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Role of Colonoscopy in Foreign Body (Needle) Ingestion in Children: A Case Report and Literature Review

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Abstract: Foreign body (FB) ingestion is one of the most complex and serious emergency conditions for diagnosis that often occurs in children. Most ingested FBs, intentionally or unintentionally, pass through the gastrointestinal tract without complications, and only a small proportion require surgical intervention inter alia colonoscopy. However, if the patient complains of abdominal pain, complications may occur, especially perforation with peritonitis, and in this case a laparotomy is needed. We reported a case of a 13-year-old girl with the chief complaint of needle ingestion two weeks ago. Patient complained of abdominal pain and was unable to defecate. Plain abdominal radiographs showed needle-shaped metal density in the lower intestinal; therefore, the patient was referred to Prof. Dr. R. D. Kandou Hospital for further treatment. An endoscopy was initially performed but no foreign body was found because they might had been in the intestine. Colonoscopy revealed a foreign body in the proximal ascending colon, transverse position. Extraction of the foreign body, along with pulling the scope and evaluating the transverse, descending, sigmoid and rectum colon which were within normal limits was carried out. Monitoring after removal of the foreign body for two days found no complaints of abdominal pain and bowel movements were normal, therefore, the patient was discharged from the hospital. In conclusion, since a sharp foreign body (a needle) was still in the proximal ascending colon, a colonoscopy was performed with successful removal of the needle.
Keywords: foreign body; needle; endoscopy; colonoscopy

INTRODUCTION

Foreign bodies that have passed through the esophagus and entered the stomach are mostly asymptomatic, unless ulceration or perforation of the gastric wall or obstruction occurs. Signs and symptoms of gastric and intestinal perforation include abdominal pain and rebound tenderness, while signs and symptoms of intestinal obstruction are abdominal pain, abdominal distention, and vomiting. Cases of foreign body ingestion that do not cause complete obstruction is not an emergency case. However, if a foreign body causes complete obstruction, it is considered as an emergency case and requires immediate treatment, such as choking on food that is solid and not mashed.[1]

Management of foreign bodies in the stomach can be in the form of observation, endoscopic extraction, colonoscopy, or surgery. The treatment depends on the level of the type and location of the foreign body and on the clinical symptoms. Small foreign bodies that do not have sharp surfaces on the sides can be treated by observation only for a certain period of time. Parents can observe foreign bodies in the child's stool. If a foreign body is not found in the stool, X-ray examination can be done at 48-72 hours interval to weekly, according to the type of foreign body.[2]

CASE REPORT

A 13-year-old girl, referred from the Toto Kabila Hospital, Gorontalo Province, came to the hospital with complaint of swallowing needles two weeks ago. Initially, the patient bit the needle and accidentally swallowed it. The patient complained of abdominal pain and was unable to defecate. The patient was then taken to Toto Kabila Hospital for treatment. An abdominal X-ray examination was performed and revealed two linear foreign bodies in the right hypochondrium at the level of the XI thoracic costovertebral joint (Fig. 1 A), and in the pelvic cavity accompanied by focal distended loops of intestine in the left hypochondrium and left lumbar region (Fig. 1 B). The patient was then referred to Aloei Saboe Hospital, Gorontalo City and an endoscopy was performed but no foreign body was found (Fig. 2); so, the patient was sent home and given laxatives to defecate. After seven days of outpatient treatment, the patient still complained of not being able to defecate; therefore, the patient came back to the Toto Kabila Hospital, and then was referred to the Surgical Department of Prof. Dr. R. D. Kandou Hospital for further treatment.

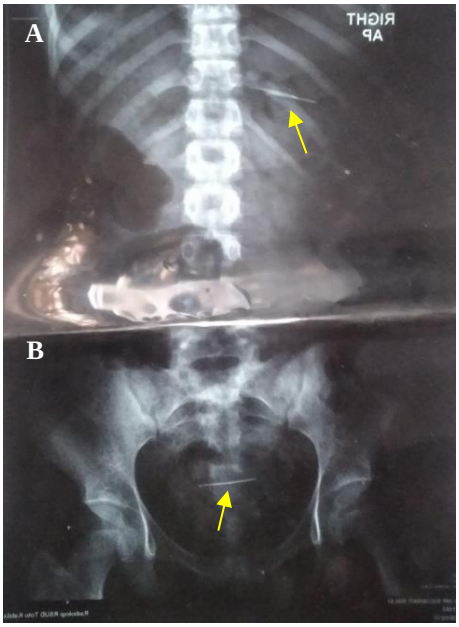


Figure 1. Abdominal X-ray revealed a linear body shape with two impressions on the right hypochondrium at the level of XI thoracic costovertebral joint and in the pelvic cavity

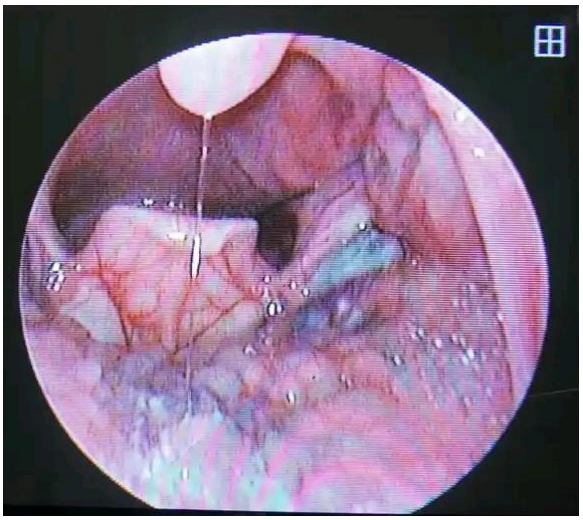
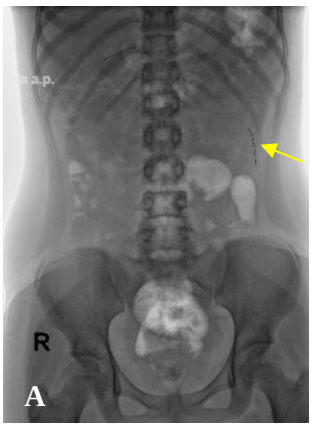


Figure 2. Endoscopic examination showed no abnormalities

The patient was found unable to defecate for two weeks. Albeit, the patient could still fart, and no complaints of abdominal pain, nausea and vomiting, fever, and respiratory disorders. On physical examination, he was conscious, normal vital signs, and head, neck, extremities, lungs, and heart were within normal limits. Abdominal examination was within normal limits, on palpation there was no abdominal pain or palpable mass. Rectal toucher examination showed smooth mucosa, fixed anal sphincter tone, no blood or palpable mass. Blood examination showed hemoglobin (Hb) 13.7 g/dL, leukocytes 6.600/mm3, platelets 331.000/mm3, hematocrit 40.2%, normal kidney and liver functions, and electrolytes within normal limits. Abdominal X-ray examination revelead needle-shaped metal density in the right hypochondrium region at the level of the XI thoracic costovertebral joint and at the level of the left II-III lumbar costovertebral joint. The patient was diagnosed with foreign bodies in the right hypochondrium region at the level of XI thoracic costovertebral joint and left lumbar region at the level of II-III lumbar costovertebral joint (Fig. 3).



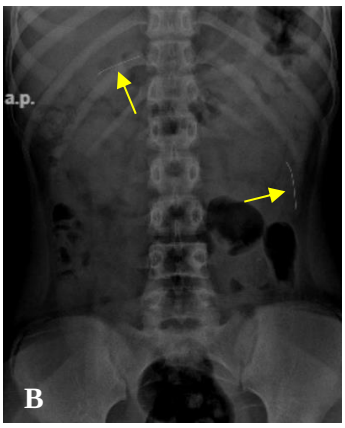


Figure 3 A, B. Abdominal X-ray showing needle-shaped metal density in the right hypochondrium region at region at the level of XI thoracic costovertebral joint and left lumbar region at the level of II-III lumbar costovertebral joint.

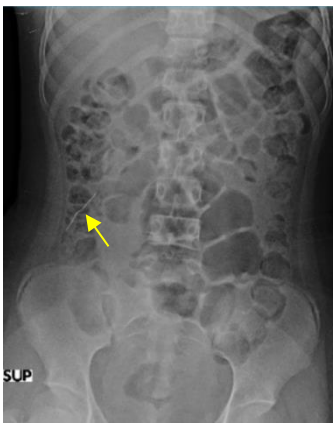


Figure 4. Abdominal X-ray showing a needle-shaped foreign body in the lower right region of the abdomen at lumbar vertebrae III-IV

The patient was hospitalized and given laxatives to defecate. After being treated for 4 days the patient was able to defecate and complaints of abdominal pain were reduced. The patient underwent an abdominal X-ray examination, which revealed a needle-shaped foreign body in the lower right region of the abdomen at the level of Lumbar III-IV (Fig. 4).

The patient was consulted to an anesthesiologist for colonoscopy and removal of the foreign body. In the operating room, the patient lied on his left side with general anesthesia, and the scope was entered until the ileo-caecal valve which was 90 cm from the ano-cutaneous line, the cecum was not hyperemic, there was no wound, and the identification of the ascending colon was within normal limit. There was a foreign body in the proximal ascending colon, transverse position. Extraction of the foreign body, along with pulling the scope and evaluating the transverse, descending, sigmoid and rectum colon which were within normal limits (Fig. 5).

Monitoring after removal of the foreign body for two days found no complaints of abdominal pain and bowel movements were normal. Therefore, the patient was discharged from the hospital.

DISCUSSION

Most foreign bodies that are ingested intentionally or unintentionally pass through the digestive tract without complications, and only a small proportion require surgical intervention. The larger the size of the foreign body, the greater the chance of complications.[1] Approximately 80%-90% of ingested foreign bodies will pass spontaneously without intervention, 10%-20% require endoscopic procedures, and less than 1% require surgery.[3]

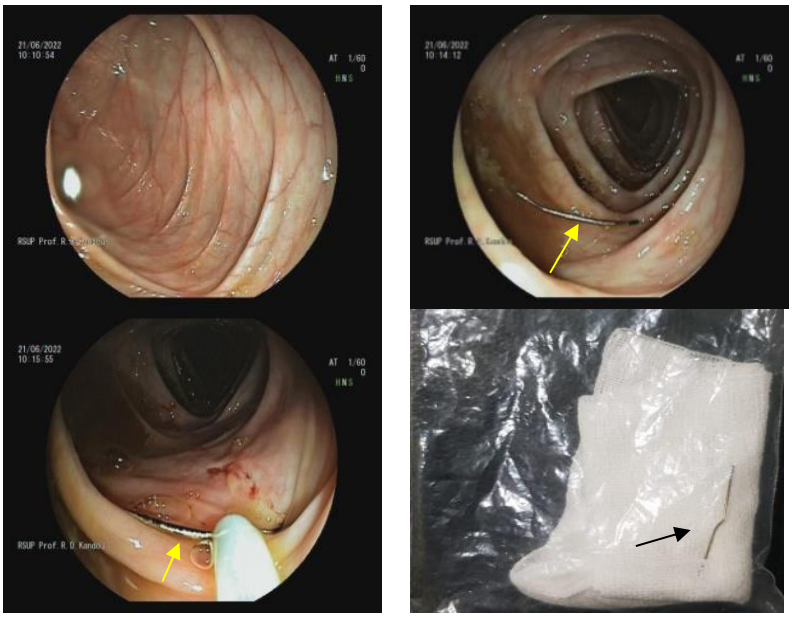


Figure 5. Colonoscopy showed a foreign body in the proximal ascending colon, transverse position, and the foreign body, a needle, was extracted

The incidence of ingestion of foreign bodies in the United States is more than 100,000 cases per year and 1500 patients are reported to have died. In children only about 40% of cases of esophageal foreign body are asymptomatic. In years 2000 the American Association of Poison Control Centers (AAPCC) documented that the incidence of foreign bodies in >116,000 cases, 75% occurred in children 5 years of age or younger. Meanwhile, 98% of intentional foreign objects in children are objects commonly found in the home environment such as coins, toys, jewelry, magnets, and batteries.[4,5]

If the patient complains of abdominal pain, complications may occur, especially perforation with peritonitis. The intestine has a significant ability to protect itself from perforation in the case of swallowing sharp objects. Anatomically, beneath the epithelial lining of the duodenum there is a lamina propria consisting of loose connective tissue.[6] The muscularis mucosal layer functions in causing movements of the villi and plicae circulares for the digestive process. Villi also have the function of increasing the surface area of the intestinal wall, so as to allow the passage of sharp objects more easily.[7] In addition, when a sharp object is ingested, the flow of intestinal contents and relaxation of the intestinal wall tends to direct the tip of the object toward the front, and the sharp end toward the back. Thus, when it arrives in the large intestine, the foreign body will be covered with feces thereby protecting the intestinal wall.[5]

Laboratory examination is a very important supporting factor in helping the diagnosis of a disease. Leukocytes function as the body's defense cells from infectious or inflammatory diseases.[7] Laboratory tests are of little use except in cases of perforation where white blood cells may be elevated. In this case, the leukocytes were 6.600/mm^3 which showed that there was no intestinal perforation in this patient.

The purpose of evaluation on abdominal X-ray is to identify the type, number, size and location of foreign bodies.[8] However, many sharp objects are radiolucent; therefore, the positive predictive value of the radiographic examination in some cases is low.[9] In this case, an abdominal X-ray was performed, showing two needles in the right hypochondrium region at the level of thoracic costovertebral joint XI and the left lumbar region at the level of LII-III. After being treated with intestinal laxatives for four days, one needle was moved to the lower right region of the abdomen at the level of lumbar III-IV and the other needle was carried out with feces.

Most cases of foreign bodies in the digestive tract can heal spontaneously without

complications, 10-20% are treated by endoscopic or colonoscopy, and only 1% require surgery secondary to complications. Complications can occur acutely, such as injury to the intestinal mucosa, inflammation, or obstruction, or they can occur later, such as scarring and strictures.[7] Although guidelines recommend the emergency endoscopic removal of all sharp objects located in the esophagus, stomach and proximal duodenum, 47% of endoscopies did not visualize the foreign body, which meant that the endoscopy was not conclusive. Thus, the decision for the intervention was made on the basis of the information that emerged from the anamnesis about the characteristics of the object.[9] In this case, an endoscopy was initially performed but no foreign body was found because they might had been in the intestine. The next step is extraction of foreign bodies, namely colonoscopy.

Almost all cases of foreign bodies were evaluated from the anus (90%), and removal of foreign bodies should be carried out by direct visualization of the anus. Removal of foreign bodies can also be done through colonoscopy or laparotomy. In addition, laparotomy can be performed if the case is accompanied by perforation or peritonitis.[2] In a pediatric case reported by Lampus et al,[10] since endoscopic foreign body removal failed to remove the foreign body in the patient, an exploratory laparotomy was performed and through antimesenterial ileotomy, the foreign body, a button battery, was successfully removed.

CONCLUSION

We reported a case of a 13-year-old girl with a foreign body in the form of a needle in the ascending colon which was successfully extracted by colonoscopy with good result. Continuous monitoring of the patient's clinical condition is very important both before and after the procedure to evaluate if there are any complications in the patient.

Conflict of Interest

The authors declare no conflict of interest in this study.

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