

Sarcomatoid Carcinoma of the Colon : A Case Report

Sarcomatoid carcinoma is a rare biphasic tumor characterized by a combination of malignant epithelial and mesenchymal cells. We report a rare case of sarcomatoid carcinoma of the colon. A 41-yr-old woman was hospitalized with a history of melena. Total colectomy was performed under the impression of colonic carcinoma. Histologically, the tumor was composed of differentiated adenocarcinoma in superficial portion and sarcomatoid spindle cells in deeper portion with a transitional area between the two portions. The sarcomatous areas revealed polygonal and spindle-shaped anaplastic malignant cells arranged in sheet, short fascicular or haphazard pattern. Immunohistochemically, tumor cells showed a positive immunoreaction for cytokeratin, epithelial membrane antigen, and vimentin. The histopathological and immunohistochemical transitions between the adenocarcinoma area and the spindle cell area suggested that the sarcomatous elements originated from the adenocarcinoma during tumor progression.

Key Words : *Carcinosarcoma; Colon; Immunohistochemistry*

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INTRODUCTION

Sarcomatoid carcinoma is an extremely rare biphasic tumor characterized by a combination of malignant epithelial and mesenchymal cells. To date, our search by computer (MEDLINE search) revealed only six cases of the colonic sarcomatoid carcinomas reported (1-6). As a result, the natural history of these unusual tumors and the best methods of treatment thereof are uncertain. These tumors occur in various anatomical locations such as the upper aerodigestive tract (7, 8), small intestine (9, 10), bladder (11), prostate (12), and many other sites.

We present a case of sarcomatoid carcinoma arising from colonic mucosa with findings from both morphological and immunohistochemical studies.

CASE REPORT

A 41-yr-old woman was admitted to the hospital because of change in bowel habit and melena of one month's duration. She had a history of hysterectomy due to uterine leiomyoma two years before with an uneventful postoperative course. The endoscopic examination at admission revealed

moderately differentiated adenocarcinoma in the sigmoid colon. Low anterior resection was done and resected colonic specimen showed 5 × 3.3 cm-sized ulcero-fungating mass in sigmoid colon with tumor cells invading extraserosal adipose tissue. There were 4 lymph nodes metastasized out of 8 examined regional lymph nodes.

Histologically, the tumor consisted of a mixture of carcinomatous and sarcomatous areas, being the former major. Carcinomatous lesion was composed of moderately differentiated adenocarcinoma and located on superficial portion of the colon. Sarcomatous area was located in deeper portion, and mostly composed of a mixture of spindle-shaped undifferentiated cells and anaplastic bizarre giant cells. There were transitional areas between carcinomatous and sarcomatous areas. On immunohistochemical study, strong immunoreactivities for cytokeratin (DAKO, Glostrup, Denmark), epithelial membrane antigen (DAKO, Glostrup, Denmark) in differentiated adenocarcinomatous areas were detected. The sarcomatous spindle cell component of the tumor was largely vimentin (DAKO, Glostrup, Denmark)-positive with co-expression of cytokeratin. The immunoreactivities were negative against the other antibodies, such as myoglobin, smooth muscle actin (DAKO, Glostrup, Denmark), chromogranin (DAKO, Glostrup, Denmark) and p53 protein

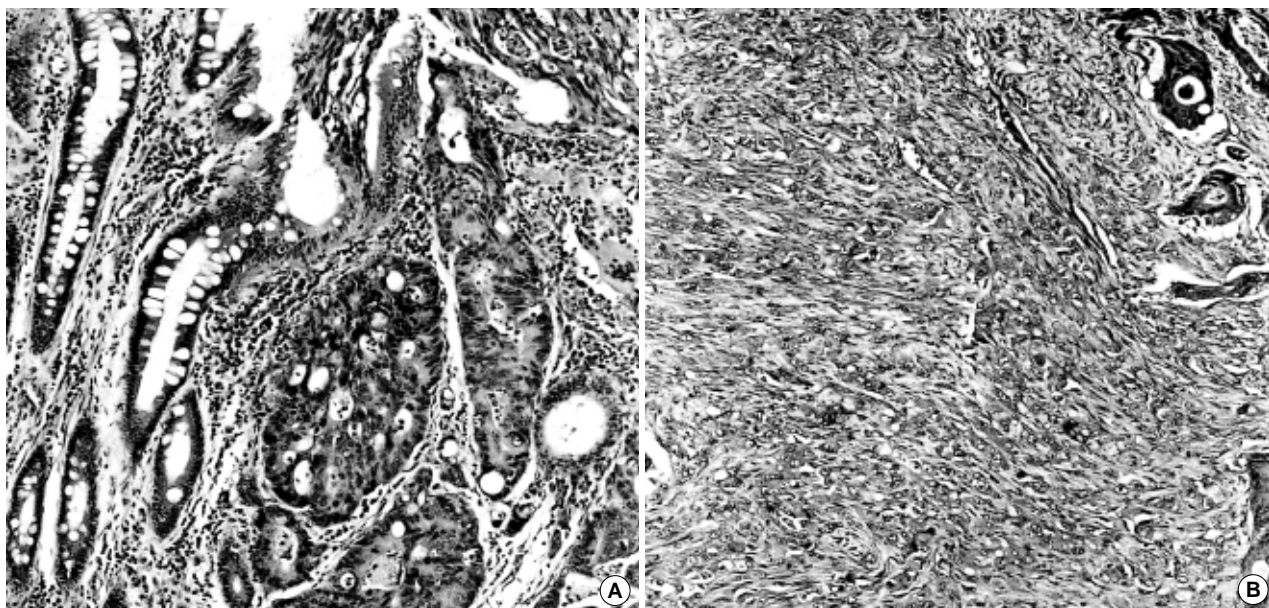


Fig. 1. Photomicrographs show moderately differentiated adenocarcinoma on superficial portion of the colon (A) and a proliferation of polygonal or spindle-shaped anaplastic tumor cells in sheet or short fascicular pattern, intermixed with differentiated adenocarcinoma (B) (H&E, $\times 100$).

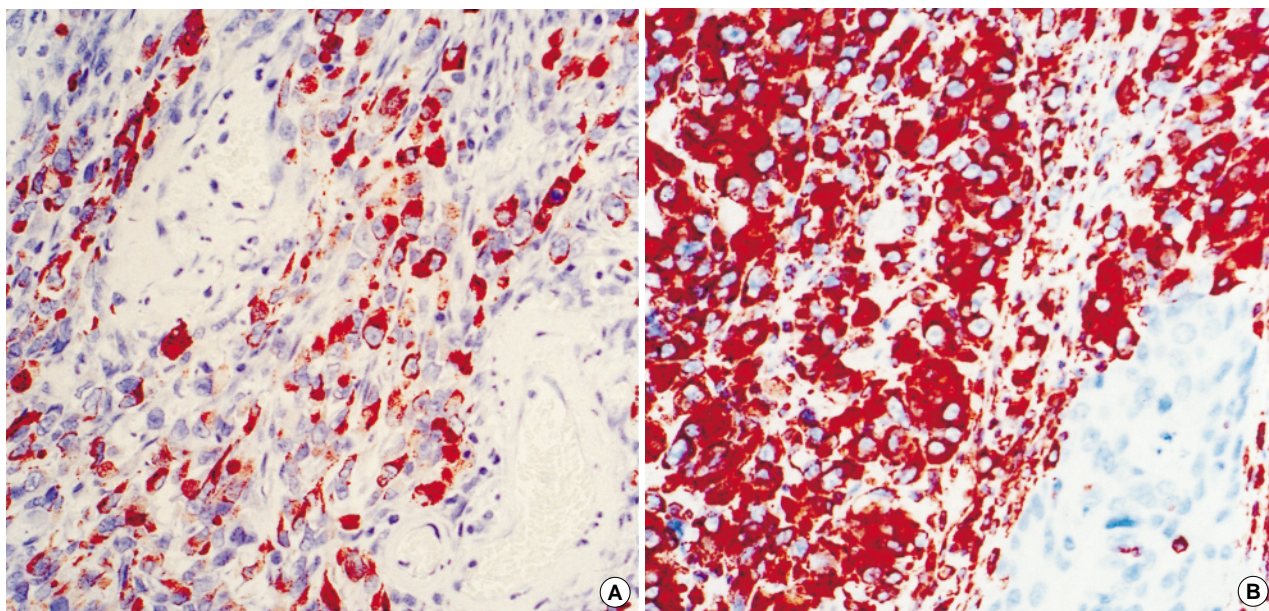


Fig. 2. Immunohistochemical stainings for cytokeratin (A) and vimentin (B) reveal diffuse cytoplasmic positivity in tumor cells of the sarcomatoid area (ABC method, $\times 200$).

(DAKO, Glostrup, Denmark).

She received 2 cycles of 5-fluorouracil/leucovorin chemotherapy after the operation. Follow-up radiologic examination showed multiple organ metastases, including liver, lung, and brain. The patient was placed in supportive care without any further treatment and died four months after the diagnosis.

DISCUSSION

Malignant tumor with a mixed phenotype is a controversial field of pathology. The rare sarcomatoid carcinomas of the colon have been described hitherto under a variety of names causing a great uncertainty about their classification and histogenesis (1-6). They can occur in various anatomical

sites and exhibit a wide range of microscopic appearances (7-12).

The pathogenesis of mesenchymal differentiation in the sarcomatoid carcinoma is uncertain. Various hypotheses have been proposed to explain the biphasic appearance of sarcomatoid carcinomas. Briefly, the explanations include the collision theory of independent neoplastic growths from multipotent stem cell origins, epithelial to mesenchymal conversion by epithelial-stromal interaction, and combination of the two (11, 13). The salient features in our case are presence of dysplasia and adenocarcinoma in situ, morphological "transition" between carcinomatous and sarcomatous tissue in relation to depth of invasion, and the detection of epithelial characteristics by immunohistochemistry in the sarcomatous component, which strongly support the histogenesis of epithelial to mesenchymal conversion. Gentile et al. (14) reported that the presence of productive retroviral infection in the sarcomatous cells was related with tumor progression from the carcinomatous to the sarcomatous phase. Delahunt et al. (12) described that the phenotypic conversion of carcinoma into sarcomatoid tissue was associated with progressive accumulation of p53 proteins, thus indicating that they had increasing clonal dominance of dedifferentiated tumor cells carrying p53 mutations. But, immunohistochemistry for p53 protein showed negative results on either carcinomatous or sarcomatous area in our case.

The six cases of the colonic sarcomatoid carcinoma previously reported in detail occurred in patients from 43 to 77 yr of age. Six patients were male and one was female. Three patients died of the tumor within a year. The best predictors of outcome in sarcomatoid carcinoma seem to be tumor location, size, invasion depth, and the clinical stage of the disease (1, 11-13). The majority of tumors in upper aerodigestive tract including esophagus and stomach have polypoid growth patterns and can be diagnosed early in their course, and accordingly, are associated with a relatively favorable prognosis. On the other hand, sarcomatoid carcinomas involving lower intestinal tract have an aggressive clinical course, often present with symptoms or signs related to distant metastasis. Thus, it is important to make a correct diagnosis by distinguishing them from other spindle cell proliferations of the intestine.

The diagnosis of sarcomatoid carcinoma by light microscopy alone can be difficult, especially with the small fragments of biopsied specimen or undifferentiated spindle cell tumor without obvious glandular differentiation. Sarcomatoid carcinoma should be distinguished from sarcomas that have more frequently spindle cell areas including carcinosarcoma, leiomyosarcoma, malignant fibrous histiocytoma, and malignant melanoma. To establish a diagnosis of sarcomatoid carcinoma, the sarcomatous component should show obvious epithelial differentiation without heterogeneous mesenchymal components. Then, immunohistochemistry

and electron microscopy may confirm the diagnosis, as epithelial characteristics in sarcomatous component could be demonstrated in all cases studied.

In summary, sarcomatoid carcinoma of the colon is extremely rare tumor composed of mixed malignant epithelial and mesenchymal cells, with only six cases reported up to date. Despite postoperative chemotherapy, the patient in our case died of liver failure resulting from extensive metastatic growth. The histologic features, stage, and outcome of the reported cases indicate that this neoplasm generally pursues an highly aggressive and malignant biological course with rapid growth and wide local infiltration, leading to a poor prognosis. Radical surgery with adjuvant chemotherapy, and close follow-up are necessary for the management of this disease.

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