CASE SERIES

ASCARIASIS PRESENTING AS ACUTE ABDOMEN DURING PREGNANCY AND PUERPERIUM

Avantika Gupta, Asmita Muthal Rathore and Usha Manaktala

Maulana Azad Medical College and Lok Nayak Hospital, Bahadur Shah Zafar Marg, New Delhi, India

Abstract. Ascariasis can have various clinical presentations. We present three cases of ascariasis in pregnant or postpartum women, presenting with acute abdomen. The diagnosis of ascariasis was made clinically with the passage of ascaris worms in the vomitus or stool and was supported by ultrasonography. All three patients were treated successfully using anthelmintics. One patient underwent exploratory laparotomy.

Keywords : biliary ascariasis, pancreatitis, pregnancy

INTRODUCTION

Ascaris lumbricoides is widely distributed in tropical and subtropical regions where there is insufficient sanitation, hygiene or education. If the worm remains in the bile duct and gall bladder, acute and chronic complications can occur, like cholangitis, strictures, calculi, cholecystitis and pancreatitis (Louw, 1966). Worldwide ascariasis is second to gall stones as a cause of acute biliary symptoms (Osman *et al*, 1998). The incidence of acute pancreatitis during pregnancy is reported to vary from 1 in 3,799 to 1 in 11,467 cases (Walker and Diddle, 1969). Women are more likely to develop ascaris pancreatitis because progesterone plays a role in inducing Oddi's sphincter to relax, allowing the nematode access to the biliary duct (Misra and Dwivedi, 2000). Sonography has been shown to have a high diagnostic accuracy as a noninvasive procedure in the diagnosis of biliary ascariasis (Schulman *et al*, 1982; Hoffman *et al*, 1997; Ferreya and Cerri, 1998; Misra and Dwivedi, 2000). Initial conservative treatment is advocated for hepatopancreatic ascariasis *(*Dragonetti *et al*, 1996; Tenner and Banks, 1997; Mukhopadhyay *et al*, 2001). Diagnosis of roundworm obstruction is usually based on history and clinical symptoms and is supported by radiological studies. Surgery is reserved for those who fail to respond to conservative management (Louw, 1966; Khuroo *et al*, 1992). We report a case series of ascariasis in pregnant or postpartum women presenting with acute abdomen.

Correspondence: Dr Avantika Gupta, House No. 93,94 Pocket-2, Sector 22 Rohini, Delhi – 110086, India.
Tel: 098 1842 7823
E-mail: dravantikagupta@gmail.com

CASE SERIES

Case 1

A 19 year old primigravida was admitted to the hospital at 29 weeks gestation with severe epigastric pain radiating to the back, constipation and expulsion of worms in the vomitus for two days prior to

the admission. The worms were confirmed to be *Ascaris lumbricoides* on examination. At the time of admission, the patient was conscious, had a pulse rate of 100 per minute, a blood pressure of 120/80 mmHg, a temperature of 37ºC and a respiratory rate of 24 per minute. The abdomen was distended and bowel sounds were absent. The uterus was normal in contour and the fetal heart tones were present. There was mild epigastric tenderness without guarding or rebound tenderness.

Laboratory tests showed leukocytosis (16,900/μl), a C-reactive protein of 22.0 mg/l (reference 0-10 mg/l), a serum amylase of 200 IU/l (reference 28-100 IU/l), a serum calcium of 9.1 mg% (reference 8.5-9.5 mg%) and serum creatinine of 1.6 mg% (reference 0.5-1.0 mg%). The oxygen saturation was 92%. The serum triglyceride and blood glucose levels were within the normal limits.

Abdominal ultrasonography showed distended bowel loops with multiple long, linear echogenic strips without acoustic shadowing in the epigastric region. The gall bladder was normal in size and echotexture with no calculi seen in the lumen. The pancreas was obscured by bowel gas. A chest x-ray showed basal atelactasis on the right side. Patient was managed conservatively and was given corticosteroid for fetal lung maturity. She was kept nil per oral and intravenous hydration was given. The patient failed to respond to conservative treatment by 24 hours and an emergency exploratory laparotomy was performed. Intraoperative findings suggested acute pancreatitis since the pancreas was edematous and the omentum showed fat necrosis. The abdomen was closed with placement of a peripancreatic drain.

A final diagnosis of acute pancreatitis due to *Ascaris lumbricoides* was made on the basis of pancreatic symptoms, passage of *Ascaris* worms in the vomitus, elevated amylase levels, radiological presence of worms, absence of any other apparent cause such as gallstones, hypertryglyceridemia or alcoholism, the presence of intraoperative findings and the omental biopsy confirming fat necrosis.

The postoperative period was uneventful. The patient was given albendazole therapy and followed up with a stool examination. Repeat ultrasonography of the abdomen revealed no evidence of intestinal worms.

The patient presented at 35 weeks period of gestation with preterm premature rupture of membranes and delivered a healthy child.

Case 2

A 24 year old female patient underwent an emergency cesarean section surgery at 38 weeks. The immediate postoperative period was uneventful. Patient was able to eat well by the third postoperative day. On the fifth postoperative day, the patient developed abdominal distension, pain and constipation. The incision line was normal appearing and bowel sounds were absent. An upright and supine abdominal x-ray showed gaseous distension. Ultrasonographic findings showed no free fluid collection in the abdomen but multiple linear echogenic shadows suggestive of worms were present. The patient was kept nil per oral and intravenous fluids were given as a part of conservative management. A Ryle's tube was inserted and a flatus tube was passed to relieve the distension. Her blood investigations, including serum electrolytes, were within normal limits. The Ryle's tube was set to suction every four hourly. Two to three *Ascaris lumbricoides* worms 10 cm long were obtained in the Ryle's

tube aspirate. Patient was managed conservatively for 48 hours and given albendazole therapy. Her abdominal distension resolved and she recovered completely by 48 hours. Patient was followed up by stool examination for parasites.

Case 3

A 25 year old female (para 3) was admitted on the third postpartum day after vaginal delivery with complaints of abdominal distension and constipation for one day. She had a history of pica one year before. On admission she had a pulse rate of 90 per minute, a blood pressure of 110/70 mmHg and a respiratory rate of 34 per minute. Her abdomen was distended and bowel sounds were absent. Laboratory examination showed eosinophilia with an absolute eosinophil count of 600/mm^3 (normal upto 350/mm^3). An x-ray of the abdomen showed gaseous distension and multiple air fluid levels. An ultrasound of the abdomen revealed intestinal distension with multiple echogenic strips suggestive of worms. The patient was managed conservatively with albendazole therapy and responded well.

DISCUSSION

Biliary ascariasis is due to intestinal ascariasis. Worm enters the bile duct in the presence of heavy duodenal infestation. The secretions from the worms and toxic decompenzation products of disintegrating worms are capable of provoking a severe inflammatory reaction in the bowel and bile ducts (Louw, 1966). Biliary ascariasis is suggested by biliary colic with vomiting of worms (Chang and Han, 1996). If conservative treatment fails or if the patient is acutely ill, endoscopic retrograde cholangiopancreatography (ERCP) may be carried out to retrieve the worms.

Ultrasonography of the abdomen has been advocated as a quick, safe, non-invasive and relatively inexpensive modality for suspected intestinal or biliary ascariasis (Schulman *et al*, 1982). The diagnosis is usually made by abdominal ultrasonography, revealing biliary duct dilation and the presence of the parasite, a hypoechoic linear structure with a hypoechogenic line inside, which is sometimes mobile (Hoffman *et al*, 1997; Ferreya and Cerri, 1998).

In the first case reported here, the diagnosis of acute pancreatitis due to *Ascaris lumbricoides* was based on the detection of worms in the biliary tract by ultrasonography, and by the presence of severe upper abdominal pain and tenderness and an elevated serum amylase level without another apparent cause, such as gallstones, alcoholism, hypertriglyceridemia or hypercalcemia (Chen and Li, 1994). A diagnostic ERCP is associated with risk of radiation, perforation and pancreatitis whereas ultrasonography and magnetic resonance cholangiopancreatography are safer. Although pancreatitis is most often acute and related to gallstones, nonbiliary causes should be sought because they are associated with worse outcomes (Eddy *et al*, 2008).

Most attacks of pancreatitis in pregnancy are mild. A severe attack of pancreatitis is associated with high maternal and fetal mortality at 60% and 21%, respectively (Chen *et al*, 1995). Preterm labor and preeclampsia may occur in a pregnancy complicated by acute pancreatitis (Montgomery and Miller, 1970).

The treatment of hepatopancreatic ascariasis is initial conservative therapy, including bowel rest, intravenous fluids, analgesics and antibiotics, followed by mebendazole once acute symptoms subside (Dragonetti *et al*, 1996; Tenner and Banks, 1997; Mukhopadhyay *et al*, 2001). In these cases, endoscopic intervention is

reserved for patients who fail conservative therapy or have worms in the ducts after three weeks of observation (Khuroo *et al*, 1993). Laparotomy should be performed if the patients fail to respond to conservative therapy or there is an evidence of infection around the pancreas or dead worms remain within the biliary tree (Khuroo *et al*, 1992).

A diagnosis of roundworm intestinal obstruction was made in latter two cases reported here based on the symptoms and was supported by radiological studies. Ultrasonography may reveal a mass of worms causing obstruction. The most common mechanism of obstruction is occlusion of the intestinal lumen by worms, the most common site being the distal ileum (Waller and Biemann, 1970). The third patient reported here had tachypnea, which may be explained by passage of the worms through the lungs. Conservative management of partial worm obstruction is advocated in many studies and includes intravenous fluid administration, nasogastric suction and enemas (Dragonetti *et al*, 1996; Tenner and Banks, 1997; Mukhopadhyay *et al*, 2001). In patients treated conservatively, strict vigilance must be maintained for any developing complications and surgery must be considered if the symptoms do not improve or they worsen within 24 hours.

REFERENCES

Chang GO, Han CT. Biliary ascariasis in childhood. *Chin Med J* 1996; 85: 167-71.

Chen CP, Wang KG, Su TH, Yang YC. Acute pancreatitis in pregnancy. *Acta Obstet Gynecol Scand* 1995; 74: 607-10.

Chen D, Li X. Forty-two patients with acute ascaris pancreatitis in China. *J Gastroenterol* 1994; 29: 676-8.

Dragonetti GC, Licht H, Rubin W. Pancreatitis : Evaluation and treatment. *Prim Care* 1996; 23: 525-34.

Eddy JJ, Gideosen MD, Song JY, Grobman WA, O'Halloran. Pancreatitis in pregnancy. *Obstet Gynecol* 2008; 112: 1075-81.

Ferreyra NP, Cerri GG. Ascariasis of the alimentary tract, liver, pancreas and biliary system- its diagnosis by ultrasonography. *Hepatogastroenterology* 1998; 45: 932-7.

Hoffmann H, Kawooya M, Esterre P, *et al*. In vivo and in vitro studies of the sonographic detection of *Ascaris lumbricoides*. *Pediatr Radiol* 1997; 27: 226-9.

Khuroo MS, Zargar SA, Yattoo CN, *et al*. Ascaris induced acute pancreatitis. *Br J Surg* 1992; 79: 1335-8.

Khuroo MS, Zargar SA, Yattoo CN, *et al*. Worm extraction and biliary drainage in hepatobiliary and pancreatitic ascariasis. *Gastrointest Endoscop* 1993; 39: 680-5.

Louw JH. Abdominal complications of *Ascaris lumbricoides* infestation in children. *Br J Surg* 1966; 53: 510-21.

Misra SP, Dwivedi M. Clinical features and management of biliary ascariasis in a non-endemic area. *Postgrad Med J* 2000; 76: 29-32.

Montgomery WH, Miller FC. Pancreatitis and pregnancy. *Obstet Gynecol* 1970; 35: 658-64.

Mukhopadhyay B, Saha S, Maiti S, *et al*. Clinical appraisal of *Ascaris lumbricoides* with special reference to surgical complications. *Pediatr Surg Int* 2001; 17: 403-5.

Osman M, Lasten SB, Taleet ES, *et al*. Biliary parasites. *Dig Surg* 1998; 15: 287-96.

Schulman A, Loxton AJ, Hegdenrych JJ, Abdulrahaman KE. Sonographic diagnosis of biliary ascariasis. *Am J Roentgenol* 1982; 139: 485-9.

Tenner S, Banks PA. Acute pancreatitis : non surgical management. *World J Surg* 1997; 21: 143-8.

Walker BE, Diddle AW. Acute pancreatitis in gynecologic and obstetric practice. *Am J Obstet Gynecol* 1969; 105: 206-11.

Waller CE, Biemann OH. Ascariasis : surgical complications in children. *Am J Surg* 1970; 120: 50-4.