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CASE REPORT

An unusual cause of acute appendicitis

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ABSTRACT

Appendicitis is one of the most frequent surgical urgency worldwide. Despite its frequency, little is known about its pathogenesis and even less about its etiology. Obstruction of the appendiceal lumen is the most likely pathogenetic mechanism that leads to bacterial overgrowth and inflammation. Scientific literature never stops to enrich itself with reports about etiologic factors. Here we report an unusual cause of appendiceal obstruction by a bullet which was inadvertently ingested while eating the meat of a game bird (quail).

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Key words: Appendicitis - Foreign bodies - Intestinal obstruction.

Appendicitis is one of the most frequent surgical urgency worldwide.[1] It is more frequently observed in children and young adults, though it can occur at every age (even in the elderly). It seems to be more frequent in male patients. It is estimated that every year about 0.2% of the population suffer from an episode of appendiceal inflammation of varying severity degree. Despite this abundance of experience, fundamental questions about the pathogenesis and etiology of appendicitis still remain unanswered.

It is acknowledged that the obstruction of the appendiceal lumen is the pathogenetic mechanism that leads to bacterial overgrowth and inflammation.

Obstruction is generally led by hypetrophic lymphatic tissue, coproliths (appendicoliths), foreing bodies, parasites, congenital or acquired stenosis or neoplasms.

We observed an unusual cause of appendiceal obstruction by a bullet which was inadvertently ingested while eating the meat of a game bird (quail).

Case report

A 80 years old male sought medical consultation for abdominal pain in the right lower quadrant. The onset of the symptoms dated two days back. The pain was initially vague; then, it had progressively worsened with associated fever. At clinical examination, the abdomen appeared to be distended and a tender spot was definitely appreciated on the McBurney point though without any corrresponding guarding sign.

The patient medical history was of limited relevance. He suffered from COPD. Some years before, he was operated on for right inguinal hernia. No sign of right inguinal hernia recurrence could be detected.

Laboratory tests showed severe leucocytosis (21.000 WBC) and increased CRP (18.78 mg/dL). Plain abdominal X-ray showed some distended ileal loops in the upper left quadrant. An acute appendicitis was deemed possible by a clinical standpoint. Nontheless, some concerns still existed because of the advanced age of the patient at which appendicitis is usually rare. In order to confirm diagnosis and to rule out other possible causes of right lower quadrant pain, an abdomen CT was carried out. On CT scans, several bowel loops were distended by fluids; the appendix had thickened walls and, surprisingly had some little bullets inside (Figure 1). Other bullets were visible in the bowel (Figure 2).

The density of the adipose tissue surrounding the appendix was abnormally increased and some microscopic air bubbles could be detected inside as a consequence of appendiceal inflammation and micro-perforation.

The patient underwent urgent laparoscopy. A gangrenous inflammation of the appendix was confirmed and appendectomy was carried out via laparoscopic route. A drain was placed in the right lower quadrant. The post-operative course was uneventful

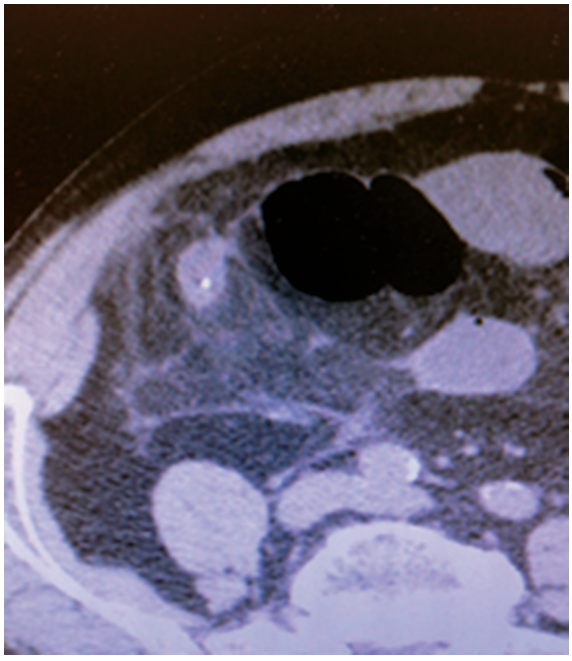

Figure 1.—Abdominal CT scan showing a bullet into the appendiceal lumen.

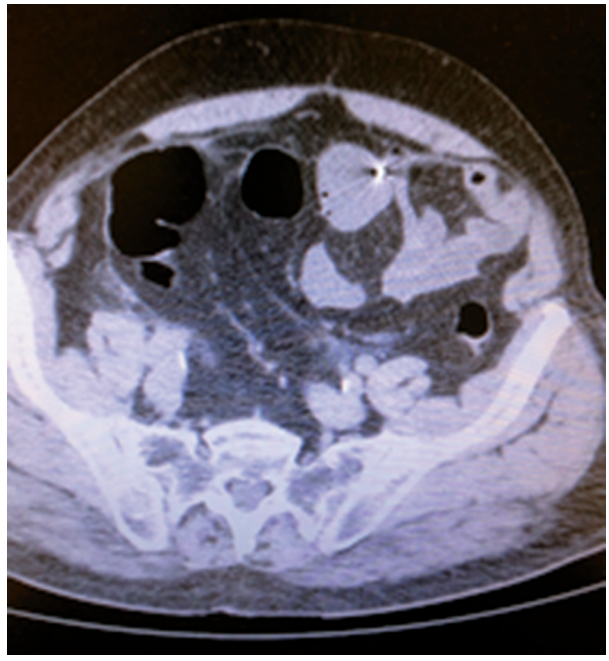

Figure 2.—Abdominal CT scan showing another bullet into the bowel.

so the patient was discharged in the 5th post-operative day. After recovery, the history of the patient was further investigated. He confirmed that two days before the operation, he had eaten some game birds (quails) killed by shotgun while hunting. The abdominal pain had started about three hours after meal, that is consistent with the average transit time from stomach to cecum. So it can be hypothesized that three hours after the index meal, bullets stuck into to appendiceal lumen causing obstruction, distension and pain. The subsequent bacterial overgrowth was responsible for inflammation, micro-perforation and for the related symptoms (fever, abdominal tenderness and leukocytosis).

Discussion

Appendicitis is one of the most frequent surgical urgency worldwide. The chance of a person developing appendicitis over the course of his or her lifetime is ~7%. Despite its frequency, little is still known about its pathogenesis and even less about its etiology.

It is acknowledged that the occlusion of the appendiceal lumen is the pathogenetic mechanism that leads to bacterial overgrowth and inflammation.

Moreover, continued mucosal secretion into the obstructed appendix leads to distension, impaired venous outflow and wall infarction; subsequent bacterial invasion into the appendiceal wall can lead to gangrene and perforation. Different causes of obstruction have been described, according to the age of appendicitis presentation. In children and young people, the hypertrophy of lymphatic tissue within the submucosal layer in response to viral or bacterial stimuli is the leading cause. Indeed, the appendix is now considered an immunologic organ that participates actively to infections with secretion of immunoglobulins, particularly IgA. In the adults the obstruction is usually due to a coprolith or ingested fruit stones; congenital or acquired stenosis, such as the ones related to visceral adhesions have also been described. Parasites are a possible cause of appendicitis. *Anisakis* worms are likely to nestle into the intestinal lumen leading to intestinal or appendiceal obstruction.[2] *Enterobius vermicularis*, also called pinworm, crawls itself to the lumen of the appendix; obstruction of the narrow appendiceal lumen initiates the clinical illness of acute appendicitis[3-4].

In the elderly, though other causes are also possible, a neoplasm should always be taken into account. Appendiceal neoplasms [5-7] arising from the epithelium, such as the mucinous cystadenoma and the mucinous cystadenocacinoma, are likely to expand into the lumen or to obstruct it with the excreted mucus.

We observed an unusual cause of appendiceal obstruction by a bullet which was inadvertently ingested while eating the meat of a game bird (quail).

Conclusions

Despite its frequency, appendicitis is far from being a completely known pathology. Fundamental questions about the pathogenesis, diagnosis and management of appendicitis remain unanswered leading to a never-ending scientific debate. Similarly, the literature never stops to enrich itself with reports about etiologic factors. This report adds another unusual cause of acute appendicitis to this list; to our knowledge, it has never been reported before that inadvertently ingested bullets could cause appendicitis.

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Conflicts of interest.—The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.
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