Angry Bird's Revenge: Hepatic Abscesses Secondary to Colonic Perforation

Gholamreza Sivandzadeh[1], Alimohammad Banazadeh[2], and Amir Anushiravani[3]

[1] Department of Gastroenterology, Gastroenterology and Hepatology Research Center, Nemazee Hospital, Shiraz University of Medical Sciences, Shiraz, Iran

[2] Department of Surgery, Nemazee Hospital, Shiraz University of Medical Sciences, Shiraz, Iran

[3] Department of Gastroenterology and Hepatology, Digestive Disease Research Institute, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran

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Abstract- Foreign bodies are commonly ingested and usually pass through the gastrointestinal tract, but in less than 1% complications can be seen. We aimed to report a very rare case of multiple hepatic abscesses caused by perforation of the sigmoid colon due to a chicken bone. An 82-year-old man presented with a 5-day history of abdominal pain, fever, and coffee ground vomiting. He was febrile and tachycardic and had a mild localized abdominal tenderness in the left lower quadrant. Laboratory findings revealed a lymphocyte dominant leukocytosis with an elevated erythrocyte sedimentation rate. Multiple abscesses were shown in the right lobe of the liver in abdominal computed tomography. Colonoscopy showed a chicken bone perforating both walls of the sigmoid colon. He received broad-spectrum antibiotics and underwent surgery for a complete recovery. Chronic lymphocytic leukemia was diagnosed by flow cytometry phenotyping. Mortality and morbidity of hepatic sepsis caused by foreign body-induced colon perforation depend on a rapid diagnosis. We presented a very rare condition that should always be kept in mind when dealing with a case of liver abscess and even while confronting septic shock with an unknown origin.

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Introduction

Ingestion of foreign bodies are common, and 80% pass through the gastrointestinal tract (GIT) without needing intervention, while 20% and 1% will respectively, need endoscopic or surgical removal. Fish bones, bones, and dentures are the most common foreign bodies in adults. They usually cause non-specific symptoms, but in less than 1% complications such as perforation and penetration of the GIT may be seen. This rare entity presents with abdominal pain (95%), fever (81%), or localized peritonitis (39%). Diverticular disease is the most common cause of sigmoid perforation, a surgical emergency. Traumatic colonic perforation due to foreign bodies usually occurs at narrow points, mainly the ileocecal valve and rectosigmoid junction (1,2).

Liver abscesses rarely arise from perforation of any segment of the GIT allowing portal drainage of bacteria to hepatocytes (3). Very few cases of liver abscesses due to penetration of a foreign body into the GIT have been reported in the literature (4). Only two other cases with sigmoid perforation have been reported. We report a case of multiple hepatic abscesses that developed secondary to an ingested chicken bone perforation of the sigmoid which was treated successfully by surgical retrieval and broad-spectrum antibiotics.

Case Report

An 82-year-old man presented with a 5-day history of abdominal pain, fever, and coffee ground vomiting. The pain was generalized and gradually got worse, eventually localizing in the left lower quadrant. There were constipation and anorexia, but he didn't complain of weight loss, tarry stool, or jaundice.

The patient had no past history of any medical or surgical problem. He had no known drug allergies, but he was using diclofenac due to generalized body pain for years.

Corresponding Author: A. Anushiravani
Department of Gastroenterology and Hepatology, Digestive Disease Research Institute, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran
Tel: +98 917 3160616, Fax: +98 21 82415400, E-mail address: amiranush23@yahoo.com

Physical examination revealed a 38.5° C fever, tachycardia of 100 per minute, and a normal blood pressure. In the abdominal examination, localized tenderness was seen in the left lower quadrant.

Laboratory data revealed a leukocyte count of 25,400/ml, with lymphocyte predominance (80%) and an erythrocyte sedimentation rate of 59 mm/hr (Table 1).

A spiral abdominopelvic computed tomography revealed multiple abscesses in the right lobe of the liver and inflammation of the left colon. An upper endoscopy was also done due to anemia and positive occult blood, only revealing few clean base ulcers in the gastric antrum.

Table 1. Laboratory data of the patient during admission

Laboratory test	1st day	Last day
White blood cells (/mm^3)	25400	14700
Differential (%)	80% lymphocyte	73% lymphocyte
Hemoglobin (gr/dl)	12.3	16.1
Platelet (/mm^3)	300,000	264
Erythrocyte sedimentation rate (mm/hr.)	59	-
C-reactive protein	106	-
Blood cultures	No growth	No growth

We had acute diverticulitis and inflammatory bowel disease in our differential diagnosis list. The patient received intravenous antibiotics, and his fever resolved and was discharged. He returned a week later with high-grade fever and generalized abdominal pain. There was no evidence of acute diverticulitis then, so a colonoscopy was performed showing a hard foreign body, two centimeters in diameter, about 25 centimeters from the anal verge which had penetrated both sides of the colonic wall (Figure 1).

The patient was sent to the operation room where the chicken bone was removed by laparotomy (Figures 2,3). The perforation site was clean, and the chicken bone was firmly stuck in a diverticulum. Therefore, the edges of the perforation were sewn together, and primary anastomosis was done. The patient recovered completely from his operation.

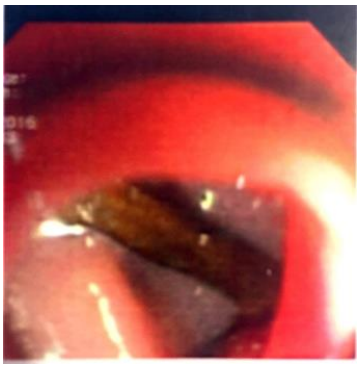

Figure 1. Chicken bone saw perforating both sides of the sigmoid colon in colonoscopy

Figure 2. A two-centimeter chicken bone after removal from sigmoid colon

Figure 3. A chicken bone that has perforated the sigmoid colon is being removed during operation

He received broad-spectrum antibiotics (meropenem and vancomycin) which completely resolved the liver abscesses.

A flow cytometer phenotyping on peripheral blood smear was performed, since he had leukocytosis with lymphocyte predominance, revealing chronic lymphocytic leukemia (CLL). His CLL was not treated considering his hemoglobin and platelet levels. Regular checks have been carried out in the outpatient setting, and he is doing fine. A written informed consent was also taken.

Discussion

Liver abscess and associated sepsis can be a potentially life-threatening condition, especially in the elderly. Previous reports suggest that unidentified foreign bodies may be vastly underdiagnosed in this condition (5). It is more common in the extremes of age and in adults with psychiatric disorders, developmental delays, and alcohol addiction. Preexisting pathology of the GIT has been shown to predispose to foreign body-induced perforation, such as strictures, diverticulosis, malignancies, achalasia, esophageal rings, and Meckel's diverticulum (6).

Clinical suspicion is often difficult in the absence of specific symptoms and imaging findings, and also the fact that most patients often do not recall ingesting a foreign body. It might be helpful to ask if toothpicks have been used or chicken and fish have been consumed in previous days.

Abdominal pain (77%), fever (58%), and vomiting (19%) were the most common signs and symptoms. Unfortunately only 5% of patients reported a history of foreign body ingestion (2).

Lambert reported the first case of hepatic abscess secondary to a GIT perforation induced by a foreign body in 1898, which was discovered on autopsy (7). Only as few as 40 cases have been reported in literature ever since (Table 2), showing that fish bones and the stomachs were the most foreign object and site of perforation, respectively. The liver abscess was found mainly in the left lobe, and its microorganisms were normal flora of the oropharynx, mainly of the streptococcal genre. However, in nearly half of these cases, the causal germ was unknown (8).

Physicians should be aware that morbidity and mortality depend on rapid diagnosis. Therefore, we suggest that this rare condition should be considered and always be kept in mind when dealing with a case of liver abscess and even while confronting septic shock with an unknown origin.

Table 2. Literature review of foreign body-induced liver abscesses

Reference	Year	Author	Foreign body	Penetration	Liver	Bacteria	Laparotomy	Mortality
1	1955	Griffiths	Needle	Stomach	Right lobe	Unknown	Autopsy	Yes
2	1955	Griffiths	Toothpick	Duodenum	Right lobe	Unknown	Autopsy	Yes
3	1966	Aron	Fish bone	Stomach	Right lobe	E. coli, Proteus	Yes	No
4	1971	Berk	Chicken bone	Stomach	Left lobe	Unknown	Yes	No
5	1971	Abel	Needle	Stomach	Left lobe	Unknown	Yes	No
6	1981	Tsuboi	Fish bone	Stomach	Left lobe	Unknown	Yes	No
7	1981	Rafizadeh	Toothpick	Duodenum	Left lobe	Streptococcus	Yes	No

Continuance of Table 2

Reference	Year	Author	Foreign body	Penetration	Liver	Bacteria	Laparotomy	Mortality
8	1981	Wood	Needle	Retrocecal appendix	Right lobe	Streptococcus viridens	Yes	No
9	1983	Shaw	Dental plate	Descending colon	-	Unknown	-	-
10	1984	Bloch	Toothpick	Stomach or duodenum	Left lobe	Streptococcus	Yes	-
11	1986	Penderson	Toothpick	Stomach	Left lobe	Unknown	Yes	No
12	1988	Gonzalez	Fish bone	Stomach	Left lobe	Unknown	Yes	No
13	1990	Dugger	Fish bone or	Stomach	Right lobe	E. coli, Proteus	Autopsy	Yes
14	1990	Allimant	Toothpick	Stomach	Left lobe	Unknown	Yes	No
15	1991	Masunaga	Fish bone	Stomach	Left lobe	Unknown	Yes	-
16	1992	Shuldais	Fish bone	Stomach	-	Unknown	-	-
17	1993	Chen	Chicken bone	Stomach	Left lobe	Unknown	Yes	No
18	1996	Acosta	Needle	Appendix	-	Unknown	-	-
19	1997	Tsui	Clothespin, Toothpick	Stomach, Duodenum	-	Unknown	-	-
20	1999	Perkins	Pen	Duodenum	Right lobe	Streptococcus malleri	No	No
21	1999	Horii	Fish bone	Unknown	Left lobe	Streptococcus constellatus	No	No
22	1999	Drnovsek	Toothpick	Duodenum	Both	Streptococcus viridens	Yes	No
23	1999	Chan	Fish bone	Stomach	-	Unknown	Yes	No
24	1999	Tsai	Fish bone	Stomach	Left lobe	Unknown	No	No
25	1999	Guglielminet	Toothpick	Stomach	Left lobe	Unknown	No	-
26	2000	Paraskeva	Fish bone	Sigmoid colon	Right lobe	Streptococcus malleri	No	No
27	2000	Cheung	Toothpick	Stomach	Left lobe	Unknown	Yes	No
28	2000	Broome	Chicken bone	Stomach	Left lobe	Unknown	Yes	No
29	2001	La Veja	Fish bone	Unknown	Right lobe	-	Autopsy	Yes
30	2001	Kessler	Fish bone	Duodenum	Left lobe	Eikenella corrodens	Yes	No
31	2001	Byard	Chicken bone	Duodenum	Both	*E. coli*, mixed anaerobes, and Candida albicans	Autopsy	Yes
32	2002	Theodoropoulou	Fish bone	Stomach	Left lobe	Unknown	Autopsy	Yes
33	2003	Chintamani	Needle	Unknown	Right lobe	Streptococcus pyogenes, E-coli	Yes	No
34	2003	Kanazana	Toothpick	Stomach	Left lobe	Unknown	Yes	No

Continuance of Table 2

Reference	Year	Author	Foreign body	Penetration	Liver	Bacteria	Laparotomy	Mortality
35	2003	Bilimoria	Toothpick	Sigmoid colon	Right lobe	Streptococcus	Yes	No
36	2003	Houli	Chicken bone	Transverse colon	Right lobe	Streptococcus angiosus	Yes	No
37	2004	Tomimori	Fish bone	Stomach	Left lobe	Streptococcus constellatus	Yes	No
38	2005	Lee	Chicken bone	Stomach	Left lobe	Klebsiella spp,	Yes	No
39	2005	Starakis	Chicken bone	Duodenum	Left lobe	Sreptococcus viridans	Yes	No
40	2005	Lee	Fish bone	Stomach	Left lobe	Streptococcus milleri	Yes	No
41	2005	Goh	Fish bone	Duodenum	Left lobe	Streptococcus milleri	Yes	No
42	2006	Chiang	Toohpick	Duodenum	Right lobe	Staphylococcus aureus	No	No

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