Mucinous Cystadenocarcinoma of the Appendix Invading the Ascending Colon with Fistula Formation: Report of a Case

YASUYUKI MIYAKURA1, HIDETAKA IWAI1, KAZUTOMO TOGASHI1, HISANAGA HORIE1, HIDEO NAGAI1, YUKA KISHABA2, KOICHI SATO3, and HIROSHI AZUMA3

Departments of 1 Surgery and 2 Pathology, Jichi Medical University, 3311-1 Yakushiji Shimotsuke, Tochigi 329-0498, Japan
3 Utsunomiya Coloproctology Clinic, Utsunomiya, Japan

Abstract
Based on colonoscopy findings, we made a preoperative diagnosis of primary mucinous cystadenocarcinoma of the appendix with features of a submucosal tumor (SMT) in the ascending colon. A 59-year-old woman who presented with right lower quadrant abdominal pain underwent colonoscopy, which revealed an SMT with three nodules covered with mucus in the ascending colon. Examination of colonoscopic biopsy specimens indicated “very” well-differentiated adenocarcinoma with mucus lakes. Abdominal computed tomography showed irregular wall thickness from the cecum to the ascending colon. The adjacent appendix had an enhanced wall and unclear border against the ascending colon. Thus, we performed right hemicolecctiony, with good results. Histopathological examination revealed mucinous cystadenocarcinoma of the appendix, invading the ascending colon with fistula formation. Appendiceal tumors can manifest with a variety of colonoscopic features, and curative surgical resection should be attempted even if there is fistula formation.

Key words Colon cancer · Direct invasion · Colonoscopy · Submucosal tumor · Fistula

Introduction

Primary mucinous cystadenocarcinoma of the appendix is uncommon, accounting for only 8% of all primary appendiceal malignancies.1 The preoperative diagnosis of mucinous cystadenocarcinoma is important because inappropriate surgical management could cause peritoneal seeding, resulting in fatal peritoneal metastasis. Establishing an accurate diagnosis can be difficult, although computed tomography (CT) and ultrasonography have occasionally revealed right lower quadrant masses with near-water density, leading to an accurate assessment. On the other hand, colonoscopic diagnosis of the appendix tumor is exceedingly difficult. To the best of our knowledge, this is the first description of mucinous cystadenocarcinoma of the appendix diagnosed correctly with the aid of colonoscopy.

Case Report

A 59-year-old woman presented to a local hospital for investigation of right lower quadrant abdominal pain. Her lower right abdomen was tender on palpation, but there was no sign of peritonitis. Laboratory studies revealed a white blood cell count of 5700/mm3 and a C-reactive protein value of 8.51 mg/dl (normal: <0.06 mg/dl). Colonoscopy and CT scan of the abdomen both suggested submucosal tumor (SMT) in the ascending colon, but she did not receive any treatment. About 1 year later, she visited Utsunomiya Coloproctology Clinic for a surveillance colonoscopy for the SMT in the ascending colon. An appendiceal tumor was diagnosed and she was referred to the surgical department of Jichi Medical University Hospital. According to her medical history, she had undergone abdominal surgery after a traffic accident at the age of 37 years. Her family history was negative for gastrointestinal cancer and polyps. Physical examination revealed a healthy woman in no acute distress and with normal vital signs. Her cardiovascular and pulmonary findings were within normal limits. Abdominal examination revealed normal active bowel sounds in all four quadrants. Her abdomen had a scar from the past surgery and was soft, without any evidence of tenderness or peritoneal signs. Colonoscopy showed an SMT covered with mucus about 4cm in diameter, in the ascending colon (Fig. 1a–c). There were three nodules on the surface of the SMT. We sus-
expected that the mucus originated from these nodules. Magnification colonoscopy showed a type IV pit pattern\(^2\) in these nodules, suggesting a neoplastic tumor (Fig. 1d). The findings of biopsy specimens taken from these nodules indicated “very” well-differentiated adenocarcinoma with mucus lakes (Fig. 2). The appendiceal orifice was open to the cecal lumen without apparent mucosal abnormalities. An abdominal CT demonstrated irregular wall thickness with enhancement from the cecum to the ascending colon (Fig. 3). The appendix was located beside this region with an enhanced wall and unclear border adjacent to the ascending colon. Thus, we made a preoperative diagnosis of mucinous cystadenocarcinoma of the appendix invading the ascending colon. An open laparotomy revealed no ascites or other abnormalities in the peritoneal cavity. An elastic-hard tumor surrounded by fatty tissue and mesentery was located between the ascending colon and the appendix. We performed a right hemicolecotomy with extended lymph node dissection. Histopathological examination of the resected specimen revealed mucinous cystadenocarcinoma of the appendix, which had invaded the ascending colon with fistula formation (Fig. 4). There was no evidence of vascular involvement and the surgical margins were free of cancer cells. No metastasis from the carcinoma was found in the lymph