Case Report

Four Cases of Cecal Cancer with Appendicitis-like Symptoms

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Abstract : Four cases of cecal cancer with appendicitis-like symptoms were compiled. The initial diagnosis in all cases was acute appendicitis, and therefore surgery was performed. The first case was a 75-year-old male with an initial diagnosis of acute appendicitis. After conservative therapy, barium enema revealed a polyp in the cecum. Colonoscopy was performed and biopsies were taken from the tumor. Histopathology revealed adenocarcinoma, and two weeks later the tumor was surgically removed. Three similar cases are also reported. The following possibilities should be included in the differential diagnosis of acute appendicitis: 1) acute appendicitis due to obstruction of the lumen by a tumor; 2) synchronous acute appendicitis and cecal cancer; and 3) cancer causing appendicitis-like symptoms.

Key words : cecal cancer, appendicitis, diagnosis

Introduction

Although appendicitis is a very common disease, several reports have shown that it still may be misdiagnosed. Cecal cancer in particular may be a confounding factor, since it may induce the onset of an episode of appendicitis or just present with symptoms resembling appendicitis.

Report of Cases

Case 1

A 75-year-old male patient complained of lower right abdominal discomfort that had persisted for 2 weeks, followed by pain for 3 days. Three years earlier he had undergone small bowel resection, due to ileus of unknown origin. The abdomen was soft and flat. There was tenderness at the lower right abdomen but no rebound tenderness nor fever. WBC count was elevated ($21,200/\text{mm}^3$), but the body temperature was 36.7°C . X-ray of the abdomen showed a moderate amount of gas in the small bowel but no evidence of air-fluid levels. Appendicitis was suspected and conservative therapy was started. Barium enema showed a mushroom-type defect in the cecum (Fig. 1 bottom) and colonoscopy confirmed the existence of a pedunculated polyp, without ulceration or bleeding (Fig. 1 top). Partial resection of the polyp was performed and the histopathological diagnosis was cancer in adenoma. CT scan showed no evidence of metastasis to the liver or to peri-aortic lymph nodes. A second polypectomy was attempted, but total resection of the polyp was not possible. Ileocecal resection was then performed. The appendix was normal, but a small finger-size mass was palpable in the cecum, which corresponded to the remaining polyp

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Fig. 1 Case 1

Top: Colonoscopy revealed a polyp with a stem.

Bottom: Barium enema showed a mushroom-type defect in the cecum.

(Fig. 2) that was later confirmed by the pathologist to be non-malignant. The prognosis was excellent.

Case 2

A 79-year-old male complained of lower right abdominal pain and high fever lasting for 2 days, with a steady increase in the pain. He had had cerebral embolism 20 years previous, and had been suffering from diabetes mellitus for 6 years. Physical examination revealed tenderness, defense and rebound tenderness in the lower right quadrant. There was tenderness at McBurney's point and rebound tenderness due to peritonitis. Slight anemia and hypoproteinemia were detected. WBC was $14,000/\text{mm}^3$. Acute appendicitis was diagnosed and appendectomy was performed. During surgery a gangrenous appendix and a small tumor (diameter about 3 cm) in the cecum were found. Biopsy of the tumor revealed an adenocarcinoma. Further studies with barium enema revealed an irregular-filling defect, protruding towards the lumen. CT scan showed no evidence of the tumor nor evidence of metastasis to the liver and lymph nodes. Right hemicolectomy was performed. A tumor in the cecum and the orifice of the appendix is shown in the surgical specimen (Fig. 3). The lesion was obstructing the lumen of the appendix, suggest that acute appendicitis occurred due to the cecal cancer. The evolution was good.

Fig. 2 Case 1

Top: Close view of the lesion.

Bottom: Resected specimen (Ileo-cecal resection)

Fig. 3 Case 2

Top: Right hemicolectomy specimen.

Bottom: Section of the resected specimen.

Fig. 4 Case 3

Top: Close view of the lesion.

Bottom: Resected specimen (Ileo-cecal resection) revealed a well-differentiated adenocarcinoma.

Case 3

A 72-year-old female complained of constipation for 5 days, pain in the right lower abdomen and fever. Her past medical history included Addison's disease for 13 years treated with steroids, tuberculosis at age 12, peritonitis at age 39 and duodenal ulcer at age 55.

There was tenderness in the right lower abdomen with a palpable fixed mass. There was no rebound tenderness and the heel-down test was negative. WBC count was $8,900/\text{mm}^3$. A tumor, 6-7 cm in diameter was detected by ultrasonography. During surgery there was no fluid in the abdominal cavity and a fist-sized hard tumor was found in the cecum. The retroperitoneal cavity was invaded, though the ureter and uterus were not. Ileo-cecal resection was performed (Fig. 4) and histopathological examination showed well-differentiated adenocarcinoma. The evolution after surgery was uneventful and the patient was discharged from hospital 26 days later.

Case 4

A 39-year-old male complained of lower right abdominal pain for 6 months. Three months earlier he underwent upper G-I barium examination and cholecystography, without abnormal findings. However the pain increased and became persistent. When he came to this hospital, he had tenderness, rigidity and rebound tenderness in the lower right abdomen with high fever and nausea. WBC count was $20,300/\text{mm}^3$. Appendicitis was suspected and appendectomy was performed. The appendix was reddish, swollen, brittle and bent in the

Fig. 5 Case 4

Top: Close view of the lesion.

Bottom: Resected specimen (Ileo-cecal resection) revealed a well-differentiated adenocarcinoma.

middle. Its distal end was adherent to the cecum. The appendix was wrapped by the omentum forming a mass. The whole mass was dissected and removed. Fever persisted after surgery, and was attributed to an abscess in the abdominal wall. Eleven days later, the abscess was drained and fever receded. However, 30 days later, the patient had referred abdominal pain, and presented with vomiting the following day. X-ray showed a great amount of gas in the small intestine, and air-fluid levels could be seen. Oral feeding was stopped and a long tube (enteral feeding tube) was inserted to start conservative treatment. He recovered in a few days, but after resumption of oral feeding the patient had a relapse. The long tube was inserted again. This procedure was done repeatedly but was ineffective, so surgery was performed again in the 53rd day after appendectomy. The cause of the ileus, adhesions of the small intestine, was not found. A tumor in the cecum was found and ileo-cecal resection was performed (Fig. 5). The histopathological diagnosis was well-differentiated adenocarcinoma. Forty-six days later the patient was discharged. No further follow-up was made.

Discussion

There are two types of cecal cancer with appendicitis-like symptoms. The first one has real inflammation of the appendix, whereas the other type has no actual inflammation in the appendix. The latter is almost always misdiagnosed as appendicitis. According to Yamagishi¹⁾ et al., 10.5% of all cases diagnosed as appendicitis were misdiagnosed, and

Fig. 6
The relationship between cecal cancer and appendix

2.8% were actually cecal cancer. According to Hiss²⁾, 4 % of patients over 60 years diagnosed with appendicitis were misdiagnosed, and all were suffering from cecal cancer. Peltokallio³⁾ studied those cases with cecal cancer misdiagnosed as appendicitis, and found that the real inflammation of the appendix was evident in 27%.

There are three possible pathologic relationships between cecal cancer and appendicitis⁴⁻⁶⁾: In type 1 (Fig. 6 top), appendicitis is induced by the obstruction of the appendiceal lumen by the tumor, in type 2 (Fig. 6 middle) there is synchronous presence of cancer and appendicitis, and in type 3 (Fig. 6 bottom) there is cancer without appendicitis. In this study, cases 1 and 3 were type 3. Case 2 was type 1, and case 4 was type 2.

Case 4 suggests that surgeons are in excellent position to diagnose the presence of cancer immediately after appendectomy. However, this case also suggests that prolonged ileus after appendectomy can mean a far more serious disease like cancer. Under ordinary circumstances during surgery, inflammation may be absent or may not be serious; in which case the surgeons may suspect that a disease other than appendicitis. However in case 4 appendicitis was diagnosed appropriately and there was no further doubt of another disease. In old patients who complain of appendicitis-like symptoms, the existence of cecal cancer should be ruled-out, especially in those who have long-lasting symptoms. CEA levels should be checked in anemic patients and in those with a palpable tumor at the lower right abdomen. If severe inflammation is absent, barium enema or colonoscopy should be performed. Finally, the presence of fistula, abscess or ileus in the post-operative stage should be investigated, and the surgeons should consider the possibility of cecal cancer in the differential diagnosis of acute appendicitis.

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