CASE REPORT

A drawing pin, drill bit, several staples and a magnet: definitely not a simple case of appendicitis

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SUMMARY

The sequelae of foreign body ingestion may present in a number of manners and are even more prone to difficulties when a history of foreign body ingestion is not apparent. An 8-year-old boy with a short history of abdominal pain and vomiting presented to the hospital after seeing his general practitioner. He had a history of developmental delay. Examination revealed lower abdominal peritonism and his blood tests revealed elevated inflammatory markers. The patient was initially diagnosed with acute appendicitis and proceeded to theatre. At operation, the patient had a normal appendix but two perforations of the small bowel were incidentally discovered. After theatre, the patient underwent an abdominal X-ray, which revealed a number of radiopaque objects in the rectum. He returned to theatre where a number of metallic objects and a magnet were manually retrieved from the patient's rectum. He made a full recovery and was discharged home a few days later.

BACKGROUND

Foreign body ingestion can carry serious consequences. In the majority of cases, the foreign object can pass through the gastrointestinal tract without concern but there are a number of points along the gastrointestinal tract within which a foreign body may become impacted. The nature of the foreign body may also result in perforation of the bowel wall. Unfortunately, the ingestion of a foreign body may not always be forthcoming in the medical history, and thus the signs and symptoms may mimic other diseases. This can result in serious delays in diagnosis and treatment.

The case presented here is of an 8-year-old boy with abdominal pain, who was treated for suspected acute appendicitis.

CASE PRESENTATION

An 8-year-old boy presented with abdominal pain that had awoken him from sleep at 6:00 that morning. He reported of pain in the centre of his abdomen and had vomited three times that morning. He was unable to further describe the pain.

His bowels had been opened the day previous and he had passed urine twice that day, to provide samples at the general practitioner surgery and within the paediatric assessment unit.

The patient's mother stated that the boy was quieter than usual and did not look his normal self. There had been no history of fever or rigours.

Only later did the mother mention that the patient had, on occasion, swallowed foreign bodies.

The patient was asked a number of times if he had swallowed or put any objects into his mouth in the last few days or weeks. He denied any foreign body ingestion.

The patient had a history of global development delay mainly affecting his speech and language skills, and microcephaly. This was not initially mentioned by his mother when the patient was clerked and only later discovered on examination of the patient's notes.

He took no regular medication and had no allergies.

On examination, the patient was seen curled up in bed and was unable to straighten out for full examination of his abdomen. He had a temperature of 37.4°C with a heart rate of 120 bpm, respiratory rate of 18 breaths/min and saturations of 98%.

Examination of the abdomen revealed a tender lower abdomen with lower abdominal peritonism and minimal bowel sounds.

INVESTIGATIONS

Blood tests were taken and revealed a white cell count of $22.6 \times 10^9/L$ and mildly raised C reaction protein. A urine dipstick test was normal.

DIFFERENTIAL DIAGNOSIS

The initial impression was of acute appendicitis. A urinary tract infection had been ruled out by a clear urine dipstick test.

TREATMENT

The patient was kept nil by mouth and given intravenous fluids and analgesics.

He was taken to theatre the same day for an open appendectomy.

At operation, a small amount of pus was found on opening the abdomen, however, the appendix was found to be entirely normal in appearance macroscopically. Another cause for the symptoms was thus sought.

The initial Lanz incision was extended to facilitate further examination of the bowel. Two areas of dense fibrinous plaques were found in the caecum and the jejunum. On removal of these plaques, two small, full thickness perforations were discovered. All of the small bowel and colon was examined for abnormalities. The perforation in the small bowel was closed with intermittent seromucosal sutures after excision of the edges of the defect, and an omental patch used to cover the suture line. The caecal perforation was also repaired with intermittent seromucosal sutures.

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Following the unusual findings at operation and the history of possible foreign body ingestion given by the mother, it was felt necessary to perform imaging of the patient's abdomen to assess for foreign bodies. An abdominal X-ray was arranged.

The X-ray revealed a number of radiopaque objects within the child's rectum (figure 1). He was returned to theatre the following morning and the objects were removed manually.

The objects consisted of a drawing pin, a drill bit, several staples and a small magnetic head from a telescopic magnetic tool (figure 2).

OUTCOME AND FOLLOW-UP

The patient's recovery was uneventful and he was discharged home a few days later.

It still remained undetermined as to when the foreign bodies were actually ingested and whether together, or individually spanning a number of days.

DISCUSSION

Symptoms from foreign body ingestion typically develop at sites of intestinal narrowing where the foreign body may become lodged or cause perforation. The upper third of the oesophagus has been noted to be the commonest site of obstruction while the most commonly ingested foreign objects are coins. Other foreign bodies that have been reported in the literature to have caused intestinal perforation include chicken and fish bones, paperclips and needles. A common site of perforation as a result of foreign body ingestion is the ileocaecal junction and the sigmoid colon.^{1 2}

Ingestion of magnets can also have serious consequences, even more so when ingested in combination with other metallic objects, or with numerous magnets. There is a risk of obstruction and perforation with ingestion of any foreign body and a

Figure 1 Abdominal X-ray showing a number of radio-opaque objects in the patient's rectum.

Figure 2 Foreign bodies removed from the patient's rectum.

particular risk of fistula formation when magnets are ingested.^{3 4}

Ordinarily, only a small minority of cases of foreign body ingestion require surgical intervention.⁵ However, a history of foreign body ingestion is not always apparent. Without a complete history, serious delay can result and the wrong diagnosis can be performed.

Small bowel perforation is not typically diagnosed preoperatively, as the clinical picture mimics that of more common conditions, such as appendicitis. Although most adults with peritonitis would typically undergo erect chest and abdominal X-rays as part of routine investigations in this type of presentation, children would not typically be exposed to the radiation found in X-rays on a routine basis.

A report considering 21 cases of gastrointestinal perforation secondary to foreign body ingestion in patients where no foreign body ingestion was reported, found that 57% of patients were preoperatively diagnosed with an acute abdomen of unknown cause, 24% with diverticulitis and 19% with acute appendicitis.⁶

Two similar cases were reported in the UK in which one young patient developed a gastrojejunal fistula, while the other, who was also initially diagnosed as acute appendicitis, was found to have multiple fistulae of the bowel wall.⁷ In both cases, no history of foreign body ingestion was noted and in both cases multiple magnets had been ingested. If numerous magnets or a magnet and other metallic foreign objects come into close contact with each other, they may become attracted to each other across the bowel wall resulting in bowel wall necrosis secondary to pressure effects. This can ultimately cause fistulae and bowel perforation. The patients in these cases both underwent significant bowel resection as a consequence. In the case we present, it would appear likely that the objects became attracted to the magnet across the bowel wall resulting in the bowel perforations seen at operation.^{3 4}

A delayed diagnosis increases the risk of complications.⁸ Given that the foreign bodies were eventually retrieved from the patient's rectum, it is possible that in this case they had been ingested a number of days earlier. However, in this case, the onset of symptoms was quite sudden and the patient presented to hospital very quickly.

There are no UK guidelines delineating the best way to manage foreign body ingestion, but a number of studies do propose pathways to follow. In all studies, aggressive management of patients who have ingested multiple magnets or a combination of magnets and metal objects is advised, as the possible complications are severe.⁹ In this case, foreign body ingestion was not initially apparent and was only considered later, as a result of the unexpected findings in surgery.

Learning points

- ▶ In paediatric cases, it is important to maintain a high clinical suspicion of foreign body ingestion and to enquire about any developmental difficulties or complications at birth. Being aware of a history of developmental delay may have earlier highlighted an alternative cause for the abdominal pain and may have ensured prompt imaging.
- ▶ Although simple X-rays may help identify radiopaque items, a negative X-ray cannot rule out the presence of foreign bodies.
- ▶ It should be remembered that children compensate well even when they have serious underlying pathology.

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