

Inadvertent ingestion of a foreign body with transfixation of the duodenal wall and perforation of the right renal vein evolving with pulmonary complication: a case report

Ingestão inadvertida de corpo estranho com transfixação da parede duodenal e perfuração da veia renal direita evoluindo com complicação pulmonar: um relato de caso

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ABSTRACT

Foreign body ingestion is a common occurrence, in which 80% of cases pass through the gastrointestinal tract without complications. However, there may be serious consequences such as perforation, hemorrhage and intestinal obstruction. The case report described demonstrates the diagnostic challenge of foreign body ingestion, due to the enormous range of symptoms that the patient may present, in addition to the importance of early diagnosis and appropriate and individualized therapy to reduce morbidity and mortality in patients.

Keywords: complications, body, foreign, ingestion.

RESUMO

A ingestão de corpo estranho é uma ocorrência comum, em que 80% dos casos passam pelo trato gastrointestinal sem complicações. Porém, pode haver consequências graves como perfuração, hemorragia e obstrução intestinal. O relato de caso descrito demonstra o desafio diagnóstico da ingestão de corpo estranho, devido a enorme gama de sintomas que o paciente pode apresentar, além da importância de um diagnóstico precoce e da terapêutica adequada e individualizada para a redução da morbimortalidade nos pacientes.

Palavras-chave: complicações, corpo, estranho, ingestão.

1 INTRODUCTION

Foreign body ingestion is a common occurrence, with 80% of cases passing through the gastrointestinal (GI) tract without complications. However, there can be serious consequences such as perforation, bleeding and intestinal obstruction. Perforation of the gastrointestinal tract occurs mainly when there is ingestion of sharp and elongated objects, such as sticks and fish bones, with the small intestine being the most frequently affected site. Therefore, early diagnosis and appropriate therapy are essential to reduce morbidity and mortality.

2 CASE REPORT

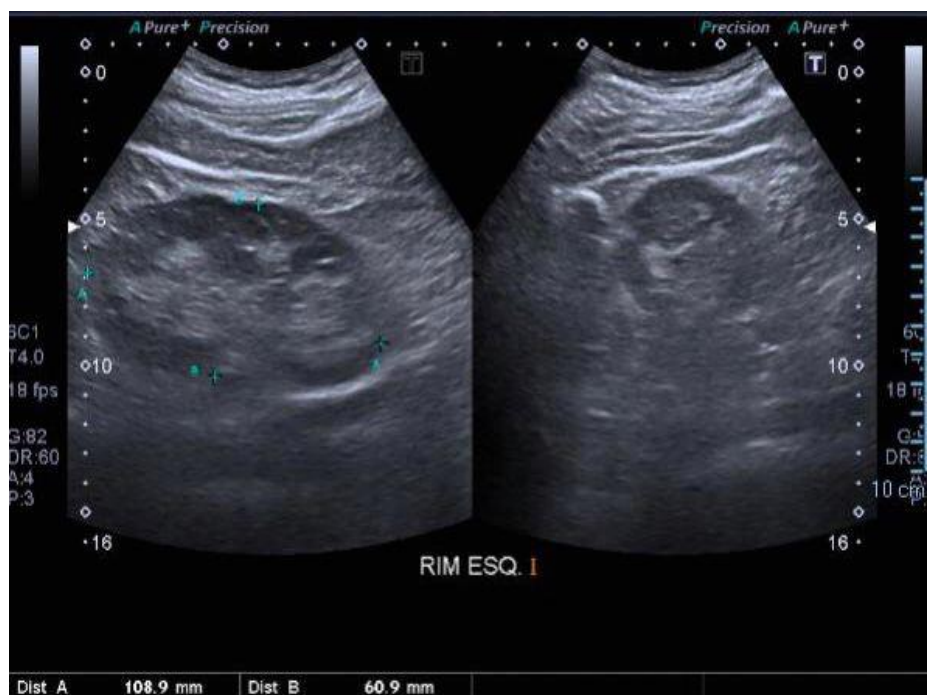
A 67-year-old male patient went to the emergency department on 08/27/2018, complaining of cramping pain in the right hypochondrium and right lumbar region, with 7 days of evolution. The pain worsened with movement and there were no episodes of nausea or vomiting. In the last 24 hours, the patient developed a fever measured at 39°C. He denied diuresis alterations and alleged alterations in the intestinal transit with diarrhea followed by constipation. When asked about his past, the patient reported having systemic arterial hypertension and dyslipidemia, using clopidogrel 75mg once a day, atenolol 25mg once a day and rosuvastatin 10mg once a day. In addition, there is a history of acute myocardial infarction in 2004, with stent placement in 2004 and later in 2010. On physical examination, the patient was in good general condition, with alterations only in the abdominal examination. The abdomen was painful on superficial and deep palpation of the hypochondrium and right flank, with no signs of peritonitis and a positive Giordano's sign. The propaedeutics was started with a laboratory review and ultrasound (US) of the urinary tract.

The laboratory review showed the following results:



Exam	Results	Reference
CRP	72,2 mg/L	< 10 mg/L
Global leukocytes	11.600	4000 a 10.000/ μ L
Platelets	243.000	140 000 a 450 000
Creatinine	0,8 mg/dL	0,7 a 1,3 mg/dL
Routine urine	Normal with negative nitrite	Normal with negative nitrite
Gram	No stainable bacteria were seen	No stainable bacteria were seen

Urinary tract US showed kidneys with normal topography, shape, dimensions, contours and mobility with free perirenal spaces. Two calculi formations were observed in the middle third of the left kidney, measuring 0.4 and 0.3 cm.



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Even with the routine urinalysis and normal gram, the result of a slightly elevated CRP and a mild leukocytosis with a shift to the left, added to the image of nephrolithiasis with a physical examination suggestive of pyelonephritis, guided the management for the treatment of urinary tract infection. Ciprofloxacin 500mg was prescribed, every 12 hours for 7 days, in addition to symptomatic drugs. It was decided to discharge the patient to continue the treatment at home due to the patient's stability. The patient returned to the emergency room on 09/01/2018 reporting the persistence of right low back pain and fever, onset of epigastric discomfort, accelerated intestinal transit and in small amounts. Diuresis was preserved and there were no other associated symptoms. On physical examination, the patient had a painful face, was hydrated and anicteric. The abdomen was flat, symmetrical, normotensive, painful on superficial and deep palpation of the epigastrium. Negative Giordano sign.

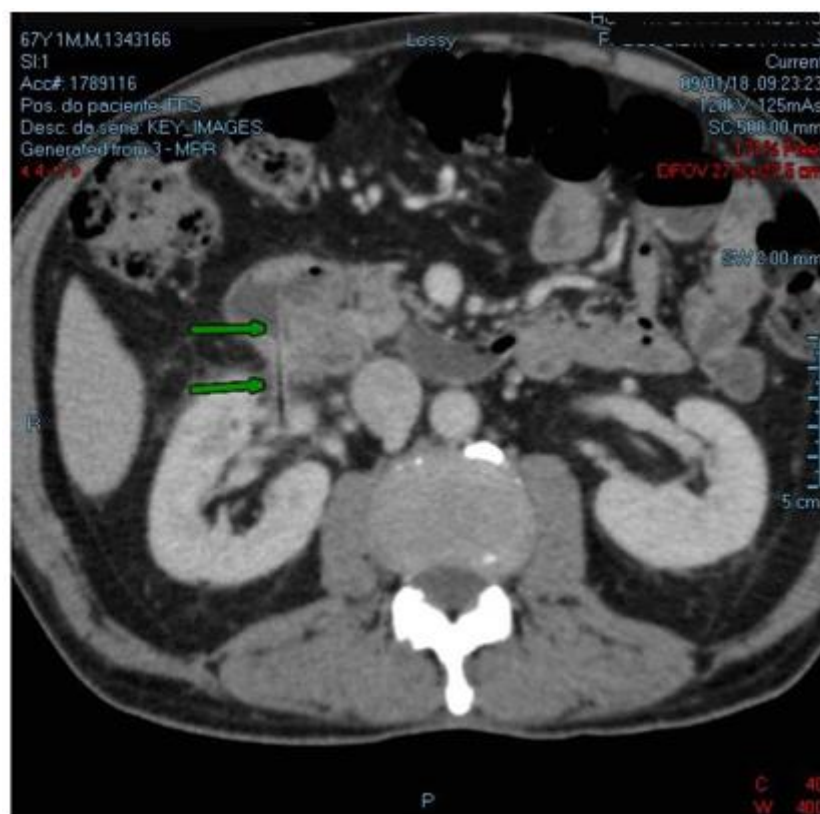
A new laboratory review was requested with the following results:

Exam	Results	Reference
GOT	64 IU/L	5-40 IU/L
GPT	54 IU/L	7-56 IU/L
Urea	22 mg/dL	10 mg/dL - 45 mg/dL
Creatinine	0,81 mg/dL	0,7 a 1,3 mg/dL
Lipase	36 IU/L	< 160 UI/L
Amylase	43 IU/L	Until 125 IU/L to people < 60 years, and until 151 IU/L to people > 60 years old
Alkaline phosphatase	153 IU/L	40 IU/L e 150 IU/L
CRP	186,7 mg/L	< 10 mg/L
Platelets	264.000	140 000 a 450 000
Global Leukocytes	10.400	4000 a 10.000/ μ L
GRAM	No stainable bacteria were seen	No stainable bacteria were seen



Due to the worsening of the clinical status, the persistence of leukocytosis and increase in CRP in the laboratory review, indicating persistence of the infection even after antibiotic therapy, it was decided to request a computed tomography (CT) scan of the abdomen.

Abdominal CT revealed the presence of a foreign body (stick), measuring approximately 5 cm, transfixing into the posterior wall of the duodenum, at the transition from the bulb to the second duodenal portion, and reaching the right renal sinus, with the extremity projected into the right renal vein. Signs of a perirenal inflammatory process were also found.



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After diagnosis, the patient was admitted under a fasting regimen associated with intravenous antibiotic therapy and supportive measures. Endoscopic removal took place on 09/10/2018, in a surgical environment, with blood reserve and a surgical team prepared for emergency action. The foreign body was removed with a polypectomy loop, without obvious complications. About 10 minutes later, the patient develops severe bradycardia and hypoxemia, requiring intensive care measures, with an improvement in the clinical status. The hypothesis of pulmonary thromboembolism (PTE) was confirmed by computed tomography angiography and anticoagulation was initiated. The patient was discharged from the hospital, without sequelae, 8 days after the procedure.



3 DISCUSSION

Faced with a complex case such as the one described, several discussions are relevant, from the most appropriate propaedeutics, to the definition of the best conduct for the patient. The ingestion of a foreign body is a diagnostic challenge in clinical practice, because most of the time the patient does not report the ingestion of the object, as in the case described, in addition to the symptoms often falsifying other diseases. A study at the Department of General Surgery at the Sher-i-Kashmir Institute of Medical Sciences Srinagar (SKMS) in northern India from 2002 to 2011 reviewed 21 cases of foreign body ingestion. Of the 21 cases, only 19.04% reported ingestion of the foreign body in the preoperative period. Regarding the propaedeutics and management of the cases, 23.8% had a preoperative diagnosis of acute diverticulitis and 19.04% of acute appendicitis, with the remainder diagnosed as acute abdomen of undefined cause. To minimize the chance of misdirection of diagnosis and management based only on clinical and laboratory reports, it is essential to choose the appropriate imaging propaedeutics in cases of acute abdominal pain. Among the available methods such as conventional radiography (XR), ultrasound (USG), computed tomography (CT) and magnetic resonance imaging (MRI), CT is the most recommended for etiological diagnosis, in order to define the appropriate therapy in most cases of non-traumatic acute abdomen. This is because its ease of access combined with high rates of sensitivity and specificity outweigh the benefits of other propaedeutic options. Comparatively, a study by Lam  ris et. al demonstrated that, for cases of sudden abdominal pain, CT had a sensitivity of 89% while USG had 70%. On the other hand, X-ray, despite being widely used as a first option in urgency, its sensitivity and specificity were 30% and 87.58%, respectively, for the same cases. MRI, although it has greater accuracy, is less used in emergency scenarios due to high costs and delay in execution. Therefore, according to the American College of Radiology, CT can be used as a first option, if available, in practically all cases of acute abdomen. However, it is important to consider the limitations for each patient, such as high levels of ionizing radiation, especially in pregnant women and children, and the use of intravenous contrast



in patients with renal failure or allergic to the substance. In addition, the case described demonstrates how careful and detailed investigation of the patient must be in order to avoid unexpected complications, such as PTE. Furthermore, this case rectifies how important the individualization of treatment is to its success. In the case of this patient, in view of the perforation of the renal vein by the toothpick, the use of anticoagulants would be an additional risk factor for hemorrhage. Thus, the evaluation of the implantation of a vena cava filter would be a treatment option for this patient, despite not being the first choice in the treatment of PTE. The vena cava filter is positioned in the inferior vena cava in order to prevent the embolus from reaching the lung. Depending on the filter diameter and model, it can be inserted through the femoral, jugular or antecubital veins. An imaging method should be performed to visualize the IVC, evaluating its diameter, permeability, whether there are congenital anomalies and the location of the renal veins. Normally, the vena cava filter is positioned in the infrarenal IVC, close to the level of the renal veins, and works as a mesh to prevent thromboemboli from reaching the heart and lungs. Some complications may occur during filter insertion, the main one being the malposition of the FVC in other veins, such as renal, gonadal and ascending lumbar veins. However, when successfully inserted, the vena cava filter becomes an effective tool in the treatment of PTE. A study carried out by the Latin American Society of Interventional Cardiology, carried out between 2005 and 2010, revealed that among 3,017 patients with contraindication to anticoagulation because of the risk of active bleeding, the use of FVC reduced mortality in a period of 30 days, in 32% and, in a period of 90 days, in 27%, which proves the benefit of using FVC in patients with contraindication for anticoagulation.

Conclusion: Situations such as the case described are rarely reported in the literature and are difficult to manage, considering that the ingestion of a foreign body, although very common in the population, is often not reported by the patient and has symptoms similar to other pathologies, which makes the diagnosis challenging. In addition, the importance of an accurate diagnosis is perceived in order to avoid further complications in the patient's condition. Thus,

a good anamnesis and physical examination are essential, together with laboratory and imaging tests that add to the diagnostic hypothesis. Therefore, the problematization of cases such as the one described in this article adds knowledge to the medical community, contributing to the management of future similar cases.



REFERENCES

1. Hong KH, Kim YJ, Kim JH, Chun SW, Kim HM, Cho JH. Risk factors for complications associated with upper gastrointestinal foreign bodies. *World J Gastroenterol* [Internet]. 2015;21(26):8125–31. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/26185385>;
2. Lee SB, Lee RK, Suh JH, Choi JW, Ha CY, Kang C. A Case of Wooden Foreign-Body Ingestion. *J Emerg Med* [Internet]. 2018;54(1):121–3. Available from: <https://doi.org/10.1016/j.jemermed.2017.09.008>;
3. NICOLODI, Gabriel Cleve et al. Perfuração intestinal por ingestão de corpo estranho alimentar. *Radiologia Brasileira*, v. 49, p. 295-299, 2016.
4. Sarmast AH, Showkat HI, Patloo AM, Parray FQ, Lone R, Wani KA. Gastrointestinal tract perforations due to ingested foreign bodies; A review of 21 cases. *Br J Med Pract* [Internet]. 2012;5(3):529. Available from: <https://www.bjmp.org/files/2012-5-3/bjmp-2012-5-3-a529.pdf>;
5. Tsuruya K, Chino O, Tanaka Y, Shimma Y, Tsuda S, Kikuchi M, et al. Successful combination of endoscopic and laparoscopic removal of multiple ingested needles: A case report. *Med (United States)* [Internet]. 2020;99(8). Available from: https://journals.lww.com/md-journal/FullText/2020/02210/Successful_combination_of_endoscopic_and.85.aspx#;
6. KINNEY, Thomas B. Update on inferior vena cava filters. *Journal of Vascular and Interventional Radiology*, v. 14, n. 4, p. 425-440, 2003.
7. WEINBERG, Ido; KAUFMAN, John; JAFF, Michael R. Inferior vena cava filters. *JACC: Cardiovascular interventions*, v. 6, n. 6, p. 539-547, 2013.