Mucinous Cystadenocarcinoma of the Colon
Report of a Case

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A rare case of mucinous cystadenocarcinoma arising in the sigmoid colon, found accidentally during an operation for cholecystolithiasis, is reported. The tumor was located 40 cm from the anal verge, and had two histologic variations consisting of a large distended cystic lesion and branching cystic channels with papillary proliferation of the epithelium. Serial sections revealed the existence of a luminal communication between the two lesions. The tumor tissue was seen mainly in the muscularis propria with no mucosal involvement. The papillary portion had a highly differentiated appearance, giving rise to considerable difficulty in determining whether it was benign or malignant. In a localized area, however, the tumor invaded into the subserosa and showed distinctive atypical changes. The tumor cells showed intense reactivity for carcinoembryonic antigen. This mucinous cystadenocarcinoma was considered to be originated from an enterogenous cyst, a possible derivative of duplication of the colon. The differential diagnosis concerning this rare tumor is also discussed. [Key words: Mucinous cystadenocarcinoma; Enterogenous cyst]

MUCINOUS CYSTADENOCARCINOMA occurring primarily in the colon is extremely rare, whereas similar neoplasms may sometimes be encountered in the appendix. Many cystic lesions arising in the colon could be related causatively to congenital malformation or inflammation. Although some enterogenous cysts or duplication in the colon have been described, their malignant transformation rarely has been reported in the literature.

Report of a Case

A 72-year-old woman had a sudden onset of epigastralgia and was seen by her physician on February 28, 1987. A number of stones was detected by ultrasonography of the gallbladder. She was referred to Chiba University Hospital and was admitted on March 3, 1987 for cholecystolithiasis. At the age of 38, she underwent radical hysterectomy along with bilateral oophorectomy for endometrial carcinoma. On admission, slight tenderness was noted in the right upper abdomen. Neither lower abdominal pain nor bloody stool was present. Further examination disclosed no abnormalities in the biliary tract, liver, upper alimentary tract, and pancreas. Laboratory data, including blood cell counts and serum transaminases, were within normal limits.

Cholecystectomy was performed on March 26, 1987. A hard mass, localized in the sigmoid colon, was found accidentally during surgical exploration. Colonofiberscopy was performed immediately and revealed an elevated, ulcerative lesion, about 40 cm proximal from the anal verge. Under the clinical diagnosis of colon carcinoma, sigmoid colectomy was also performed. A biopsy specimen taken during colonofiberscopy failed to show evidence of malignancy. Neither metastasis to other organs nor regional lymph node enlargement was recognized.

The postoperative course was satisfactory and she was discharged on April 19, 1987. She was alive and well when last seen in August 1987.

Gross Findings: Surgical material of the sigmoid colon had intramural mass in the anterior wall, measuring 2.0 × 3.0 cm, with a small central ulceration. The bowel lumen was narrowed at the tumor portion and the mucosa showed spotted redness and induration (Fig. 1).
FIG. 1. Resected specimen showing localized submucosal mass with ulceration on mucosal surface, as well as circumferential thickening of the bowel wall (hematoxylin and eosin; ×1.1).

Although infiltration of the tumor into the serosal surface was suspected, no adhesion to the surrounding tissue or enlargement of regional lymph nodes occurred. The colonic mucosa, other than the lesion, appeared to be normal, with no sign of inflammatory diseases. The resected gallbladder contained 95 stones; the mucosa had no malignancy.

**Microscopic Findings:** The resected sigmoid colon was fixed in 10 percent formalin and embedded in paraffin. Serial sections were cut at 4 μm thickness and stained with hematoxylin and eosin, periodic acid-Schiff, high-iron diamine-alcian blue, pH 2.5, and elastic tissue stain. Carcinoembryonic antigen immunoreactivity was also examined using peroxidase-antiperoxidase method (Histogen Kit, BioGenex).

The tumor was made up of two components. First, there were mucin-filled, large, cystic lesions located primarily within the muscle layer (Fig. 2). One of the large cysts was disrupted to form an ulcer and its lumen contained a mixture of mucin, fibrin, erythrocytes, and some inflammatory cells. The lesion consisted of three cysts communicating with one another and their walls were mostly lined by low cuboidal cells and partially by normal-appearing mucous cells similar to those of the normal colonic mucosa (Fig. 3). Other portions lacked the epithelial covering. The cyst epithelium showed no atypical changes. From these findings the cyst seemed to be compatible with an enterogenous cyst developed from spherical duplication of the colon.

The other tumor portion was composed of scattered cystic structures of varying sizes and shapes. Serial sections revealed that their lumens had a communication with each other and with the above-mentioned enterogenous cyst. Intraluminal papillary projections of the lining epithelium were prominent and usually had a well-differentiated appearance (Fig. 4). Careful observation demonstrated some glands composed of atypical cells with large nuclei, prominent nucleoli, and loss of polarity (Fig. 5). Moreover, these cysts or glands were distributed randomly within the muscular, as well as subserosal, layers, mimicking an invasive intramuscular growth pattern commonly seen in colonic carcinoma. No vascular involvement could be observed, however.

These glands had intense CEA immunoreactivity in the cytoplasm (Fig. 6), while normal colonic glands and the lining epithelium of the enterogenous cyst showed weak staining restricted to the apical sur-