

BILIARY ASCARIASIS: OVERALL PERSPECTIVE OF MANAGEMENT

Md Saiful Hoque^{1*} Tahmina Akther Chowdhury² Salauddin Mohammed Ali Haider³
Sabrina Akhter Qurashi⁴ Sabuj Kanti Nath⁴

Abstract

Background: One of the common cause of admission in surgical ward with acute abdomen in Asian subcontinent is Biliary Ascariasis. The causative agent, *Ascaris lumbricoides* is distributed throughout the tropics & subtropics & mostly present in developing country due to unhygienic livelihood. This study deals with management of Biliary Ascariasis demonstrating the effectiveness of only conservative management in acute condition.

Materials and methods : This was an analytical study where 47 patients diagnosed as a case of Biliary Ascariasis were observed & managed accordingly. Complete history, diagnostic tool, complication of Ascariasis & treatment modality were analysed.

Result: Here we documented 47 patients throughout the period October-2018 to September -2019 age limit is 13 yrs to 70 yrs. Out of which female patient was 78.72% where male was 21.27%. Among female patient 10.63% were pregnant at the time of presentation. 100% patient present with biliary colic, 57.44% had associated nausea & vomiting 38.99% patient present as a case of cholecystitis. Cholangitis developed was 8.5% patient, 8.5% had obstructive jaundices, 4.2% developed liver abscess, 6.38% pancreatitis, 10.63% got cholelithiasis & 8.51% develop cholelithiasis &/ or hepaticolithiasis. USG & CBC was advised for all patient as standard diagnostic tool. During conservative treatment endoscopy

was advised to all, only 63.82% was able to do this & successful extraction of worm was possible in 26.02%. 70% improved by conservative treatment & ERCP required in 10.63%. Surgery for exploring CBD was done in 1 patient (2.1%). 34.02% patient had H/O recurrent attack. 17.02% patient underwent previous endoscopic procedure & 8.51% ERCP procedure. Before discharge review USG found in 68.08% patient with evidence of clear CBD & then discharged with advice of taking Antihelminthic therapy in 2 months interval.

Conclusion: Maintenance of hygienic & regular anthelmintic therapy is all prevention of occurrence & complication. Only conservative management with or without minimal invasive endoscopic retrieval of worm is very much effective for improvement of symptoms.

Key words

Biliary Ascariasis; USG upper Abdomen; Conservative approach; Abdominal pain; Endoscopy Upper GIT; ERCP; Antihelminthic therapy.

Introduction

Bangladesh is an endemic zone of intestinal nematode, *Ascaris lumbricoides*. Due to their tendency to explore ducts & cavity they often invade the bile & pancreatic duct¹. So incidence of biliary Ascariasis is not infrequent. A significant portion of patients presenting with upper abdominal pain are finally diagnosed as a case of biliary ascariasis. Simple biliary colic to dramatic life threatening complication may follow the attack. Diagnosis by USG followed by early intervention for endoscopic &/or ERCP guided extraction of worm leads to rapid relief of pain, lesser the hospital stay, reduces the cost. Proper health education, maintenance of personal hygiene & taking Antihelminthic accordingly can prevent recurrence. Surgical intervention is required in complicated case. Our study deals with management of Biliary Ascariasis demonstrating the effectiveness of only conservative management in acute condition.

-
1. Associate Professor of Surgery
Chittagong Medical College, Chattogram.
 2. Assistant Professor of Pediatric Surgery
Chittagong Medical College, Chattogram.
 3. Assistant Professor of Gastroenterology
Chittagong Medical College, Chattogram.
 4. Assistant Registrar of Surgery
Chittagong Medical College Hospital, Chattogram.

***Correspondence:** Dr. Md Saiful Hoque
E-mail: saiful_surgery@yahoo.com
Cell : 01556 32 28 67

Submitted on : 18.12.2019

Accepted on : 20.01.2020

Materials and methods

This was analytical study. 47 patient during the period of October 2018 to September 2019 admitted in ward-27 (SU-III) of Chittagong Medical College Hospital were diagnosed as case of biliary ascariasis. All patient were diagnosed by non-invasive USG with evidence of living or dead Ascaris in CBD, hepatic duct or within liver. Routine full blood count, Serum amylase, LFT were done according to symptom by standard method. History of recurrence, previous endoscopy or ERCP, laparoscopic cholecystectomy, whether taking antihelminthic therapy & exploration of CBD was documented in case. Conservative treatment with I/V fluid, I/V antispasmodic, I/V antibiotic (If need) was started immediately after admission. If ascariasis was seen in CBD (Lower part) trial for endoscopic extraction advised to all patient. Then single dose of oral antihelminthic (Syrup Melphin) with laxative prescribed to all patient. In complicated case ERCP done in 5 patient & operation done for dead worm in CBD causing obstructive jaundice. Each patient was advised to take antihelminthic 2 months interval.

Results

Female predominant disease mostly found after the age of 30yrs & among female during the reproductive life.

Table I : Gender prevalence of Biliary ascariasis

Sex	Number of patients	Percent (%)
Male	10	21.27%
Female	37	78.72%

Disease is predominant in 2nd - 4th decade of life.

Unique feature of biliary ascariasis is sudden onset of colicky upper abdominal pain with nausea & vomiting in most cases. Clinical presentation listed below.

Table II : Common presentation of biliary ascariasis

C/F	Number of patients	Percent (%)
Pain	47	100%
Nausea &/or vomiting	27	57.44%
Fever	18	38.99%
Cholangitis	07	14.89%
Itching	02	4.2%
H/o vomiting worm	02	4.2%

Diagnostic investigation tool was USG of whole abdomen with special attention to Hepatobiliary and pancreatic region CBC show moderate rise of white cell count with eosinophilia in some patient. ALP was raised in 6 patients, serum amylase was raised in 33 patients.

Table III : Investigation done by suspected biliary ascariasis

Investigation	Number of patient done the test	Percent (%)
USG	47	100%
Endoscopy	30	63.82%
ERCP	5	10.63%
CBC	47	100%
S. Lipase	18	38.29%
S. Bilirubin	08	17.02%
Review USG	32	68.08%
SGPT & ALP	1	21.27%

History of recurrent attack due to Ascaris lumbricoides is seen in 16 patients & other complication is listed here (Mostly known from history).

Table IV : Common complication associated biliary ascariasis

Complication	Number of Patients	Percent (%)
H/O Recurrence	16	34.02%
Cholecystitis	5	10.63%
Pancreatitis	3	6.38%
Liver abscess	2	4.25%
Cholangitis	4	8.51%
Hapaticolithiasis&/or Choledocholithiasis	4	8.51%

Table V : Association of previous intervention with biliary ascariasis

N/O Intervention	Number of Patients	Percent (%)
Cholecystectomy	03	6.38%
Previous Endoscopy	08	17.02%
ERCP	04	8.51%
Exploration of CBD	02	4.25%

Most patient were admitted for 3 – 4 days & observed clinically with serial USG. Non Complicated cases were improved by only conservative treatment & endoscopy intervention up to surgery also needed as following ratio.

Table VI : Efficacy of deferent treatment protocol

Rx type	Number of Patients	Percent (%)
Only conservative	33	70%
Endoscopy retrieval of worm	8(30)	26.02%
ERCP procedure	5	10.63%
Exploration of CBD	01	2.1%

Discussion

Ascariasis lumbricoides is a nematodes & widely distributed throughout the world. Highly endemic region includes Indian subcontinent, Latin America, Fareast, Middle East partly & Africa. Throughout the world billion of people are infested with this large nematode².

Though usual habitat of *A. lumbricoides* is the small intestine it tends to migrate to other cavity or duct when worm load is high or infection of intestine by a variety of virus, bacteria or other types of parasites. During exploring it sometimes enter into the CBD through the duodenal papilla & produce colicky upper abdominal pain. Worm spontaneously return to intestine & sometimes they explore further to GB/ common bile duct/ & in liver & sometimes died in lumen & act as a nidus for stone formation³. Worm may block pancreatic flow & produce pancreatitis. Dead worm in the liver produce liver abscess.

We found 37 female patient out of total 47 patient which proves that it is a disease of adult woman⁴. Exact cause of female predominance is not clearly established but progesterone have role in smooth muscle relaxation which delay GB emptying & thus may cause relaxation of smooth muscle of sphincter oddi & entry of worm in biliary tree^{5,6}. This background somehow explain why

biliary ascariasis is common in pregnant lady. Here we found 5 patient of biliary ascariasis associate with pregnancy (10.63%).

Surprisingly male patient develops more serious complication of biliary ascariasis then female like liver abscess or stone formation leading to obstructive jaundice.

The most common presenting feature is pain in upper abdomen. Then we found nausea & vomiting (27) acute cholecystitis (18) cholangitis (07), obstructive jaundice (02) & passage of worm with vomiting (02). Non invasive, less expensive imaging

modality that is USG is the choice of investigation as it is effective & reliable method in diagnosis of hepatobiliary or pancreatic ascariasis. Various appearance of round worm in biliary tree & gallbladder in USG is described here⁷.

i) Inner Tube Sing: Thick echogenic stripe with a central anechoic tube in GB or CBD.

ii) Stripe Sing: None shadowing stripe without on inner tube within GB or CBD.

iii) Spaghetti Sing: Overlapping longitudinal interfaces in the main bile duct due to coiling of Single / several worm.

Sometimes choledocholithiasis is confused with biliary ascariasis since acousting shadows is not seen in 10% common bile duct stone⁸. We found one patient of this type during study period & multiple dead worm was extracted from CBD by surgery. USG is also helpful for F/U of patient after improvement of condition which show clear biliary tree.

Most of the cases are uncomplicated & improved by conservative approach that is keeping the patient nil per oral which leads of decrease the worm load & facilitates return of worm to intestine. Associated antibiotic antispasmodic & anthelmintic improves pts within 2-3 days. Our 70% patients improved by these measures.

Endoscopic extraction was advised when patient is in acute condition & worm is seen in the lower or mid zone of CBD⁹. Endoscopy done by 30 patients & out of which 8 patient's extraction was successful. Benefit of endoscopic extraction is it gives prompt relief of colic & patient can be discharged early with advice.

5 patient required ERCP procedure & 2 out of 5 patient has H/O recurrent ERCP procedure with sphincterotomy. Risk benefit ratio should be assessed before ERCP for its possible complication & chance of recurrence.

Serious complication like liver abscess, obstructive jaundice, hepaticolithiasis or choledocholithiasis require surgical intervention though here we seen the improvement of liver abscess pt (2) by conservative approach & only patient require choledochotomy for extraction of worm.

Limitation

- i) This is single centered study
- ii) Due to lack of funding and time constraint authors could not include large number of participants and participation from different hospital of the country could not be ensure.

Conclusion

Biliary ascariasis should be kept in mind as a differential diagnosis for biliary colic in endemic zone like Bangladesh. It may present as serious complication of biliary ascariasis. USG has dramatic accuracy in diagnosing this disease till now. Conservative approach is standard treatment option. Early detection, timely endoscopic intervention & judicious approach for ERCP can bring excellent outcome in patient with biliary ascariasis.

Recommendation

Regular deworming (Antihelminthic drug) at 2 months interval is essential to avoid complication related to Ascariasis (Especially Biliary Ascariasis). To make awareness about the Ascariasis and complication related to Ascariasis is the main target of the study.

Acknowledgment

The authors gratefully acknowledge to Dr. Ershad Uddin Ahmed Head of Gastroenterology & Professor (Dr.) Shubas Majumder Head of Radiology Imaging and All the trainees and interns in Department of Surgery, Unit-3 for their kind co-operation in designing the study.

Contribution of authors

MSH - Conception, design, acquisition of data, drafting and final approval.

TAC - Data analysis, interpretation of data, critical revision and final approval.

SMAH - Acquisition of data, drafting and final approval.

SAQ - Data analysis, critical revision and final approval.

SKN - Data analysis, drafting and final approval.

Disclosure

All the authors declared no competing interest.

References

1. Jun Wang, Yang-Lin Pan, Yan Xie, Kai-Chun Wu, Xue-Gang Guo. Biliary ascariasis in a bile duct stones-removed female patient. 2013 ;19(36):6122-6124.
2. Khan A, Bhasin S, Bhajat R, Chrungoo R. An Unusual Presentation of Biliary Ascariasis. JK Science Journal of Medical Education and Research. 2007;9:35-36
3. Rana S, Bhasin D, Nanda M, Sing K. Parasitic Infestations of the Biliary Tract. Current Gastroenterology Reports. 2007;9:156-124.
4. Filanker KS, Amarpukur AD, Joshi RM, Shetty TS, Khithani AS, Chemburkar VV. Hepatolithiasis with biliary ascariasis-A case report. BMC Gastroenterology. 2003;3:35.
5. Khuroo MS, Zargar SA. Biliary ascariasis: A common cause of biliary and pancreatic disease in an endemic area. Gastroenterology. 1985; 88: 418-423.
6. Fisher RS, Roberts GS, Grabowski CJ, Cohen S, Inhibition of lower oesophageal sphincter circular muscle by female sex hormones. Am J Physiol. 1978; 234.
7. Everson GT, McKinley C, Lawson M, Johnson M, Kern F Jr. Gallbladder function in human female : effect of the ovulatory cycle, pregnancy and contraceptive steroids. Gastroenterology. 1982; 82:711-719.
8. Khuroo MS, Zargar SA, Mhajan R, Bhat RL, Javid G. Sonographic appearance of biliary ascariasis. Gastroenterology. 1987;93:267-272.
9. Dewbury KC, Smith CL. The misdiagnosis of common bile duct stones with ultrasound. J Radiol. 1983;56:625-630.