CASE REPORT

Analysis on misdiagnosed cases of right colon cancer as appendicitis

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Abstract: The aim of this case report is to investigate the causes of misdiagnosing right colon cancer as appendicitis, in order to reduce the misdiagnosis rate. The process of diagnosing and treating 44 misdiagnosed right colon cancer cases was analyzed. It was found that the right colonic lumen in these patients was thick, and their cancer consisted mostly of the ulcerative type or of a cauliflower-like tumor that protruded into the intestinal cavity. Moreover, ring-shaped and structured cancer was rarely observed, which suggested a decreased likelihood of obstruction. The patients showed limited peritoneal irritation signs in their right lower abdomen, which was also a potential cause for misdiagnosis. Right colon cancer associated with appendicitis is easily misdiagnosed as simple appendicitis, chronic appendicitis, or appendiceal abscess. Therefore, it is necessary to raise general awareness on the manifestations of the disease in order to exclude other common complications during diagnosis and to reduce the misdiagnosis rate. An accurate early diagnosis and treatment will improve patient prognosis.

Keywords: right colon cancer; misdiagnosis; appendicitis

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Introduction

Colon cancer is the third most common malignant tumor of the alimentary tract and its incidence rate is on the rise in recent years[1]. Based on a previously published study, the average misdiagnosis rate of colon cancer was reported to be ~19%;[2] however, there is limited statistical information on the incidence of colon cancer misdiagnosis in the English medical literature. Owing to right colon cancer’s biological traits and anatomical features, its early symptoms lack specificity and its clinical manifestations are similar to appendicitis and appendiceal abscess – a combination of factors that could easily lead to misdiagnosis[3]. Some misdiagnosed cases are only found during appendix surgeries, and treatments are delayed due to inadequate preoperative preparation.

Clinical data

General description

A total of 44 cases, consisting of 25 male and 19 female patients, were studied. The age of the patients ranged from 38 to 80 years old, with a mean age of 52 years old. The clinical manifestations were reported as follows: right lower abdominal pain, fixed tenderness in the right lower abdomen, and positive rebound tenderness. Preoperative diagnosis revealed 14 cases of acute appendicitis and limited peritonitis. The patients were admitted into the hospital mainly as a result of recurrent right lower abdominal pain. There were 24 cases of acute exacerbation of chronic appendicitis. Ultrasound scans showed cystic mass in the appendix area of the right lower quadrant. The admission diagnosis confirmed six cases of appendiceal abscess. After 7–14 days of anti-inflammatory treatment, it was observed that the mass in the right lower quadrant had various degrees of reduction, but no complete disease remission was observed. Subsequent electronic colonoscopy and pathological diagnosis revealed that the tumor was ileocecal valve cancer.

Treatment and results

It was found that 29 cases underwent emergency surgery.
During the surgery, it was observed that the appendicitis in 25 cases was mild. Detailed investigations of the cecum, ascending colon, and ileum revealed 10 cases of cecal tumor and 15 cases of ascending colon tumor. Out of these 25 cases, 18 underwent one-stage right hemicolectomy, 4 underwent second-stage right hemicolectomy, and 3 underwent palliative operation owing to the advanced age of the patients. There were 4 cases of significantly swollen appendix that were detected during operation and they were originally diagnosed as acute appendicitis.

However, the pain in their right lower quadrant remained after the initial operation, and subsequent electronic colonoscopy as well as pathological diagnosis revealed the underlying cause to be colon cancer. In response, a right hemicolectomy procedure was performed one month after the first surgery. Meanwhile, 5 appendiceal abscess cases were identified at the point of admission. However, electronic colonoscopy and pathological diagnosis soon revealed that they were in fact ileocecal valve cancer and all five patients underwent right hemicolectomy. In general, post-operative pathology revealed 29 cases of adenocarcinoma, 3 cases of mucinous adenocarcinoma, and 2 cases of adenocarcinoma anaplastic. All 34 patients were reportedly cured of their conditions at the one-year follow-up mark.

Discussion

Typical clinical manifestations of patients with right colon cancer are weight loss, anemia, and right lower quadrant mass, among other symptoms. A small number of cases showed clinical features of acute and chronic appendicitis, especially in ileocecal valve cancer. Acute appendicitis is the most commonly encountered condition in general surgery and it may affect anyone, regardless of their age. Unfortunately, the misdiagnosis of right colon cancer as appendicitis or appendiceal abscess does occur occasionally in the clinical setting. The rate of misdiagnosis ranges from 10.0% to 22.8% internationally, while that in China is as high as ~25%.

Causes of right colon cancer misdiagnosed as acute appendicitis

1. The growth of colon cancer increases the pressure on the intestine and appendix chamber. In these patients, poor drainage in the appendix or obstruction by phytobezoar led to the obstruction of the appendix lumen, resulting in appendicitis.
2. The spread of tumor necrosis infection in these patients directly affected the appendix.
3. An absence of patients’ complete medical history. The early reported symptoms were changes in the bowel habits and stool characteristics of these patients, i.e. increased frequency of bowel movements, diarrhea, constipation and blood, as well as the presence of pus or mucus in stool. Abdominal pain was also one of the early symptoms and it was often detected as a persistent pain with inaccurate positioning. The aforementioned symptoms should be carefully observed and a detailed patient history should be reviewed to avoid misdiagnosis.
4. Physicians did not perform a comprehensive and detailed physical examination on the patients. When dealing with right lower abdominal pain, fixed tenderness in the right lower abdomen, and rebound tenderness, attending physicians were biased towards the diagnosis of appendicitis and failed to recognize the right lower quadrant mass. Even when the right lower quadrant mass was detected, it was erroneously thought to be appendiceal abscess, as opposed to right colon cancer.
5. Surgical wounds of previously performed McBurney incisions, along with the size of the incisions, might have also contributed to diagnostic difficulties in these patients.

Proposed measures to reduce rate of misdiagnosis

1. Physicians should review the detailed medical history of patients, especially those who are older than 40 years old and belong to the high-risk group owing to one or more of the following reasons: (i) having relatives with a history of colorectal cancer; (ii) having a history of cancer, intestinal adenomas, or polypus; (iii) tested positive for fecal occult blood, and; (iv) showed more than two of the following four symptoms: mucous bloody stool, chronic diarrhea, chronic constipation, and chronic appendicitis. Patients who are in the high-risk group should be further examined via fiberopticoscopy, X-ray barium enema, or air barium contrast enema to derive a more accurate diagnosis.
2. The right lower quadrant mass, if detected, should be examined carefully before surgery. Abdominal B-ultrasonic examination, abdominal X-ray, digital rectal examination, fecal occult blood test, barium enema study, or fiberopticoscopy can be performed to confirm the initial diagnosis.
3. The exploratory incision that is performed on the right side of the abdomen must be of the appropriate size. If disease manifestation during the surgery is found to be inconsistent with preoperative clinical symptoms or laboratory examination, then the right colon should be examined carefully.
Complications or persistent pain in the right lower abdomen after an appendectomy procedure should be examined periodically to detect any signs of right colon cancer.

Conclusion

The early symptoms of right colon cancer are atypical and may lead to potential misdiagnosis as appendicitis. Nonetheless, we can effectively prevent misdiagnosis by better understanding the manifestations of the disease, conducting more thorough scientific analysis during patient diagnosis, and using more effective treatment methods to manage the disease.

References