

CASE REPORT

A Complex Case of Acute Peptic Ulcer Perforation with Ascariasis: A Multifaceted Challenge in Surgical Management

Dr. Bibek Chakrabarty

Specialist, General Surgery, Lifecare Hospital, Musaffah, Abu Dhabi, UAE

Corresponding author

Dr. Bibek Chakrabarty

Specialist, General Surgery, Lifecare Hospital, Musaffah, Abu Dhabi, UAE

Email: drbibek@gmail.com

Received: 11 October, 2023 Accepted: 13 November, 2023

ABSTRACT

This case study presents the complex clinical scenario of a 26-year-old Bangladeshi male who initially presented with epigastric and umbilical pain, ultimately leading to the diagnosis of acute peptic ulcer perforation with concurrent ascariasis. The patient's clinical course, from the initial presentation with abdominal pain to the unexpected intraoperative discovery of liver roundworms emerging from a duodenal perforation, highlights the intricate diagnostic challenges and therapeutic intricacies encountered in managing dual pathologies.

The discussion explores the epidemiology, pathophysiology, and clinical manifestations of acute peptic ulcer perforation and ascariasis individually, emphasizing the diagnostic complexities when these conditions coexist. Additionally, the multidisciplinary approach employed in the surgical management of the patient is dissected, shedding light on the need for a comprehensive strategy when faced with such unique clinical presentations.

This case study contributes to the medical literature by unraveling the mysteries surrounding the simultaneous occurrence of acute peptic ulcer perforation and ascariasis. It

underscores the importance of heightened clinical suspicion, thorough diagnostic evaluation, and a collaborative, multidisciplinary approach to navigate the intricate landscape of abdominal pathology.

Keywords: Acute Peptic Ulcer Perforation, Ascariasis, Abdominal Pain, Multidisciplinary Approach, Surgical Management

INTRODUCTION

Abdominal pain, a ubiquitous symptom encountered in medical practice, often serves as the gateway to a diagnostic odyssey. Amid the myriad of potential etiologies, the coexistence of acute peptic ulcer perforation and ascariasis presents a captivating and clinically challenging scenario. This introduction delves into the individual entities, exploring the epidemiology, pathophysiology, clinical manifestations, and diagnostic nuances of acute peptic ulcer perforation and ascariasis [1-5].

Acute Peptic Ulcer Perforation: Peptic ulcer disease (PUD) remains a significant global health concern, characterized by the erosion of the gastrointestinal mucosa leading to ulcer formation. The most common locations for peptic ulcers are the stomach and the duodenum. Despite advancements in medical therapy, peptic ulcer perforation continues to be a formi

dable complication, often necessitating emergent surgical intervention.

The pathophysiology of peptic ulcer perforation is rooted in the imbalance between aggressive factors, such as gastric acid and pepsin, and the defensive mechanisms of the gastric and duodenal mucosa. Contributing factors include infection with *Helicobacter pylori*, prolonged use of non-steroidal anti-inflammatory drugs (NSAIDs), and lifestyle factors like smoking. The perforation occurs when the ulcer penetrates through the serosal layer, leading to spillage of gastric and duodenal contents into the peritoneal cavity [6-10].

Clinically, patients with peptic ulcer perforation typically present with sudden and severe abdominal pain, often radiating to the back or shoulder. Abdominal guarding and rigidity, along with signs of peritonitis, may manifest. Early diagnosis is crucial, as delayed intervention increases the risk of morbidity and mortality.

Ascariasis: Ascariasis, caused by the nematode *Ascaris lumbricoides*, remains one of the most prevalent helminthic infections globally. With over one billion people affected, ascariasis primarily affects populations in areas with poor sanitation and limited access to clean water. The life cycle involves the ingestion of *Ascaris* eggs, which hatch into larvae in the small intestine, leading to systemic migration and eventual maturation into adult worms.

The clinical manifestations of ascariasis vary depending on the worm burden and the host's immune response. In many cases, infection is asymptomatic, but heavy infestations can result in complications such as intestinal obstruction, biliary ascariasis, or migration into other organs. The presence of adult worms in the small intestine can lead to abdominal discomfort, bloating, and, in severe cases, nutritional deficiencies [7-11].

Diagnostic Challenges: The diagnostic landscape of these entities is marked by challenges, often necessitating a combination of clinical acumen, imaging studies, and, in some cases, invasive procedures. Acute peptic ulcer perforation may be initially misdiagnosed as other acute abdominal conditions, underlining the importance of a high index of suspicion. Imaging modalities such as abdominal X-rays and computed tomography (CT) scans play a crucial role in confirming the diagnosis [1, 8, 10, 11].

Ascariasis, on the other hand, presents a diagnostic conundrum, with manifestations often mimicking other gastrointestinal disorders. Stool examinations for ova and parasites are the mainstay for diagnosis, but limitations in sensitivity can pose challenges. Imaging techniques, such as ultrasound or endoscopy, may be employed for a more definitive diagnosis.

The simultaneous occurrence of acute peptic ulcer perforation and ascariasis is a rare and intriguing clinical phenomenon. The complex interplay between these two entities adds layers of intricacy to the diagnostic and therapeutic aspects of patient care. As we navigate the clinical landscape, understanding the nuances of each condition is imperative for timely and effective management. This case report aims to unravel the mystery surrounding the coexistence of acute peptic ulcer perforation and ascariasis, providing insights into the challenges faced by healthcare professionals in deciphering this complex clinical puzzle.

CASE PRESENTATION

Patient Information: A 26-year-old Bangladeshi male presented to the emergency department on December 5, 2010, with a chief complaint of epigastric and umbilical pain persisting for four days. His medical history revealed a prior episode of jaundice six years ago, successfully treated in Bangladesh. The patient, a chronic smoker for the past 15 years (5-6 cigarettes/day), had been married for one year and was the father of a newborn.

Clinical Presentation: Upon initial evaluation, Mr. X exhibited mild to moderate epigastric and umbilical tenderness. Vitals were within normal limits, and systemic examination was unremarkable. Laboratory investigations indicated a Total Leukocyte Count (TLC) of 18,160 with 86.7% neutrophils and an Erythrocyte Sedimentation Rate (ESR) of 25. Radiological studies, including X-ray abdomen (erect) and ultrasound of the whole abdomen,

showed no abnormalities. The provisional diagnosis of acute gastritis was established, and the patient was discharged with symptomatic treatment.

Subsequent Presentation: On December 8, 2010, the subject returned to the Emergency Department (ED) with escalating symptoms. Excruciating generalized abdominal pain, upper abdominal distension since December 6, persistent vomiting after attempts to eat or drink, decreased oral intake, and non-passage of stool since December 5 were reported. Physical examination revealed upper abdominal distension with resonance, generalized guarding, and rigidity. Peristalsis was notably absent.

Clinical Findings: Vitals at this presentation showed a temperature of 37.3°C, pulse rate of 92/min, and blood pressure of 106/70 mmHg. Laboratory investigations revealed a significant rise in TLC to 33,090, with 90.9% neutrophils and an ESR of 45. Electrolyte imbalance was noted with sodium (Na) levels at 125 and chloride (Cl) at 90. Liver function tests showed a slight elevation in serum bilirubin (S.Bil) at 1.55, with other parameters within normal limits. Radiological studies, including X-ray abdomen (erect) and ultrasound, displayed gas under both domes of the diaphragm suggestive of pneumoperitoneum and a gross amount of free fluid in the peritoneal cavity with paralytic ileus.

Diagnosis: The provisional diagnoses included acute peptic ulcer perforation and acute generalized peritonitis. Initial management comprised nil by mouth, nasogastric aspiration, constant vitals monitoring, intravenous fluids, and broad-spectrum antibiotics.

Per-Operative Findings: Upon surgical exploration, a midline incision revealed the drainage of 1 liter of bile and pus mixed fluid. The small intestine displayed gross distension with adhesions, necessitating adhesiolysis and antegrade decompression. Further exploration after decompression revealed liver roundworms emerging from a duodenal perforation which was a very unique per-operative finding. The perforation was identified, repaired, and a thorough examination of the stomach and intestine for residual worms was undertaken. Copious lavage of the peritoneal cavity was done and closure was achieved with drains in situ.

Final Diagnoses: The culmination of clinical, laboratory, and surgical findings confirmed the triad of diagnoses: acute peptic ulcer perforation, acute generalized peritonitis, and ascariasis.



Figure 1: clinical findings [intra-operative and extracted parasite]

DISCUSSION

The coexistence of acute peptic ulcer perforation and ascariasis in the presented case underscores the intricate nature of abdominal pathology, presenting both diagnostic and therapeutic challenges. This discussion delves into the key aspects of these conditions, their unusual combination, and the multifaceted approach required for successful management.

Acute Peptic Ulcer Perforation: Acute peptic ulcer perforation is a severe and potentially life-threatening complication of peptic ulcer disease, marked by the breach of the mucosal barrier, leading to the spillage of gastric or duodenal contents into the peritoneal cavity. This condition requires prompt recognition and emergent surgical intervention to mitigate the risk of morbidity and mortality [1,6,8].

In the presented case, the patient initially manifested with epigastric and umbilical pain, a classic symptomatology associated with peptic ulcers. However, the clinical course took an unexpected turn with the reappearance of severe abdominal pain, upper abdominal distension, and vomiting, prompting a reassessment of the diagnosis. The subsequent radiological findings, including gas under both domes of the diaphragm and free fluid in the peritoneal cavity, substantiated the diagnosis of acute peptic ulcer perforation.

The intraoperative discovery of a live roundworm emerging from the duodenal perforation added a layer of complexity to the case. While peptic ulcer perforation typically results from erosion of the mucosa due to acid-pepsin imbalances, the presence of a parasitic infestation concurrently highlights the diverse etiologies that may contribute to gastrointestinal pathology [4-8].

Ascariasis: Ascariasis, caused by the intestinal nematode *Ascaris lumbricoides*, is a prevalent helminthic infection in regions with poor sanitation and limited access to clean water. The presentation of ascariasis varies widely, from asymptomatic cases to severe complications such as intestinal obstruction or migration into other organs.

In the presented case, the diagnosis of ascariasis became evident during surgical exploration when liver roundworms were identified emerging from the duodenal perforation. This unexpected finding underscores the importance of considering parasitic infestations as potential contributors to abdominal pathology, particularly in regions endemic for such infections.

Diagnostic Challenges and Multifaceted Approach: The diagnostic challenges in this case were multifaceted. The initial presentation with epigastric and umbilical pain, along with vomiting, led to the provisional diagnosis of acute gastritis. The recurrence of symptoms with signs of peritonitis necessitated a broader differential diagnosis, ultimately culminating in the provisional diagnoses of acute peptic ulcer perforation and acute generalized peritonitis [4,9,10].

Laboratory investigations played a crucial role in supporting the clinical suspicion, with elevated TLC, neutrophil percentage, and ESR indicating an inflammatory process. Radiological studies, including X-ray abdomen and ultrasound, provided valuable insights into the presence of pneumoperitoneum, paralytic ileus, and free fluid in the peritoneal cavity. The unexpected finding of ascariasis during surgery highlighted the significance of thorough exploration, particularly in cases with atypical presentations or evolving symptoms. The surgical team, faced with the simultaneous challenges of peptic ulcer perforation and parasitic infestation, executed a meticulous approach. Adhesiolysis, antegrade decompression, identification and repair of the duodenal perforation, examination for residual worms, lavage, and closure with drains constituted a comprehensive strategy.

Clinical Implications: This case has several clinical implications. Firstly, it underscores the need for healthcare providers to maintain a high index of suspicion, especially in regions where parasitic infections are endemic. The coexistence of peptic ulcer perforation and ascariasis is an entity that may elude conventional diagnostic algorithms [9-11].

Secondly, the successful management of this case highlights the importance of a multidisciplinary approach. The collaboration between surgeons, gastroenterologists, and infectious disease specialists played a pivotal role in navigating the complexities presented by these dual pathologies.

Limitations and Future Considerations: While this case provides valuable insights, it is not without limitations. The rarity of concurrent peptic ulcer perforation and ascariasis makes it challenging to generalize findings. Additionally, the retrospective nature of this discussion limits our ability to delve into the nuances of the patient's pre-hospitalization experiences, potentially influencing the pathophysiology of the observed conditions.

Future considerations should involve heightened awareness among healthcare providers in endemic regions regarding the diverse etiologies that can contribute to abdominal pathology. Additionally, advancements in diagnostic modalities, such as more sensitive stool examinations or imaging techniques, may enhance the early identification of parasitic infestations.

CONCLUSION

The presented case serves as a testament to the intricate and sometimes unexpected nature of abdominal pathology. The simultaneous occurrence of acute peptic ulcer perforation and ascariasis demands a nuanced and comprehensive approach to diagnosis and management. This discussion illuminates the diagnostic challenges, the unexpected intraoperative finding, and the multifaceted surgical strategy that culminated in the successful resolution of this complex clinical scenario. It underscores the importance of remaining vigilant in the face of evolving symptoms, especially in regions where diverse pathologies may coexist.

REFERENCES

1. Mintz Y, Horgan S, Cullen J, et al. Laparoscopic versus open appendectomy: a prospective randomized double-blind study. *Ann Surg.* 1999;229(3):343-348. doi:10.1097/00000658-199903000-00005
2. Sachdev MS, Bhargava S, Mittal NK, et al. Roundworm-associated perforation of the gut: a clinical and pathologic study of 54 children. *Pediatr Surg Int.* 2001;17(5-6):406-410. doi:10.1007/s003830000495
3. van der Hagen SJ, Baeten CG, Soeters PB, et al. Internal herniation of the small intestine through a perforation of a duodenal ulcer. A case report. *Acta Chir Belg.* 1998;98(6):265-266.
4. Tintinalli JE, Stapczynski J, Ma O, et al. *Tintinalli's Emergency Medicine: A Comprehensive Study Guide.* 7th ed. McGraw Hill; 2011.
5. O'Connell PR, Lavelle-Jones M. The acute abdomen and gastrointestinal bleeding. In: Adam A, Dixon AK, Gillard JH, et al., eds. *Grainger & Allison's Diagnostic Radiology: A Textbook of Medical Imaging.* 5th ed. Churchill Livingstone; 2008.
6. Zelicson MS, Bronder CM, Johnson BL, Camunas JA, Smith DE, Rawlinson D, Von S, Stone HH, Taylor SM. *Helicobacter pylori* is not the predominant etiology for peptic ulcers requiring operation. *Am Surg.* 2011;77:1054-1060.
7. Zittel TT, Jehle EC, Becker HD. Surgical management of peptic ulcer disease today-- indication, technique and outcome. *Langenbecks Arch Surg.* 2000;385:84-96.
8. Sung JJ, Kuipers EJ, El-Serag HB. Systematic review: the global incidence and prevalence of peptic ulcer disease. *Aliment Pharmacol Ther.* 2009;29:938-946. [PubMed][Google Scholar]
9. Bertleff MJ, Lange JF. Perforated peptic ulcer disease: a review of history and treatment. *Dig Surg.* 2010;27:161-169
10. Lau JY, Sung J, Hill C, Henderson C, Howden CW, Metz DC. Systematic review

oftheepidemiologyofcomplicatedpepticulcerdisease:incidence,recurrence,riskfactors and mortality. *Digestion*. 2011;84:102–113

11. Bas G, Eryilmaz R, Okan I, Sahin M. Risk factors of morbidity and mortality in patients with perforated peptic ulcer. *Acta Chir Belg*. 2008;108:424–427.