTATIONS OF BILIARY ASCARIASIS PATIENTS IN SADAR HOSPITAL, COX'S BAZAR

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Abstract

Aims: *Aim of the study was to know the clinical presentations of biliary ascariasis.*

Materials and Methods: *It was a cross-sectional observational study had been carried out on 50 patients over a period from January 2017 to December 2018 at the Department of Medicine, Sadar Hospital, Cox's bazar. The clinical presentation, ultrasonographic findings, management and follow up of patients diagnosed to have biliary ascariasis were recorded in a pre-designed case record form and finally all the relevant data were processed and analyzed.*

Results: *This study revealed that maximum patients of biliary ascariasis belonged to 31-40 yrs age group. Number of female patients was more (86%) in comparison to male patients (14%). Among female patients, 20.93% patients were pregnant. Most of the patients 92%came from rural areas. All patients in this study presented with upper abdominal pain. Other complaints were nausea, vomiting, fever and jaundice. Most of the patients (38%) had history of passage of worm with vomitus. Ultrasonographic profile of this study revealed that ascaris was most commonly entrapped in the common bile duct (80%). The percentage of complications was 38%. Acute acalculous cholecystitis was the commonest. The percentage of Cholangitis and acute pancreatitis was also significant.*

Conclusion: *Bangladesh is an endemic zone for ascaris lumbricoides infestations. Ultrasonography is the investigation of choice for diagnosis and follow up of the patient of biliary ascariasis. Majority of the patient can be managed with conservative treatment and mechanical removal of worms by endoscopy. This study recommends that proper hygiene and regular deworming can prevent biliary ascariasis.*

Key words: *Ascariasis, bile ducts, cholangitis*

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Introduction

Ascariasis is a common clinical problem in developing countries. The infection largely occurs in tropical and subtropical countries, related in part to the warm and humid soil that is conductive to the development of the ascaris larva and in part to the poor sanitary & hygienic conditions that maintain the infection.[1]

Biliary Ascariasis is most important manifestation caused by *Ascaris lumbricoides* in the biliary channels.[2] It can cause different hepatobiliary and pancreatic complications in addition to biliary colic. Ascaris has been implicated in up to 23% of patients presenting with acute pancreatitis in endemic areas and is associated with high mortality rate.[3] Indeed

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most of the mortality associated with biliary ascariasis has been attributed to acute pancreatitis.[4] It is responsible for a good number of admissions in hospital.

The exact prevalence of bilary ascariasis in our country is not known but it can be assumed from our clinical practice that it is a fairly common cause of hospitalization of patients presenting with acute abdominal pain. Abdominal pain is the predominant symptoms in biliary ascariasis. Moderate to severe abdominal pain occurs in most of the patients affected by roundworms in biliary channels. It may induce serious abdominal catastrophy such as acute pancreatitis, acute cholangitis-leading to sepsis and haemobilia.

Clinical presentations of Biliary ascariasis in our country is also less explored. Very few studies were done in these contexts. Demographic data like age and sex prevalence also was not known adequately. Our attempt is to see the clinical presentation of biliary ascariasis in Bangladeshi population admitted in district hospital. This study might be helpful in diagnosing and knowing the diversity of clinical manifestation caused by *Ascaris lumbricoides* in the biliary channels and enhances the management of these patients.

Diagnosis of biliary ascariasis can be made by ultrasonography and upper gastrointestinal endoscopy. Ultrasonography is a highly specific and sensitive method for detection of worms in the biliary tree.[5] Upper gastrointestinal endoscopy is a measure to see the worm directly. Worm can also be extracted endoscopically. Early diagnosis and treatment is important to prevent the ascariasis related complications.[1]

Aims and Objectives

The general objective of the study was to know the clinical presentations of biliary ascariasis. The specific objectives were to study the patient's profile including age, sex, and residence in order to correlate them with the occurrence of disease, to observe various complications of biliary ascariasis that may be the first manifestation and to assess the effectiveness of different modalities of investigations.

Methodology

This was a cross sectional observational study conducted at Department of Medicine in Sadar Hospital, Coxsbazar from January 2017 to December 2018. Total 50 cases were included in this study. Inclusion criteria were findings of round worm like material in the biliary channels on ultrasonography and endoscopic findings of round worm through the papilla. Exclusion criteria were Patients who have contraindications of endoscopy of upper gastrointestinal tract, incidental diagnosis of biliary ascariasis without any symptom and debilitated patient with co-morbid diseases.

After enrollment of every patient in this series, a thorough history regarding patient's particulars, socioeconomic and personal history, presenting complaints, past history of passing worm in stool or vomitus, recurrent abdominal pain and history of any biliary surgery or procedure like ERCP were obtained to have features in favor of biliary ascariasis. Careful physical examination was done in every case.

Our mainstay investigation was ultrasonography (USG) which was performed by the same ultrasonographist. Complete blood count, Serum bilirubin, Serum alkaline phosphatase, Serum amylase estimation was done. All cases were initially given a fixed conservative treatment consisting of nothing per oral, nasogastric suction, intravenous fluids, intravenous anti-spasmodics (tiemonium methyl sulfate), intravenous antibiotic (if features of cholangitis). Patients were kept on observation to note symptomatic improvement with passage of time. Persisting pain more than 24hours or patient with high amylase (>600 IU/L) was sent for duodenoscopy with an attempt of endoscopic removal of worm if visible at the ampulla of Vater. On between 3^{rd} to 5^{th} day of hospitalization repeat abdominal ultrasound in all patients and Serum bilirubin, SGPT, SGOT, Serum alkaline phosphatase and Serum amylase was done in cases with poor response. Patients who were not responding to conservative management were advised for ERCP or surgery. Once clinically improved, oral feeding was started and advised to come after every 2 weeks for a

period of 4 weeks. During follow up, clinical assessment and persistence or disappearance of worm was evaluated by USG. All patients were advised to take antihelminthic drug at every 3 months interval.

All the information of particular case was recorded in a pre-designed case record form and finally all the relevant data was processed and analyzed.

Results

A total of 50 cases of patients with biliary ascariasis patients had been studied. As the study was conducted in adult medicine wards, all cases were above 13 years. 23 cases (46%) were of 31-40 years age group which ranks top of the score. Twelve cases belonged to age group 21-30 years and take the second rank in the list. The youngest patient was 15 years old and the eldest was 59 years old. Mean age was 31.30 years. Number of female patients was 43 (86%) and male 7(14%) only. Most of the female patients were of reproductive age group (13-50 years) and the number was 41 out of 43(95.3%). The percentage of pregnant female was 20.93%. Among them, 7 cases had pregnancy of more than 20 weeks. 46 (92%) patients came from rural areas and 4(8%) from urban areas.

All patients in this study presented with upper abdominal pain. Nausea and/or vomiting were also an important complaint and 41 patients (82%) had this. 12 patients (24%) reported to have fever that was associated with chills and rigor in 7 patients (14%). Only 6 patients (12%) had history of yellow coloration of urine and sclera.19 (38%) patients had history of passage of worm with vomiting and 7(14%) patients had seen worm in their stool. 16 patients (32%) had history of recurrent upper abdominal pain and 7 patients (14%) was diagnosed as biliary ascariasis by ultrasound. (Table-I)

Table I

Presenting complaints of the patients of biliary ascariasis (n=50)

Presenting Symptoms	No. of Patients	Percentage
Upper abdominal pain	50	100%
Nausea and/or vomiting	41	82%
Fever	12	24%
Chills and Rigor	7	14%
Jaundice	6	12%
Worm in stool	7	14%
Worm in vomitus	19	38%
Previous history of abdominal pain	16	32%
Previous Diagnosis of biliary ascariasis	7	14%

On physical examination, 12 patients (24%) had raised temperature and 22 patients (44%) had pulse rate more than 90 beats per min. Jaundice was detected in 6 patients (12%). Upper abdominal tenderness was present in 45 patients (90%) while 5 patients had no tenderness in their abdomen. No patients had palpable gall bladder and Murphy's sign was not positive in any case. (Table-II).

Table II

Physical findings of the patients. (n=50)

Findings	Severity	No. of Patients	Percentage
Temperature	Low Grade(99.4-101°F)	8	16%
	High Grade(101-104°F)	4	8%
Pulse	90-100/min	16	32%
	>100/min	6	12%
Jaundice	Mild	4	8%
	Moderate	1	2%
	Severe	1	2%
Upper abdominal tenderness	Tender	45	90%
	Non-tender	5	10%
Murphy's sign		0	0%
Palpable Gall bladder		0	0%

14 patients (28%) had raised WBC count (Leucocytosis). 44 patients (88%) had normal serum bilirubin. Only 6 (12%) patients showed raised serum bilirubin. Serum alkaline phosphatase was raised in 9 (18%) cases and serum alanine aminotransferase was raised in 6 (12%) cases. 5 patients (10%) had raised serum amylase. (Table-III)

Sonographic profile showed that the most common site of entrapment was common bile duct (80%). Worm was visualized in gall bladder in 4% cases. Worm occupying in both extrahepatic and intrahepatic biliary tree was seen in 6% cases. In most of the cases (90%) the number of worm is single. (Table-IV)

Complications observed in 18 patients (36%) only. Acute acalculouscholecystistis was the most common complication found in 6 cases (12%) while cholangitis and acute pancreatitis was observed in 4 (8%) and 5 (10%) cases respectively. Obstructive jaundice which was progressive in nature was found in only 2 cases (4%). 1 patient (2%) with previous history of recurrent abdominal pain developed feature of septic shock. (Table –V)

Table III

Biochemical Profiles in biliary ascariasis patient

Investigations	Range of Result	No of Patients	Percentage
Total count of WBC	Normal (4000-11000/cu mm)	36	72%
	Raised	14	28%
Serum Bilirubin	Normal (up to 1mg/dl)	44	88%
	Raised	6	12%
Serum Alkaline Phosphatase	Normal (40-125 U/L)	41	82%
	Raised	9	18%
Serum AlanineAminotransferase	Normal (10-40 U/L)	44	88%
	Raised	6	12%
Serum Amylase	Normal (28-100 U/L)	45	90%
	Raised	5	10%

Table IV

Ultrasonographic findings of site of entrapment of worms in the biliary tree (n=50).

Site of Worm Entrapment	No. of Worm	No. of Patients	Total (%)
Common bile duct	Single	33	40 (80%)
	More	7	
Gall bladder	Single	2	2 (4%)
	More	0	
Right hepatic duct	Single	3	3 (6%)
	More	0	
Both right and left hepatic duct	Single	0	2 (4%)
	More	2	
Both extra hepatic and intra	Single	0	3 (6%)
hepatic biliary tree	More	3	

Table V

Different complications observed (n-50)

Complications	No. of Patients	Percentage
Acute Acalculous Cholecystitis	6	12%
Cholangitis	4	8%
Acute Pancreatitis	5	10%
Obstructive Jaundice	2	4%
Septic Shock	1	2%
Total	18	36%

Discussion

Ascaris lumbricoides is a common parasite and over a billion people are estimated to be infested with it.[6] The prevalence of ascaris varies in different parts of the world. In China and South East Asia it is highly prevalent. [7]

This study revealed that most of the patients (46%) were in 31-40 yrs age group and the mean age was 31.30 years. This result was consistent with studies done by Islam Md. Rashidul[11] and Kaiser MS[12] in Bangladesh and Misra SP in India.[8] Most of the cases (86%) were female and only 7 cases (14%) were male which was consistent with other studies done all over the world.[1,8,9, 11, 12,] The exact reason for the female preponderance is still not clear. Women may be more affected because of their greater contact with children as carrier rate among children is around 70%.[15] In young females, the hormone progesterone leads to relaxation of the smooth muscle of the sphincter of Oddi allowing the ascaris to gain easy entrance to the biliary duct. The Progesterone level is high in pregnancy which causes more relaxation of Sphincter of Oddi.[8,13] Nine patients (20.93%) were pregnant among 43 cases in this observation. There is also hypocontractility of gall bladder during pregnancy.[14]

There are several ways in which intestinal ascariasis can manifest. [8] Upper abdominal pain is the most prominent symptom which was present in all patients. This is the most frequent manifestation in all studies.[1, 4, 5, 9] Vomiting, fever with or without chills and rigor and jaundice are variable features of biliary ascariasis that depends upon degree and extent of bile duct inflammation and systemic insult. Nausea and/or vomiting present in 41 patients (82%), fever in 12 (24%) and chills and rigor in 7 patients (14%). All other available studies on this topic also addressed similar pattern of presentation of this disease.[1, 4, 9, 11, 12] In this study, 19 patients (38%) had history of passage of worm emesis at the time of acute abdominal pain. Similar results have been reported in another study which stated that such a history should always be sought in patients with suspected biliary ascariasis.[1] 7 patients (14%) in our study had reported of passing worm in stool. 16 patients (32%) had history of recurrent upper abdominal pain. 7 patients diagnosed previously as biliary ascariasis by ultrasound and admitted here with upper abdominal pain and vomiting. They didn't take anti helminthic regularly even after diagnosis of biliary ascariasis. In endemic areas, ascariasis is equal to gall stones as a cause of biliary tract disease.[9] However, the most dramatic and serious presentation is that of pancreatobiliary ascariasis.[4, 9, 10]

Among physical signs, upper abdomen was tender in 45 patients (90%). 12 cases (24%) were febrile and jaundice was present in 6 cases (12%). Murphy's sign was absent in all patients. Most common presentation was biliary colic, but good number of patients presented with cholangitis, ascaris induced acute pancreatitis, acute acalculouscholecystitis and liver abcess. In this study, 36% of the patient presented with different hepatobiliary and pancreatic complications of Biliary Ascariasis. Similar rates of complications were also seen in other studies.[15, 16] The adult round worms are actively motile and can migrate into accessible passages. Despite the small lumen of ampulla, round worm invasion is not uncommon because duodenum and upper jejunum are the natural habitat of the parasite. After invading the bile ducts round worms sometimes may cause biliary obstruction, biliary colic, pyogenic cholangitis and septicaemia.[4, 17] Worms may induce acute pancreatitis by blockingeither bile or pancreatic ducts. Worms in the common bile duct usually block the cystic duct opening and

cause distension of cystic duct and gall bladder, which lead to episodes of acute cholecystitis. However, worms in the bile and hepatic ducts may cause hepatic abscess.[1, 18] Though I didn't get any patient presented with hepatic abscess. Another mechanism of biliary obstruction is when fragments of adult worm or the ascaris ova serve as nidus for gallstone formation.[1] These worms have high glucoronidase activity which deconjugate bilirubin.[19] Thus, ascaris related biliary stones are usually of pigment type and bile stasis and ascending bacterial infection aided their formation.[9]

Biochemical profile showed similarity to the clinical presentations of the patients. In this study, total count of WBC was raised in 14 patients. Among them, one patient was severely ill and developed septic shock. Altered liver function found in a few number of patient. They had hyperbilirubinemia and raised liver enzymes. Clinically they presented with cholangitis and obstructive jaundice. Five patients had pancreatitis who also had raised serum amylase level. Analysis of biochemical and hematological investigations of biliary ascariasis in different studies disclose the facts that when single worm invade the common bile duct, the obstruction is partial. If adequate steps are taken in proper time, no secondary complication can ensue and thus maintaining the values within normal range. If more than one worm get room in CBD, obstruction is complete and complications supervene in a fast pace leading to elevated values of different associated biochemical markers.[20]

Abdominal ultrasonographic examination is the best tool for diagnosis in a suspicious patient. In a study where the diagnostic value of ultrasonography in ascariasis was investigated, ultrasonography was considered as an effective and reliable method in the diagnosis of hepatobiliary, enteric and pancreatic ascariasis.[21] The ultrasonic appearance of biliary ascariasis has been described in detail. Features include the presence of long echogenic structures- single or multiple, linear or curved structures with or without a central anechoic tube, mostly without an acoustic shadowing.[22] If the typical findings are not seen, choledocholithiasis may also be confused with biliary ascariasis, [23] especially since acoustic shadowing may not be seen in about 10% of common bile duct stones. [24, 25] About 80% of the worm found in the common bile duct and only 6% in the gall bladder in this study. Worm occupying in both extrahepatic and intrahepatic biliary tree was seen in 6% cases. We found more than 2/bolus worm in 10% cases only.

Conclusion

Ascaris lumbricoides infestation is responsible for significant number of morbidity and mortality in our country. It is more prevalent in rural females in reproductive age. Though upper abdominal pain is the most frequent manifestation, patient may also present with the features of complications. Ultrasonography is the most simple, rapid and non-invasive method for diagnosis and follow up of the patient of biliary ascariasis. Reinvasion of the biliary tree is common in endemic area. This study recommends that the risk of ascaris infestation can be prevented by improving sanitation, personal hygiene and keeping the intestines free of worm by taking effective antihelminthic therapy at regular interval which is very cheap and available.

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