CASE SERIES

Ascaris induced acute pancreatitis in paediatric population — a case series

Mahrukh Afreen,[1] Hussain Mustafa,[2] Sajida Qureshi,[3] Javeria Afreen,[4] Ayaz Mansoor,[5] Nimra Shaikh[6]

Abstract

The most common helminthic parasitic infection inhabiting human intestine is Ascaris lumbricoides (AL). Being the largest of the helminthic family, it infects almost one billion people worldwide, but any information about local population is unavailable especially in children. When patients present with abdominal pain, having ascaris induced pancreatitis never meets the differential diagnosis list even though AL itself is highly prevalent in our part of the world. Infected patients can present with a variety of symptoms depending on the location of parasite. If the biliary tree is inhabited, patients usually present with symptoms of choledocholithiasis or pancreatitis. We report the case series of 3 patients from paediatric age group, having acute pancreatitis secondary to AL. Patients had upper abdominal pain of varying duration. Ultrasound abdomen showed worm inside the Common Bile Duct (CBD) in all 3 patients. Endoscopic retrograde cholangio-pancreatography (ERCP) showed worms coming out of the ampullary orifice. Two patients received albendazole orally post ERCP and were discharged after complete resolution of symptoms with advice of repeat ERCP after 6 weeks, however one patient was advised Magnetic resonance cholangio-pancreatography (MRCP).

Keywords: Ascaris lumbricoides, Endoscopic retrograde cholangio-pancreatography (ERCP), Magnetic resonance cholangio-pancreatography (MRCP), Pancreatitis, Choledocholithiasis.

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Introduction

The commonest parasite to infect human Gastrointestinal tract (GIT), in developing or tropical countries is Ascaris lumbricoides[1] also known as the round worm. Presenting complains of patients diagnosed to have helminthic parasitic infection, ranges from being asymptomatic (when the worm stays silently in hollow viscus lumen) to life threatening intestinal obstruction. It can present as acute cholecystitis, acute cholangitis, obstructive jaundice, or pancreatitis when inhabiting the gall bladder, biliary tract, CBD or pancreatic duct[2,6] respectively via migration into ampulla of Vater. Only a few reported cases are of AL migrating to pancreatic duct resulting in acute parasitic pancreatitis have been reported. We report here 3 paediatric group cases who came in with acute pancreatitis symptoms due to ascaris lumbricoides infestation of the gasrro-intestinal tract.

Case Series

Our first case was of a 12-year-old male with no known co-morbids (NKCM) presented in the Emergency Room (ER) of Shaheed Mohtarma Benazir Bhutto Institute of Trauma (SMBB- IT), Karachi, in August 2020, with complaints of colicky epigastric pain radiating towards the left shoulder, associated with occasional constipation, decreased appetite for the last 2 weeks and vomiting, which resolved by taking an anti-emetic. The patient belonged to a poor socio-economic status family, having access to unfiltered drinking water. On examination the child looked anaemic and dehydrated but was vitally stable. His abdomen was soft, mildly tender with guarding in epigastrium. There was no visceromegaly and gut sounds were audible.

Initial investigations showed TLC of 17700 / µL (4,500-11,000/ µL) with eosinophilia, amylase was 564U/L (40-140 U/L), and alkaline phosphatase (ALP) was 739IU/L (44-147 IU/L), rest of the laboratory parameters were unremarkable. Ultrasonography of abdomen showed echogenic foci in gall bladder, dilated CBD measuring 0.75 cm and immobile echogenic foci in the CBD suggesting dead worm in the gall bladder and CBD. With raised amylase and ALP, diagnosis of acute pancreatitis secondary to parasitic obstruction was made.

The patient was admitted and underwent ERCP which showed three worms coming out of ampullary orifice. Sphincterotomy and cannulation of CBD showed multiple elongated filling defects in CBD; 10-15 long worms resembling ascaris were removed using balloon sweep and grasper (as shown in figure). Stent was placed in CBD and good drainage flow was ensured. Worms were left in the second part of duodenum to be passed out in stool.

The patient was advised stool detailed report (DR) followed by repeat ERCP after 6 weeks, for stent removal. The patient was started on oral anti-helminthic and anti-spasmodic medications. He was allowed oral feeds as per

[1-3,5,6]Department of Surgery, Dr. Ruth K.M Pfau Civil Hospital, Karachi, [4]Final Year MBBS Student, Dow Medical College, Dow University of Health Sciences, Karachi, Pakistan.

Correspondence: Mahrukh Afreen. Email: mahrukh.afreen@gmail.com

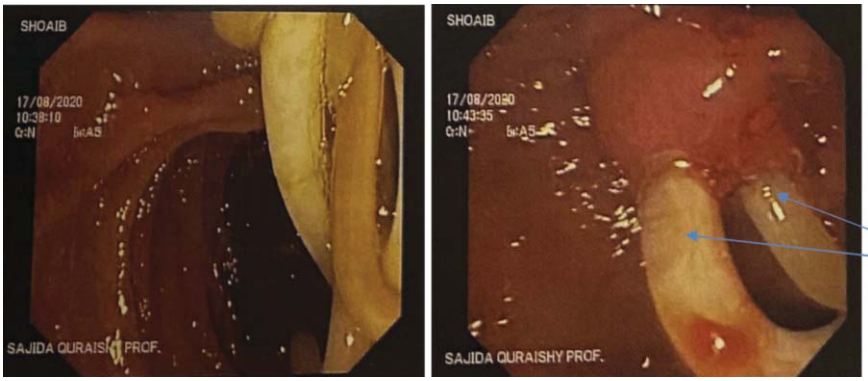

Figure: Ascaris coming out of the ampulla of the pancreatic duct. (Ascaris coming out of ampulla of Vater, [marked by arrows] in a 12-year-old male child during an ERCP).

tolerance and defecated multiple worms before being discharged.

Our second case was of an 8-year-old male with NKCM presented in the OPD of Surgical Unit 5, Dr. Ruth K. M. Pfau Civil Hospital Karachi, in May 2020, with complains of colicky upper abdominal pain radiating towards the back associated with vomiting. On examination the child looked dehydrated but was vitally stable. Abdominal examination showed soft, tender upper abdomen, no visceromegaly and audible gut sounds.

He had a TLC of 15500 / µL (4,500-11,000/ µL), amylase of 689U/L (40-140 U/L), ALP of 33U/L (44-147 IU/L) and total bilirubin of 4.52 mg/dl (0.1-1.2 mg/dl). Ultrasound abdomen showed worm in the gall bladder, pancreatic duct and CBD. Raised amylase, ALP and total bilirubin were suggestive of biliary pancreatitis secondary to parasitic infection.

The patient was admitted and underwent ERCP which showed multiple worms in the ampullary orifice. Cholangiogram showed dilated CBD with linear filling defects (ascaris worms). CBD was cleared with extraction and grasping forceps. No balloon sweep was done. The patient was advised oral anti-helminthic and analgesics. He was allowed oral feeds as per tolerance and had defecated multiple worms before being discharged.

Our third case was of a 5-year-old male with NKCM who presented in the OPD of Surgical Unit 5, Dr. Ruth K. M. Pfau Civil Hospital Karachi, in January 2021, with epigastric pain, associated with nausea and anorexia for one week. On examination the child looked anaemic and vitally stable. Abdominal examination showed tender abdomen throughout, no visceromegaly with audible gut sounds.

He had amylase of 496 U/L (40-140 U/L), ALP of 478 IU/L (44-147 IU/L) and total bilirubin of 4.19 mg/dl (0.1-1.2 mg/dl), ultrasonography showed possibility of worm infestation in extra hepatic biliary system and moderate intrahepatic duct dilatation. Diagnosis of biliary pancreatitis secondary to parasitic obstruction was made.

For ERCP, ampulla was accessed at Second part of the duodenum. Bulky ampulla with ulceration at the verge was noted. Motile worms were seen at the ampullary orifice. CBD cannulation was not achieved.

The patient was advised stool DR and MRCP with repeat ERCP in 6 weeks but was lost to follow-up.

Discussion

Ascaris lumbricoides is one of the most found helminthic parasite worldwide, with a propensity for tropical or subtropical regions.[1] It infects about 25% of the worlds population. The exact load in our local population is not available. An association of the parasitic infestation has been observed with poor personal hygiene and warm and moist climates.[3]

In humans Ascaris enters the GIT after ingestion of eggs within contaminated food sources. Eggs hatch into larvae, migrate to lungs via portal and systemic circulation after penetrating intestinal lymphatic and venous circulation. It then ruptures alveoli, ascend to pharynx, and are swallowed back into GIT where they grow into mature worms.[3]

Symptoms of the disease may vary according to the location of parasite infestation. The most common presentation is of biliary colic (56%), whereas hepatic abscess and haemobilia are rarely seen.[4] Luminal small intestinal disease tends to be asymptomatic.[5] Migration and invasion from duodenum to biliary and pancreatic duct may cause acute pancreatitis causing activation of pancreatic enzymes due to obstruction. Most of the symptoms resolve within 24 to 36 hours as the worm passes back into the duodenum but in a few cases, it may lead to cholangitis, secondary bacterial infection or even liver abscess or perforation of CBD. Patients may also present with bowel obstruction, cholecystitis, or duodenal perforation. Those with history of cholecystectomy seem more prone to migration of Ascaris lumbricoides into the biliary system.[6]

In the cases presented, the diagnosis was incidentally made during ultrasonography which is usually the first modality used for diagnosing worm infestation[6]. It is an ideal tool for diagnosis of Ascaris lumbricoides by

imaging.[7] There are no specific blood markers, however eosinophilia may be seen during the pulmonary stage of the disease.

ERCP is used for diagnosing and treating Ascaris lumbricoides infestation especially in the biliary duct.[6] First line treatment includes anti-helminthic agents combined with ERCP.[8] Pancreatic and biliary duct can also be visualized using MRCP. If ERCP is unsuccessful, laparoscopic choledochotomy or laparotomy (in complicated cases) can be performed.[7]

Conservative treatment includes oral albendazole and mebendazole and alternatively levamisole,[9] repeating stool sample 2 weeks following initiation of treatment for confirmation of eradication of worm. But the oral treatment should be started after worms pass into the duodenum or are retrieved during ERCP as anti-helminthic therapy will result in death of the worm in the biliary channel causing further complications.

The present anti-helminthic drug (Albendazole) is effective against all stages of Ascaris lumbricoides, hence patients are advised stool reports after 2-3 months.[9] In the presented cases since ERCP was successful hence stool DR was negative.

Conclusion

Regular practice in the past to treat acute biliary pancreatitis secondary to worms was surgical but ERCP with sphincterotomy has showed promising results, which can be seen from our case series result as well. Mortality and morbidity of acute biliary pancreatitis secondary to worm infestation has been reduced with early ERCP intervention.

Disclaimers: Informed written consent for publishing the cases, was taken from the parents or guardian of all 3 patients included in the study.

Conflict of Interest: None.

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