Case report

Exophytic colon cancer mimicking an ovarian tumor: the value of evaluation of the venous anatomy on MDCT

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Abstract

We report a case of exophytic sigmoid colon cancer mimicking an ovarian tumor. This tumor showed submucosal growth accompanied by an extracanal cystic component. It was difficult to determine whether this tumor derived from the sigmoid colon or from the ovary by double contrast barium enema and endoscopic examination. On multidetector-row CT (MDCT), it was possible to see that this mass continued not to the gonadal vein but to the inferior mesenteric vein indicating sigmoid colon origin. In determining the origin of a pelvic mass, it is useful to evaluate the relationship between the tumor and the venous anatomy.

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1. Introduction

Many large masses in the female pelvis arise not only from the reproductive organs but also from the gastrointestinal system, urinary system, and adjacent soft tissue. Thus, the differential diagnosis for female pelvic masses is extensive [1]. Recently investigators reported the utility of evaluating the gonadal vein on CT in determining the origin of a large pelvic mass [2,3]. They noted that when the gonadal vein continued to the pelvic mass, the mass should be considered to be of ovarian origin. Here we describe a rare feature of exophytic colon cancer precisely diagnosed by estimating the venous anatomy.

2. Case report

A 74-year-old woman consulted a local clinic complaining of constipation for 3 months. A barium enema (BE) revealed a mainly submucosal tumor with ulceration at the sigmoid colon. The BE detected a nearly smooth narrowing in the long range, deep ulceration and extravasation of contrast medium. Thus, she was referred to our hospital.

The patient’s serum carbohydrate antigen 125 (CA125) level was 70.7 U/ml (<35 U/ml), carcinoembryonic antigen (CEA) was 652.1 nm/ml (<2.5 nm/ml) and carbohydrate antigen 19-9 (CA19-9) was 73.2 U/ml (<32 U/ml). Other laboratory findings were within normal limits.

A second BE in our hospital showed circumferential involvement of the sigmoid colon with ulceration. Most of the tumor existed in submucosal layer 1 (Fig. 1). Endoscopic examination revealed severe canal stenosis mainly covered with normal mucosa and a small area of redness (not shown). Contrast-enhanced multidetector-row CT (MDCT) (Toshiba, Aquillion, Tokyo Japan) revealed a 4-cm solid mass adjacent to the sigmoid colon and two 3-cm cystic components anterior and posterior to the mass, respectively (Fig. 2A). The posterior cystic structure was abutted to the uterus (Fig. 2B). It was difficult to determine whether this mass was sigmoid colon cancer or ovarian cancer that had invaded the sigmoid colon. Thus, we tried to analyze the relationship between the venous anatomy and the mass. The left gonadal vein (GV) ran near the solid...
component of the mass and continued to the posterior cystic structure. The inferior mesenteric vein (IMV) continued to the solid component of the mass and the wall of the anterior cystic structure. According to these findings, we interpreted this solid mass and anterior cystic structure as sigmoid colon cancer with cystic change and the posterior cystic structure as a left ovarian cyst. During surgery, a tumor located in the sigmoid colon and left ovarian cyst was also confirmed. The left ovarian cyst was not attached to the sigmoid colon and was not removed. Macroscopically, the tumor showed minimal mucosal change and prominent submucosal exophytic growth (Fig. 3). Microscopic examination showed adenocarcinoma involving the whole thickness of the colonic wall, with marked necrosis or cystic degeneration of the submucosal component (not shown).

3. Discussion

The normal anatomy of the gonadal vein (GV), as imaged by CT, has been previously described [4–6]. The right GV arises from the right ovarian plexus and lies lateral to the right ureter. It ascends and parallels the right ureter, crossing anteromedially to it approximately half-way between the right GV-inferior vena cava (IVC) union and the IVC bifurcation. The right GV then joins the IVC laterally or anterolaterally [4]. The left GV arises and ascends similarly and drains into the left renal vein instead of the splenic vein (Fig. 2).
of the IVC [6]. The veins of the sigmoid colon drain into the IMV, which is located anterior to the left external iliac vessels, the left ureter and the left GV and join the splenic vein [7,8].

Recently, high-resolution CT scanners combined with intravenous contrast medium injections and thinner sections have substantially improved the imaging of the female genital tract anatomy and have facilitated precise identification of the vascular structures [6]. Thus, although the left GV travels very close to the IMV, we can easily distinguish the left GV from the IMV on MDCT.

The characteristics of the tumor, such as its content, architecture and pattern of degeneration, are not always helpful in determining the origin of a large pelvic mass [1,9,10]. We reported that by detecting the anatomic continuity of GVs to the masses on MDCT, the differentiation of the origin of large (over 8 cm) pelvic masses between ovarian and uterine origin is possible with an accuracy of around 90% [3]. In this case, the left GV continued not to the solid component of the mass but to the posterior cystic structure, and the IMV continued to the solid component and anterior cystic structure indicating that this solid mass was not of ovarian origin. According to the evaluation of these vascular anatomical findings, we precisely diagnosed the origin of the two cystic components, respectively, as well as that of the main solid tumor.

Colorectal carcinoma showing submucosal growth is extremely rare, with only 31 cases reported in the literature (all were in Japanese) [11]. Nishigami et al. reported that the histological features of these tumors were as follows: (1) abscess formation, (2) mucinous carcinoma, (3) carcinoma with lymphoid stroma, (4) carcinoma with massive lymphoid cell infiltration, (5) carcinoma with fibrosis around the tumor, (6) carcinoma arising from colitis cystica profunda. In this case, the submucosal component was mainly composed of necrosis, hemorrhage and cystic change. The reason for this was unclear; however, it is possible that carcinoma cells metastasized to the subserosal regional lymph nodes, in which the tumor grew rapidly and showed the cystic change. Because of this rare condition, the preoperative diagnosis was difficult to make using solely the double contrast barium enema or the colorectal fiberscopy.

Here we have reported a rare case of exophytic colon cancer precisely diagnosed by evaluating the anatomic continuity of the mass and the IMV and GV. In the difficulty of determining the origin of tumors in the pelvic mass, examining the relationship of venous anatomy and the mass on CT provides useful information.

4. Summary

We report a case of exophytic sigmoid colon cancer mimicking an ovarian tumor. This tumor showed submucosal growth accompanied by an extracanal cystic component. Because of the prominent submucosal growth of the tumor, it was difficult to determine whether this tumor was derived from the sigmoid colon or from the ovary by double contrast barium enema and endoscopic examination. On multidetector-row CT (MDCT), the left GV continued not to the solid component of the mass but to the posterior cystic structure, and the IMV continued to the solid component, indicating that this solid mass was not of ovarian origin but of colonic origin. Because contrast-enhanced MDCT enabled us to facilitate precise identification of the vascular structures and the female genital tract anatomy, we precisely diagnosed the origin of two cystic components, respectively, as well as that of the main solid tumor. In determining the origin of pelvic mass, it is useful to evaluate the relationship between the tumor and the venous anatomy.
References


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