
BILIARY ASCARIASIS: CAUSING RIGHT UPPER QUADRANT PAIN SONOGRAPHIC EVALUATION OF 60 PATIENS IN CENTER FOR NUCLEAR MEDICINE AND ULTRASOUND, RANGPUR: NORTHERN PART OF BANGLADESH.

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INTRODUCTION

Ascaris lumbricoides is the most frequent human helminthes parasite. Human ascariasis is rarely symptomatic but complications can arise due to worm migration. Erratic worm migration into the biliary tree is a rare but threatening condition with its potential to develop complications such as cholecystitis, Pancreatitis, obstruction of the bile ducts, liver abscesses and recurrent pyogenic Cholangitis.¹

The clinical features associated with biliary ascariasis including recurrent biliary colic, obstructive jaundice, pyogenic Cholangitis, vomiting of the roundworms, hepatomegaly, acalculous cholecystitis, and acute cholecystitis. Fragments of the adult worms or their ova may form a nidus for the development of biliary calculi.¹

Although plain radiograph, oral cholecystograms, intravenous cholecystograms, and ERCP have been advocated in the diagnosis, ultrasound has been shown to have high diagnostic accuracy in the diagnostic work-up of biliary ascariasis. Ultrasound is safe, non-invasive, accurate, rapid and cheap and in most instances, it is the only diagnostic modality required. Ascariasis may appear as thick, echoic strip containing a central, longitudinal, anechoic tube, probably representing the worm's digestive tract (inner tube sign). Often the worms are seen as one or more non-shadowing tube like structures that may be straight or coiled (strip sign), as seen in the present case. Aggregates of worms may have appearance like spaghetti (spaghetti sign).² The impacted worm sign is characteristic of biliary ascariasis and presents ultrasonically as long curvilinear, tubular non-shadowing structures with echolucent cores, in the distribution of intrahepatic biliary ducts.³ Sonography is valuable not only in the diagnosis of biliary ascariasis but in the follow-up of efficacy of its treatment.

CT and MRI appearances of biliary ascariasis has been described. Bull's eye and Eye-glass appearance are seen in transverse sections. On reformation of the transverse CT and Coronal MR images, the tubular ascaris is better depicted.⁴

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MATERIALS AND METHODS

Infestation with *Ascaris lumbricoides* is seen worldwide. Recently, there has been much interest in the pancreatic-biliary complications of *Ascaris* infection. In this study, we present our experience of 60 patients seen in Center for Nuclear Medicine and Ultrasound, Rangpur, a referral center. Among them 34 were male. Age ranging from 10 to 55 years. All the patients were referred from the Department of Surgery, Rangpur Medical College and Hospital, Rangpur and LAMB hospital Dinajpur, over a 1-yr period (September of 2001 to August of 2002). All of the patients came with a history of severe pain in the right upper abdomen, some of them had history of vomiting and rise of temperature.

IMAGING FINDINGS

A sagittal ultrasonographic (US) image of the porta hepatis showed a tubular, nonshadowing structure with a highly echogenic wall and a less echogenic center, within the slightly dilated common bile duct. Additional images better illustrated both the extent of the echogenic area, as it lay insinuated from the common hepatic bile duct to the head of the pancreas, and the tubular shape of the abnormality. The tubular structure is approximately 5 mm in diameter.

US readily depicts the worm in the bile ducts or gall bladder^{5,6} The diagnosis is established by means of microscopic identification of *Ascaris lumbricoides* eggs in fecal samples. An *Ascaris lumbricoides* worm occasionally is identified in stool or vomitus after antihelminthic therapy with albendazole.⁷

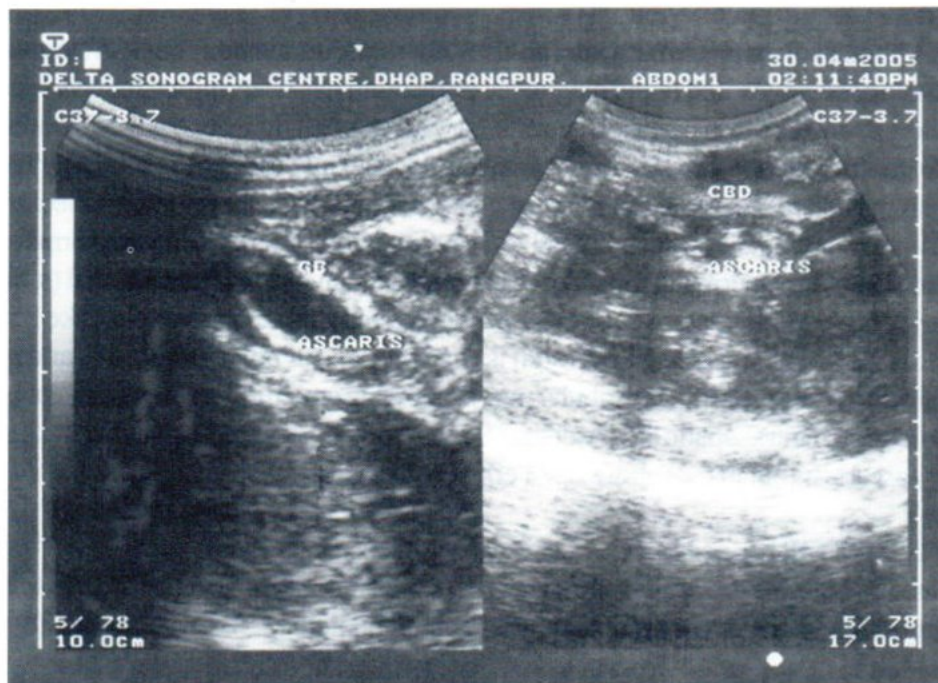


Fig. 1 Dead *Ascaris* in Gall bladder & CBD.

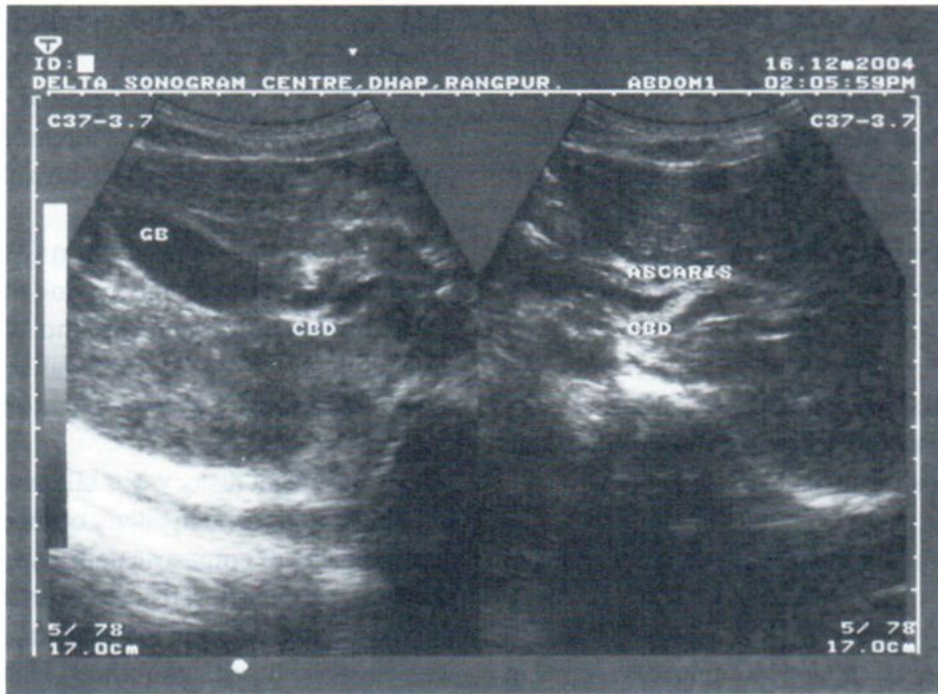


Fig. 2 Ascaris in CBD.

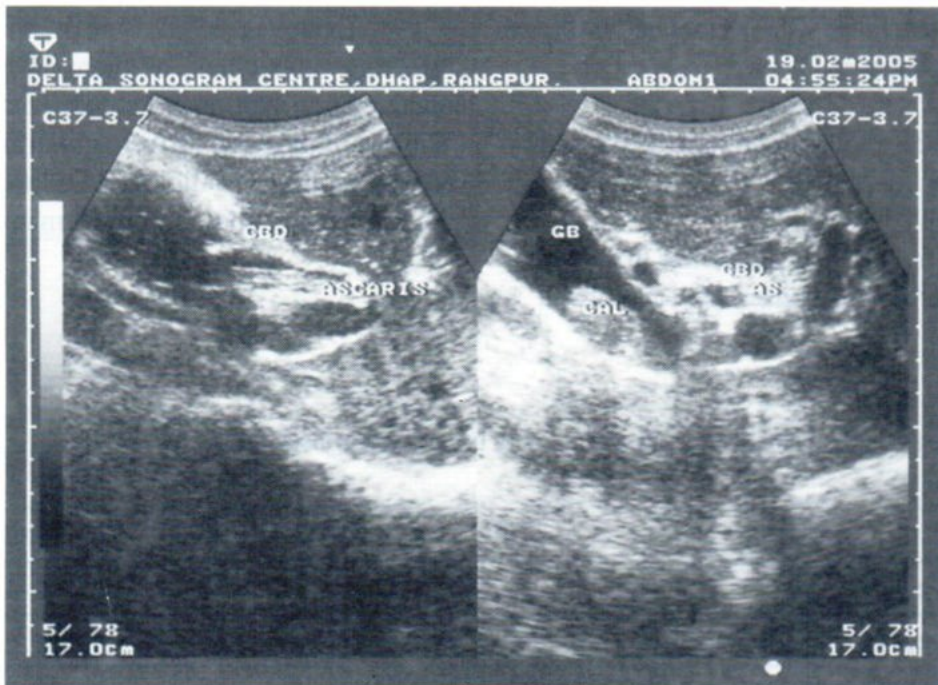


Fig. 3 Ascaris in CBD & Stone in GB.

RESULT

Among the sixty cases round worms were seen in the CBD in 47 mm. In ten cases worm was seen in the gall bladder and three cases in the dilated intra hepatic duct mainly the left. Worms found the gall bladder, four were alive and six were dead. In those in CBD only two 40 were alive and rest 07 were dead.

The distended gall bladder was found in 22 cases 6 of those showed features of cholecystitis. This six showed worm in gall bladder.

The rest of the patient had normal size, shape of gall bladder.

In 42 cases, common bile duct was normal in caliber. 12 had both intra and extra hepatic biliary dilatation.

In 8 cases, there were associated multiple stones in gall bladder.

These 8 cases diagnosed were confirmed by cholecystectomy.

Follow up scan was performed in the rest of the 52 cases after having conservative treatment.

Cholangitis were reported in 8 cases as described by thickening and increased echogenicity of the wall of biliary channels in irregular fashion.

Along with round worm in CBD, Pancreatitis was reported in two patients having scan evidence of broad hypoechoic pancreas and was confirmed biochemically. Round worm was reported in two female patients who were pregnant about 18 weeks.

Relevant history was taken in every patient showing round worm in biliary channels, There were acute episode of epigastric pain, dyspepsia, nausea, anorexia, pyrexia etc. History of passage of worm in the vomitus was present in 19 patients and 7 patients was presented with jaundice. History of taken antihelminthic drugs before the episode of pain were found in 6 patients.

Treatment records were documented from the referring physicians, of them 10 patients were operated and worms were taken out of the CBD. The rest of the patients were given antihelminthic, antispasmodic and antibiotics. Follow-up USG were done in 40 cases showing no worm in CBD by USG.

TABLE 1 Age and Sex Distribution of patients with biliary Ascariasis.

Age	Male	Female
10-20 years	08	12
21-30 years	06	09
31-40 years	05	05
41-55 years	07	08

TABLE 2 Biliary ascariasis and educational and socio-economic status of the patients;

Educational and socioeconomic Class	Male	Female
Illiterate and low socioeconomic Class	22	31
S.E.C. above/high socio-economic Class	02	05

S.E.C. = Socio-economic Class

TABLE 3 Result of treatment of patients and follow-up.

Mode of Treatment	Male	Female	Follow-up	
			Male	Female
Medical Treatment	16	34		
Surgery	03	07	21	34

DISCUSSION

Ascaris lumbricoides infects approximately 1 billion people worldwide.⁸ It is distributed throughout the tropics and subtropics and is also present in other humid regions such as the rural southeastern United States.⁹ Approximately 4 millions people in the United States are infected, many of whom are immigrants.¹⁰ Most cases occur where there is poor fecal sanitation.¹¹

The human infection life cycle begins by ingestion of an egg, with the larvae hatching in the small intestine. The larvae invade the small-bowel mucosa, migrate through the circulatory system to the lungs, invade the alveoli, ascend the tracheobronchial tree, and then are swallowed into the small intestine where they mature into adult worms.¹² Ascarids may reach 40 cm in length with a width of 3-6 mm.¹³ Intestinal infestation is often asymptomatic. Migration of worms into the biliary tree is a well-known complication, which may result in biliary colic, cholecystitis, Cholangitis, intrahepatic abscesses, or Pancreatitis. Followed, Cholelithiasis is the second most common cause of acute biliary symptoms, worldwide.¹⁴

The differential diagnosis for increased echogenicity within the common bile duct, either diffuse or focal, includes calculus, sludge, pus, thrombus, tumor, gas, foreign body, and parasites. Calculus or calculi are excluded in this case because the intraluminal echogenic region did not shadow and did not consist of one or multiple round or oval echogenic regions. Sludge, pus, and thrombus would not be expected to be so discretely tubular yet much smaller in cross-sectional area than the common duct and should also appear more amorphous, lacking the prominently echogenic wall demonstrated in this case. Bacterial infection is unlikely because the patient was afebrile and without leukocytosis.¹⁵

In US, *Ascaris lumbricoides* in the biliary ducts usually manifests as an echogenic tubular structure, compared with bile, and has a diameter of approximately 3-6 mm, a relatively hypoechoic center, and a more echogenic wall. It may exhibit slow movement. Ascarids typically lie parallel with the long axis of the bile duct.^{13,15} They may be coiled. If multiple, they may completely fill the bile duct,

producing either the "spaghetti sign",¹⁴ or if they are very densely packed in the bile ducts, they may appear amorphous and manifest as hyperechoic pseudotumors.¹⁶

This study reflects that, biliary ascariasis appears more common than it is anticipated. This study also depicts importance of exclusion of biliary ascariasis in patients with upper abdominal pain.

This study also support that biliary ascariasis is more common in illiterated and low socioeconomic group of population, may be due to ignorance and poor hygienic condition.

CONCLUSION

In contrast to our socioeconomic condition it is necessary to deworming routinely for prevention of biliary ascariasis and its complication, particularly in the low socioeconomic and illiterated population groups.

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