



CASE REPORT / ПРИКАЗ БОЛЕСНИКА

Ileal perforation by accidentally ingested animal bone – rare cause of acute abdomen

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SUMMARY

Introduction In healthy adults, accidental ingestion of foreign bodies is uncommon. Intestinal perforation by ingested bone fragments is rare, but can be presented as a life-threatening condition, especially when the diagnosis is delayed.

Case outline We present an uncommon case of a 73-year-old female with acute abdominal symptoms due to ileal perforation caused by accidentally ingested animal bone. Pneumoperitoneum revealed by abdominal X-ray and abdominal free fluid revealed by abdominal ultrasound as well as the general condition of the patient required urgent laparotomy, when the diagnosis of ileal perforation was made. A foreign body was removed from the intestine, along with partial resection of the intestine and end-to-end anastomosis.

Conclusion Surgical treatment of life-threatening complications arising after ingestion of foreign bodies is the only method of choice in the treatment of such patients.

Keywords: ingested foreign bodies; intestinal perforation; surgery

INTRODUCTION

Ingested foreign bodies (IFB) are not uncommon, can be found at any age in both adults and children and are usually asymptomatic and excreted without disturbance. The majority of patients, about 80%, are children, who accidentally swallow foreign bodies [1]. In adults, it occurs more often among the elderly, in psychiatric patients, alcoholics and drug addicts, and in some specific professions like tailors, carpenters, etc. [2]. Most IFB, > 90%, pass through the intestine uneventfully in a week [1, 2], and among them food particles, such as bones, are the most common [3].

Uncomplicated cases are usually managed conservatively, but some cases can develop complications such as abscess, diverticulitis, perforation, obstruction. Perforation of the gastrointestinal tract by IFB is rare. Less than 1% of IFB will cause bowel perforation requiring surgical treatment [2, 4].

We present a case of small bowel perforation caused by an ingested animal bone in a patient with no intestinal disease and previous abdominal surgery.

CASE REPORT

A 73-year-old female patient was admitted to the Department of General Surgery due to abdominal pain, malaise, fever, flatulence, nausea and vomiting. The complaints started two days before the admission, with the appearance of severe pain in the epigastrium followed by vomiting. Despite the signs of diffuse peritonism and

abdominal sensibility revealed by the abdominal examination, the patient was in good general condition. Signs of pneumoperitoneum were observed on the X-ray of the abdomen and lungs (Figure 1). Ultrasound of the abdomen revealed free fluid after which the decision to proceed with an emergency laparotomy was taken. Exploratory laparotomy was performed with a medial laparotomy under general anesthesia. A large amount of free fluid in the abdominal cavity was identified – a sample was taken for microbiological analysis. Subphrenic bilateral, as well as interintestinal and small pelvis abscess collections, with fibrin deposits on all organs of the abdominal cavity were found. Perforation of the ileum was identified (Figure 2). A foreign body, an animal bone, was identified in the intestine, which caused necrosis of the wall and perforation of the intestine (Figure 3). A 10-cm-long bowel resection was performed, with an end-to-end anastomosis. Abundant lavage of the abdominal cavity with a larger amount of physiological solution was performed. Postoperatively, the patient was treated empirically with antibiotics (ceftriaxone, metronidazole, amikacin) and other supportive therapy. On the third postoperative day, a microbiological analysis of the contents of the abdomen (*Klebsiella* sp.) was obtained and treatment continued according to the antibiogram (ciprofloxacin, metronidazole, piperacillin/tazobactam). There was an improvement in the general condition and a decrease in inflammatory parameters. From the eighth day of hospitalization, the patient was subfebrile with an increase of biochemical inflammatory markers. Computed tomography (CT) of the abdomen found subcapsular liver abscesses

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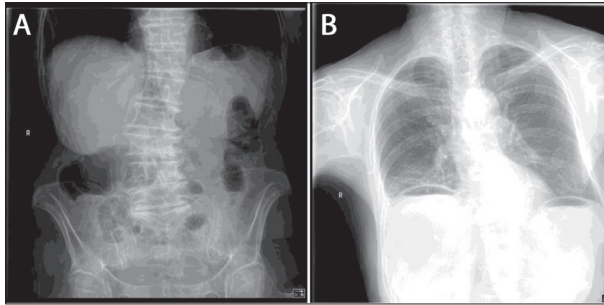


Figure 1. Abdominal (A) and chest (B) X-ray

and right pleural effusion. Continued treatment with vancomycin 1 g every 12 hours and meropenem 1 g every six hours for another 10 days and other supportive therapy. The prescribed therapy leads to a complete stabilization of the general condition. Abdominal control CT showed no signs of liver abscess, and the patient was discharged from the ward on the 23rd day of hospitalization. Postoperative ultrasound follow-up was carried out for another three months, without postoperative complications.

We obtained verbal and signed consent of the patients to publish the case report. This article was planned in compliance with the Patient Rights Directive and ethical rules by considering the principles of the Declaration of Helsinki.

DISCUSSION

IFB are a common cause of presentation in the emergency room and mostly occurs in children and in the elderly with an incidence of 4% [5]. Eighty to ninety percent of patients with IFB do not require any intervention, 10–20% of patients who ingest foreign bodies require an endoscopy intervention, and up to 1% of patients require surgery [6].

In adults, IFB are most often found in patients with psychiatric and addictive diseases as well as and in the elderly with dental prostheses. Accidental ingestion of various foreign bodies, such as toothpicks, teeth, fish and chicken bones, screws, coins, dentures, and spoon handles, has been reported [7, 8]. Foreign body sticking can be seen in any part of the digestive tube. IFB sticking in the esophagus depends on the anatomical characteristic of the esophagus, associated pathology, and the nature of the foreign body (sharp, spherical, etc.) [5]. There are three physiological narrowings in the gastrointestinal tract that can represent the site of foreign body entrapment: pylorus, duodenal C-loop, and the ileocecal junction. The most common locations for objects to get stuck in the large intestine are appendiceal lumen, cecal-ascending colon junction, colonic flexures, and haustra [9]. Obstruction, hemorrhage, necrosis and abscess, peritonitis, and perforation are the main complications of IFB and may occur in all segments of the gastrointestinal tract. Although perforations have been recorded in the duodenum, ileum, and the right colon, the ileum is considered the most common perforation site, followed by the rectosigmoid junction [6]. According to literature data, fish bones are the most common cause of gastrointestinal perforation.

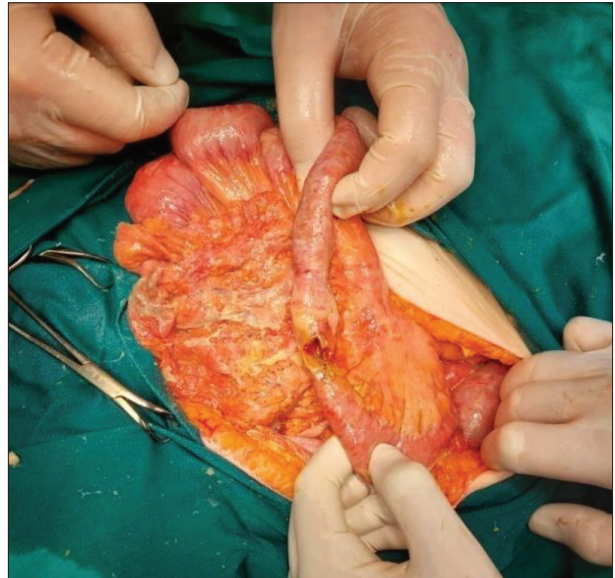


Figure 2. Intraoperative finding: bowel perforation



Figure 3. Extracted foreign body – animal bone

Most gastrointestinal foreign bodies can be removed by gastroscopy or enteroscopy. According to recommendations of the European Society for Gastrointestinal Endoscopy, an emergency endoscopy for IFB causing complete esophageal obstruction, and for sharp-pointed objects or batteries must be performed within six hours and in incomplete obstruction within 24 hours. Urgent endoscopy for IFB in the stomach, such as sharp objects, magnets, batteries, etc is recommend to be performed within 24 hours and for medium-sized blunt foreign bodies in the stomach within 72 hours [10].

Our patient was without significant comorbidities and previous abdominal surgery procedures, who requested medical help two days after the onset of the symptoms with signs of acute abdomen.

Preoperative diagnosis of IFB bowel perforation can be difficult because the patients are often unaware that they have swallowed a foreign body. The clinical presentation can vary and depends of the site of perforation and the amount of spilled intestinal contents and can include abdominal pain, fever, nausea, vomiting, peritonitis, sepsis, inflammatory mass, fistulas, bowel obstruction, and gastrointestinal hemorrhage [6, 11].

In addition to the clinical picture, imaging methods for preoperative diagnosis include plain radiograph (with low sensitivity for radiographically insensitive material), ultrasonography, and CT scan with high sensitivity and specificity. The presence of pneumoperitoneum is not reliable as it is not found in many cases. Nevertheless, definitive diagnosis has been reached during laparotomy in more than 90% of the cases [2]. Our patient was unaware that she had swallowed a foreign body, which initially made the preoperative diagnosis difficult. The final diagnosis was made during the surgery.

The management of an IFB depends on the patient symptoms, the type and the location of the ingested object. Management of bowel perforation is mostly surgical for cases with peritonitis, abscess, inflammation, bleeding, fistula, and ileus and implies surgical repair – suture of the defect, or segmental bowel resection with primary anastomosis or ileostomy/colostomy [2]. Surgical intervention includes laparoscopic or open methods. Some authors recommend Non-surgical management for limited cases. This treatment consists of intravenous fluid, nutrition support, antibiotics,

and other supportive therapy and depends on the size and the location of perforation, time of diagnosis, patient condition, and contamination degree [6, 12].

According to literature the morbidity attributable to bowel perforation by IFB is around 24% and the mortality is up to 6.5%. Reported complications include intra-abdominal abscess, intestinal fistula, perianal abscess, respiratory distress, endocarditis, Fournier's gangrene, ileus, wound infection, inflammatory mass, intestinal occlusion, and diffuse peritonitis. The cause of death is usually multiple organ failure due to severe sepsis [2].

In conclusion, even though accidental or intentional foreign body ingestion are rare causes of intestinal perforation, they cannot be ignored as causes of acute surgical abdomen. Endoscopy for sharp and large IFB must be performed whenever is possible to avoid intestinal perforation. When complications occur, surgical solution of the problem is the only way to save the patient.

Conflict of interest: None declared.

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Перфорација илеума узрокована случајно прогутаном животињском кости – редок узрок акутног абдомена

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САЖЕТАК

Увод Код здравих одраслих особа случајно гутање страних тела није уобичајено. Перфорација црева прогутаним коштаном фрагментима је ретка, али може бити стање опасно по живот, посебно када се дијагноза одложи.

Приказ болесника Представљамо неуобичајен случај 73-годишње жене са акутним абдоминалним симптомима услед перфорације илеума изазване случајно прогутаном животињском кости. Пнеумоперитонеум потврђен рендгенским снимком абдомена и присуством слободне течности вери-

фиковане ултразвуком абдомена, као и опште стање болеснице захтевали су хитну лапаротомију, када је постављена дијагноза перфорације илеума. Страно тело је уклоњено из црева, уз делимичну ресекцију црева и термино-терминалну анастомозу.

Закључак Хируршко лечење животно опасних компликација које настају после ингестије страног тела једини је метод избора у лечењу оваквих болесника.

Кључне речи: прогутано страно тело; перфорација црева; операција