Cardiac hazard associated with eating habits. A case of infected intrapericardial foreign body due to an ingested toothpick

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An unusual case of a toothpick perforating the distal one-third of the duodenum, penetrating the inferior vena cava and thereafter migrating to the right atrium with extensive pericardial fibrosis is reported. A 60-year-old man was admitted to the emergency department because of epigastric pain, which had progressively worsened. After partial recovery, he was discharged. However, after four episodes of different gastrointestinal bacteria septicemias of unknown origin over a period of five months, the patient was transferred to Laval Hospital (Laval, Quebec) for clinical investigation. Cardiac echocardiography demonstrated a right atrial mass, suggestive of the presence of a thrombus. Thus, after exploratory thoracotomy was performed to remove the so-called thrombus, a toothpick was found in the right atrium.

Key Words: *Pericarditis; Septicemia; Toothpick injury*

Les risques cardiaques associés aux habitudes alimentaires : Un cas de corps étranger intrapéricardique infecté causé par l'ingestion d'un cure-dents

On présente un cas inhabituel de cure-dent ayant perforé le tiers distal du duodénum, pénétré dans la veine cave inférieure, puis migré dans l'oreillette droite et causé une importante fibrose péricardique. Un homme de 60 ans a été admis à l'urgence en raison de douleurs épigastriques qui s'étaient progressivement aggravées. Après un rétablissement partiel, il a obtenu son congé. Cependant, après quatre épisodes différents de septicémie à bactéries intestinales d'origine inconnue en cinq mois, le patient a été transféré à l'Hôpital de Laval (à Laval, au Québec) afin de subir une exploration clinique. L'échocardiographie a révélé une masse auriculaire droite, évocatrice d'un thrombus. Une thoracotomie exploratoire pour extraire ce soi-disant thrombus a mis au jour un cure-dent dans l'oreillette droite.

Ingestion of a foreign body is a common cause of gastrointestinal injuries (1). This also represents important risks of inflammatory mass formation, while the ingestion of a sharp and pointed object, such as chicken or fish bones and wooden or plastic toothpicks, may penetrate into a solid organ such as the liver or pancreas. Budnick et al (2) reported 8176 toothpick-related injuries in the United States from 1979 to 1982, for a rate of 3.6 per 100,000 person-years. In all published cases, complications related to toothpick swallowing are difficult to diagnose and a definite diagnosis is usually made during surgical procedures (1,3). Patients often do not remember swallowing a foreign body, and image studies demonstrate the presence of a toothpick in only 14% of cases (3). Thus, we describe a case of an infected right atrial granulating mass caused by unintentional ingestion of a toothpick.

CASE PRESENTATION

A 60-year-old man without significant medical history consulted the emergency department of his regional hospital because of an increasing epigastric pain radiating to the back, with body temperatures of 38°C to 40°C. The patient also experienced a 5 kg weight loss during the weeks preceding his symptoms.

On presentation, physical examination was essentially normal, except for right flank pain and right lower quadrant abdominal tenderness. Laboratory tests revealed normal red and white blood cell counts, low hemoglobin levels and a low platelet count (50×10^9/L). Urine and blood studies were normal. Serum amylase, lipase and tests for liver function were within normal limits. Hemocultures were subsequently positive for *Streptococcus faecalis* and anaerobic bacteria. During hospitalization, abdominal echocardiography, intravenous pyelography, intestinal transit scintigraphy, barium studies and a 12-lead electrocardiogram were normal. Treatment with intravenous antibiotics (cefoperazone, metronidazole and gentamycin) was prescribed initially, without any improvement. One week later, an exploratory laparotomy disclosed an abscess with possible secondary septicemia. Biopsy of three fragments of the omentum and the liver showed nonspecific inflammation. The patient recovered after receiving 300 mg of clindamycin intravenously every 6 h, and was discharged following treatment.

One month later, he experienced an identical epigastric episode, together with fever, profuse perspiration and asthenia. At that moment, hemocultures were positive for *Proteus mirabilis* and *Candida albicans*. Because the patient seemed resistant to numerous antibiotics, he was transferred to Laval Hospital (Quebec) after a 10-day hospitalization. The patient was hospitalized for nearly two months. On arrival, an important pericardial effusion was found on echocardiography and was drained by aspiration. After a few days, he underwent left anterior diagnostic thoracotomy. The pericardium was opened at the level of the phrenic artery and a fragment was sent to the pathology department. Pathology confirmed a fibrinous pericarditis concomitant to recent fibrinous pericardial reaction. Histology and cultures did not allow a precise diagnosis because hemocultures were initially negative. Further investigation revealed a thrombus in the inferior vena cava. During hospitalization, the patient became septic again on two separate occasions, and *C albicans* and *P mirabilis* were isolated. One week before being discharged, an exploratory laparotomy was negative, and there was no thrombus in the inferior vena cava, although it had been imaged four times with echocardiography and angiography. Netilmycin and clindamycin therapy was started for a period of four weeks.

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Two months later, the patient was readmitted to his regional hospital in an identical context: hemocultures were positive for *P mirabilis*. Right paracardiac pneumonia was diagnosed, and netilmycin and clindamycin were once again prescribed. The patient was discharged after 15 days of treatment, following complete resolution of the infection. However, he was readmitted two days later, and again referred to Laval Hospital. On admission, the patient was described as being cachectic and septic. Physical examination was normal, whereas hemocultures depicted *P mirabilis*. Netilmycin and clindamycin were prescribed again, rapidly resolving the fever. However, the patient became septic 10 days later. At that time, the central venous catheter was deemed to be the source of the septic state. Hemocultures were subsequently positive for *C albicans* and *P mirabilis*.

Thus, extensive investigation was performed again. Isotopic phlebography, pulmonary ventilation/perfusion scan, gallium scan, sinus x-ray, abdominal echocardiography, intravenous urography, intestinal transit scintigraphy, barium studies and gastroscopy were all negative. However, a significant right heart dilation was reported to have progressed over the past three months. Echocardiography revealed a 2.5 cm × 4 cm right atrial mass, suggestive of the presence of a thrombus. This mass seemed to be attached to the right side of the atrium instead of the interauricular septum. The leaflets of the tricuspid valve were free of movement and no dysfunction was observed.

On the premise of an infected thrombus in the right atrium, an exploratory thoracotomy was performed. Surprisingly, the cardiac surgeon found a foreign body that had perforated the right atrium and was now in the pericardium. The 'foreign body' was a 5.5 cm toothpick. Two 2.3 cm × 1.3 cm fragments with a fibrinous aspect were also removed. The cultures of these fragments underlined the presence of *C albicans*, which was the same type isolated in preceding hemocultures. Following surgery, the patient recovered completely. At a five-month follow-up examination, he was asymptomatic. The patient did not recall swallowing a toothpick.

DISCUSSION

The ingestion of a foreign body seems to be an uncommon but real problem. Indeed, the overall mortality associated with complications related to toothpick ingestion was reported to be 18%, and is partially associated with the difficulty of diagnosing the infection (1). In the present case, no gastrointestinal tract perforation was found during the exploratory laparotomy, but there were clinical signs and symptoms of peritonitis, and intra-abdominal bacteria were found in the pericardial effusion. Although the final laparotomy did not reveal a thrombus in the inferior vena cava, we cannot exclude the presence of an infected thrombus at a certain point in time. Thus, the clinical presentation of the present case suggests that the toothpick passed through the distal one-third of the duodenum, penetrated into the inferior vena cava and migrated into the right atrium, causing bacterial pericarditis. The present case suggests that foreign body ingestion should be taken into account during the evaluation of abdominal pain, peritonitis or repeated septicemia of unknown origin.

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