TMR
doi: 10.53388/ghr2021-12-041

CASE REPORT

Biliary ascariasis mimicking intra-abdominal TB – Can Endoscopic Ultrasound "unearth" the worm?

James Emmanuel[1]*, Nagaraj Sriram[1], Chiam Keng Hoong[1], Raman Muthukaruppan[1]

[1] Department of Gastroenterology and Hepatology, Queen Elizabeth Hospital, Kota Kinabalu, Sabah, Malaysia.

***Corresponding to**: James Emmanuel, Gastroenterology Fellow, Department of Gastroenterology and Hepatology, Queen Elizabeth Hospital, Kota Kinabalu, Sabah, Malaysia. Contact number : +6017-3251915. Email : sentulian83@gmail.com.

Abstract: Ascariasis remains a major burden of disease globally, with an estimated prevalence of 1 billion individuals being affected. Previous studies have highlighted a strong association and geographical overlap between worm infestation and TB infection. In these same studies, the occurrence of helminth-tuberculosis coinfection has been described and is postulated to be a result of immune modulation induced by both etiological organisms. An 81 year old male with history of laparoscopic cholecystectomy presented with acute pancreatitis and cholangitis. An abdominal Ultrasound was performed which excluded biliary dilatation and evidence of gall stones. Nevertheless, in view of a high index of suspicion of biliary obstruction, we proceeded with an Endoscopic Ultrasound (EUS) procedure which revealed multiple long, tubular, hyperechoic structures with an anechoic centre that spanned the entire length of the Common Bile Duct. The echogenic structures did not exhibit posterior acoustic shadowing and appeared mobile which was in keeping with biliary ascariasis. In addition, multiple large matted lymph nodes were observed at the periportal, hilar and -peripancreatic region. EUS-FNB of the biopsied hilar lymph node was in keeping with reactive lymphadenitis. Endoscopic Retrograde Cholangiopancreatography (ERCP) was subsequently performed and multiple linear imbricated, bile coated structures which was in keeping with macerated worms were trawled out from the CBD. Patient was given Albendazole therapy and repeat endoscopic evaluation revealed eradication of Ascariasis.

Key words: biliary ascariasis, tuberculosis, endoscopic ultrasound.

***Acknowledgments*:** Non funding was needed to complete this manuscript.

***Abbreviations*:** AST, aspartate aminotransferase; ALT, alanine aminotransferase; ALP, alkaline phosphatase; EUS, Endoscopic Ultrasound; ERCP, Endoscopic Retrograde Cholangiopancreatography.

***Authors' Contributions*:** James Emmanuel contributed to the idea, compilation, and other authors prepared the manuscript.

***Competing interests*:** Authors declare no Conflict of Interests for this article.

***Citation*:** James E, Nagaraj S, Chiam KH, et al. Biliary ascariasis mimicking intra-abdominal TB – Can Endoscopic Ultrasound "unearth" the worm? *Gastroenterol Hepatol Res*. 2021;3(4):19. doi: 10.53388/ghr2021-12-041.

***Executive Editor*:** Ming-Zhong Xiao.

***Submitted*:** 16 October 2021, ***Accepted*:** 12 November 2021, ***Published*:** 12 December 2021

TMR
doi: 10.53388/ghr2021-12-041

Introduction

Ascariasis remains a major burden of disease globally, with an estimated prevalence of 1 billion individuals being affected [1]. This helminth which parasitize the human intestine finds its roots in low income countries as a result of poor environmental sanitation and hygiene [2]. Previous studies have highlighted a strong association and geographical overlap between worm infestation and TB infection [2-3]. In these same studies, the occurrence of helminth-tuberculosis coinfection has been described and is postulated to be a result of immune modulation induced by both etiological organisms.

Case detail

An 81 year old male with history of laparoscopic cholecystectomy presented with epigastric pain and vomiting of 4 days duration. There was an associated weight loss of 5 kgs in the preceeding 3 months. Blood parameters were notable for deranged Liver Function Test with total bilirubin, 3.2 mg/dL; aspartate aminotransferase (AST), 75 U/L; alanine aminotransferase (ALT), 169 U/L, alkaline phosphatase (ALP), 400 U/ an. Amylase levels were elevated at 3393 U/L. The provisional diagnosis at this point was acute pancreatitis with cholangitis.

An abdominal Ultrasound was performed which excluded biliary dilatation and evidence of gall stones. Nevertheless, in view of a high index of suspicion of biliary obstruction owing to the clinical presentation and biochemical parameters, we proceeded with an Endoscopic Ultrasound (EUS) procedure (Olympus Linear Ultrasound Endoscope GF-UCT180). On endoscopic view there was a large, live white worm seen in the greater curvature. EUS imaging revealed multiple long, tubular, hyperechoic structures with an anechoic centre that spanned the entire length of the Common Bile Duct. (figure 1) The echogenic structures did not exhibit posterior acoustic shadowing and appeared mobile which was in keeping with biliary ascariasis. In addition, multiple large matted lymph nodes were observed at the periportal, hilar and peripancreatic region. There was minimal stranding noted in the pancreatic head and body which was in keeping with recent pancreatitis. No focal lesions of the pancreas were identified and the main pancreatic duct was not dilated. We performed an EUS-FNB (Endoscopic Ultrasound Fine Needle Biopsy) of the hilar lymph node using a 22G Olympus EZ Shot 3 Plus needle (OLYMPUS MEDICAL SYSTEMS CORP Ishikawa-cho, Tokyo, Japan).

Endoscopic Retrograde Cholangiopancreatography (ERCP) was subsequently performed and on advancing the duodenoscope another live worm was seen in the second part of the duodenum. A rat tooth forceps was used to retrieve the worm. (figure 2) After extraction of the worm, the ampulla was inspected and revealed a patulous papilla with surrounding erythema. We then performed a sphincterotomy. Cholangiogram demonstrated a dilated CBD with multiple linear filling defects within. (figure 3) This was followed by a balloon sweep using an extractor balloon. Multiple linear imbricated, bile coated structures which was in keeping with macerated worms were trawled out from the CBD. In view of the presentation with cholangitis , we proceeded with biliary stenting. The patient was given eradication therapy with Oral Albendazole and over the next few days he showed biochemical and clinical improvement. The histopathological examination of the biopsied hilar lymph node was in keeping with reactive lymphadenitis. In the subsequent clinic follow-up patient remained asymptomatic, and a repeat EUS and ERCP done 3 months after presentation, demonstrated lymph node regression with no residual biliary ascariasis.

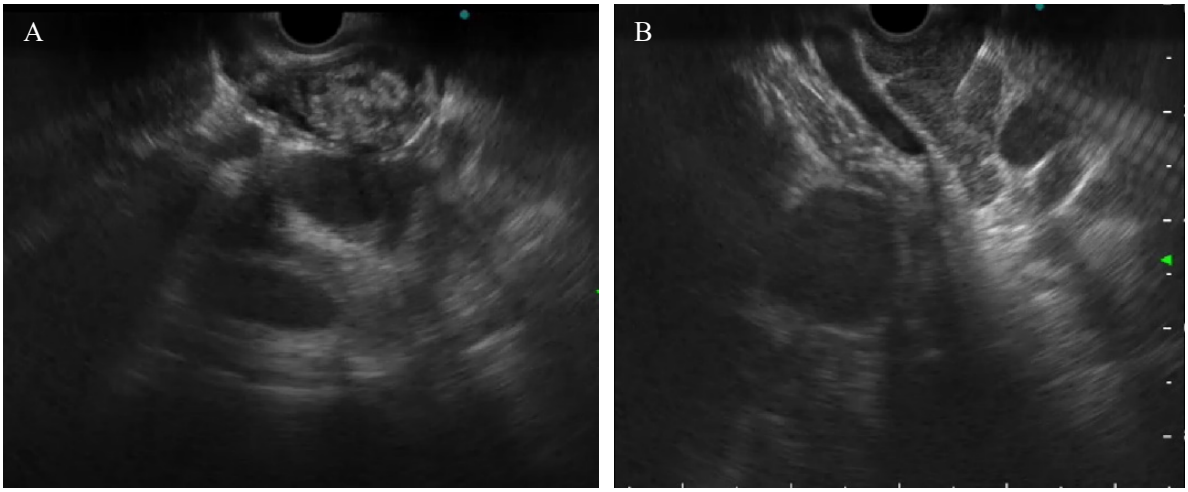

Figure 1. A. EUS imaging revealed tubular, hyperechoic structures with an anechoic centre; B. EUS FNB of a matted periportal lymph node.

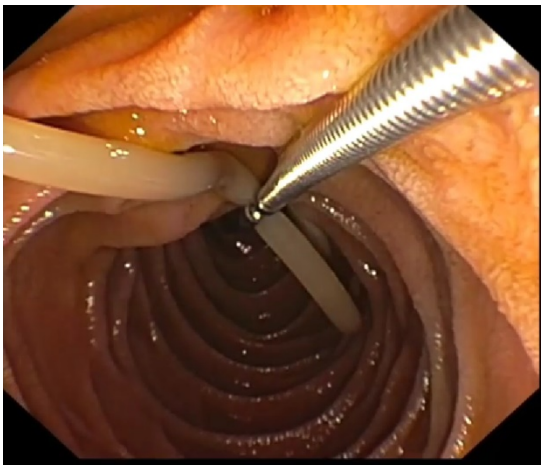

Figure 2. Retrieving the worm using a rat tooth forceps.

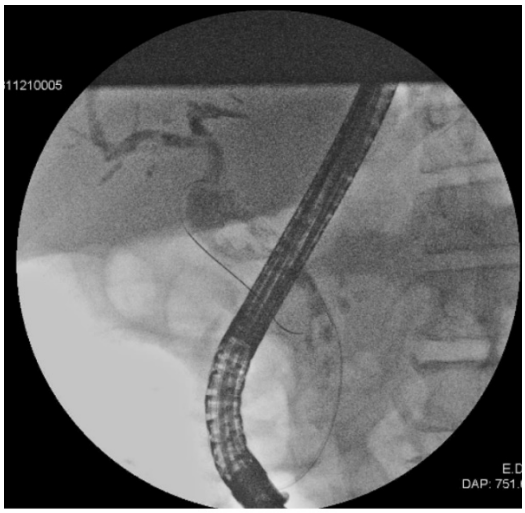

Figure 3. Cholangiogram revealed a dilated CBD with multiple linear filling defects within.

Discussion

The state of Sabah in East Malaysia bears a disproportionately large burden of Tuberculosis and geohelminth infection [4]. The former have imposed a severe burden of death in this state owing to topographic conditions that result in delayed presentation and diagnosis.

The clinical presentation of patients with ascariasis vary considerably, and is largely dependent on the worm burden and the location of the nematode. In addition, factors such as the migratory patterns of these parasites, also contribute to the heterogeneity in presentation as illustrated in our case where the patient had presented with acute pancreatitis and cholangitis [2].

The ability of helminths to impair TB antigen specific cellular responses has major implications as it increases a patients susceptibility to mycobacterial infections. The influence that these parasites exert on TB antigen reactivity, which is the basis of diagnostic tests in TB, diminishes its sensitivity thus giving rise to false negative results [2].

Despite the failure to identify biliary dilatation on imaging in our patient, it is noteworthy, that previous literature have reported a sensitivity of 86% in detection of biliary ascariasis with the abdominal ultrasound modality [5]. EUS which was performed due to a high index of suspicion of biliary obstruction demonstrated findings in keeping with biliary ascariasis. These characteristic findings on EUS were similar to previous case reports, where in we were able to appreciate linear echogenic structures with an anechoic centre that lacked an acoustic shadow [6-7]. However, our case is unique due to to contemporaneous observation of large matted intra-abdominal lymphnodes in the background of biliary ascariasis. Multiple, large, matted nodes, though not pathognomonic has been traditionally associated with tuberculous infection. The association of biliary ascariasis and lymphadenopathy have not been reported previously. Our EUS findings coupled with patients symptoms of weight loss and the endemicity of TB in our region had raised suspicion of intra-abdominal TB. Nevertheless, the histopathological findings and the regression of the nodes on repeat endoscopy, makes it conceivable that the abdominal lymphadenopathy was due to underlying biliary ascariasis.

Interestingly, in our patient, roundworms were also encountered in the stomach, which is a rare occurrence due to the “housekeeping” peristaltic activity and acidic nature of the stomach. Patient was given Albendazole therapy and repeat endoscopic evaluation revealed eradication of Ascariasis.

Conclusion

We report a case of a patient presenting with cholangitis and pancreatitis secondary to biliary ascariasis with incidental finding of multiple matted intra-abdominal lymph nodes. Endoscopic Ultrasound is an important tool to improve diagnostic accuracy in such cases as it demonstrates characteristic sonographic features and allows for tissue acquisition that aids in elucidating the diagnosis. To the best of our knowledge this is the first reported case of biliary ascariasis presenting with intra-abdominal lymphadenopathy.

References

1. Shah J, Shahidullah A. Ascaris lumbricoides: a startling discovery during screening colonoscopy. Case reports in gastroenterology. 2018;12(2):224-9.
2. Babu S, Nutman TB. Helminth-tuberculosis

doi: 10.53388/ghr2021-12-041

co-infection: an immunologic perspective. Trends in immunology. 2016;37(9):597-607.
3. Elias D, Mengistu G, Akuffo H, et al. Are intestinal helminths risk factors for developing active tuberculosis?. Tropical Medicine & International Health. 2006;11(4):551-8.
4. Lim-Leroy A, Chua TH. Prevalence and risk factors of geohelminthiasis among the rural village children in Kota Marudu, Sabah, Malaysia. PloS one. 2020;15(9):e0239680.
5. Khuroo MS, Zargar SA, Mahajan R. Hepatobiliary and pancreatic ascariasis in India. The Lancet. 1990;335(8704):1503-6.
6. Nabi Z, Lakhtakia S, Shava U, Devarasetty R, Reddy DN. Recurrent acute pancreatitis in a toddler: a “wormy surprise”. VideoGIE. 2018;3(9):266-7.
7. Somani P, Sharma M, Pathak A, et al. Endoscopic ultrasound of bile duct ascariasis (with video). Endoscopic ultrasound. 2017;6(3):208.