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[症例報告]Colonic cancer associated with radiation colitis : A case report and a brief review of the literature

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Colonic cancer associated with radiation colitis: A case report and a brief review of the literature

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ABSTRACT

A 62-year-old Japanese woman was admitted to our hospital because of a slight rectal bleeding and stenosis in the left colon on a barium study. The patient had undergone a total hysterectomy and received radiotherapy for uterine cervical cancer at 35 years of age. Twenty-seven years after the treatment of uterine cervical cancer, the patient presented with slight rectal bleeding. The physical examination revealed a mid-line surgical scar, brown pigmentation of the skin and wall thickness in the lower abdomen consistent with radiation effect. A barium enema study showed stenosis of the descending colon. Colonoscopy was failed because of difficulty in inserting the endoscope. The patient underwent a left colectomy with lymph node dissection. The lower abdominal cavity showed extensive fibrosis (so-called frozen pelvis) which is often associated with the radiation effect. The resected colon showed a macroscopic Type 2 tumor which invaded the retroperitoneal space and the tumor was histologically diagnosed to be well-differentiated adenocarcinoma (stage IV). Severe endoarteritis was also observed in the vicinity of the tumor. The patient is doing well at the time of writing. *Ryukyu Med. J.*, 20(2)85~87, 2001

Key words: colonic cancer, irradiation, hysterectomy, uterine cervical cancer

INTRODUCTION

Radiotherapy is an effective treatment modality for uterine cervical cancer. Thanks to recent advances in the therapeutic equipment and the techniques of irradiation, the survival rate of patients with uterine cervical cancer have increased¹⁾. The development of primary colorectal cancer following radiotherapy is a well known phenomenon^{2,4)}. Nevertheless, no direct pathogenesis between radiation exposure and the development of colorectal cancer has yet been established. Based on colorectal cancer cases reported in a large series^{5, 6)} in the literature, the clinicopathologic characteristics of colorectal cancer after irradiation have gradually been identified. This paper describes a case of adenocarcinoma of the descending colon in which the history strongly suggested radiation-associated carcinoma 27 years after radiotherapy for uterine cervical cancer.

CASE REPORT

A 62-year-old Japanese woman was referred to our University Hospital for further examination because of a slight rectal bleeding and left-sided colonic stenosis on a

barium study. Her past history revealed that the patient had undergone a total hysterectomy and thereafter had received a postoperative radiotherapy at 35 years of age. Unfortunately, the exact information regarding to the total dose and period of irradiation was not available for this patient. Her doctor's chart and radiotherapy records had also been discarded.

The patient had been doing well for 27 years since undergoing surgery and radiotherapy for uterine cervical cancer. In November 1999, the patient presented with a few months' duration of chronic constipation and slight rectal bleeding. On admission, the patient was well nourished and healthy. On physical examination, the lower abdomen showed a mid-line surgical scar, and moderate brown pigmentation of the skin and abdominal wall thickness with fibrosis consistent with a radiation effect. A rectal examination showed no abnormality. A barium enema study revealed a rather smooth narrowing of the distal descending colon with a lack of distensibility and haustration measuring about 4 cm in length (Fig. 1). Colonoscopy failed to examine the lesion in the colon because of the difficulty in handling the endoscope and the patient's refusal to undergo further endoscopic examinations due to pain.

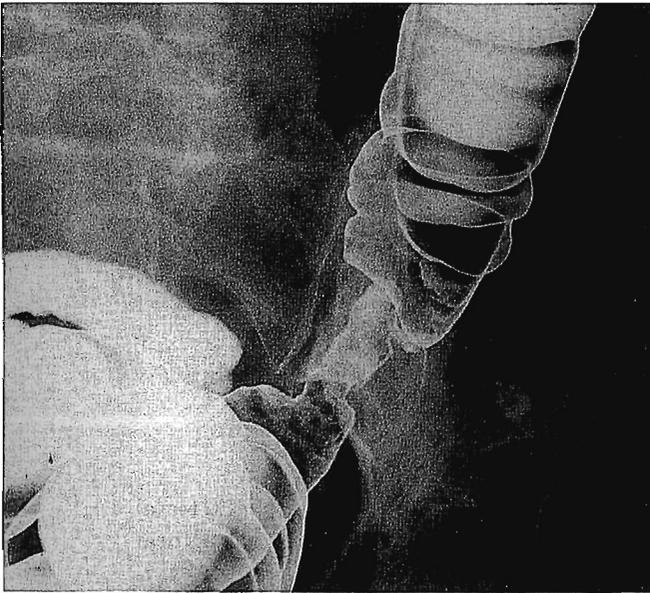


Fig. 1 A barium enema study showing rather smooth stenosis of the left colon.

An abdominal CT scan demonstrated a smooth thickness of the wall of the descending colon and lymph node enlargement around the inferior mesenteric artery. The patient consulted gynecologists at our hospital for her postoperative status of uterine cervical cancer. As a result, the patient was diagnosed to have no evidence of uterine cervical cancer recurrence.

Based on these findings, she was diagnosed to probably have carcinoma of the left colon. The patient underwent a left colectomy (the distal descending and sigmoid colon) with a nodal dissection. The tumor penetrated the corresponding retroperitoneal space and there was some difficulty in lysing the tumor from the retroperitoneal tissue. The lower abdominal cavity, mainly the left-sided abdominal cavity corresponding to the affected colon and pelvis, revealed extensive fibrosis (so-called frozen pelvis) which was consistent with a radiation effect.

Grossly, the resected colon was a macroscopic Type 2 tumor (ulcerated type with clear margin) measuring 4×4 cm in size. The base of the tumor directly invaded into the retroperitoneal tissue (Fig. 1). Histologically, the tumor was diagnosed to be well-differentiated adenocarcinoma and was evaluated to be stage IV. Severe endoarteritis was observed in the vicinity of the tumor (Fig. 2). The submucosal vessels show an obliterative endoarteritis with thickened sclerotic walls. Postoperatively, the patient was uneventful.

DISCUSSION

As the survival rate after cancer treatment (surgery, adjuvant chemotherapy or radio-therapy) has improved, the occurrence of secondary primary cancers seems

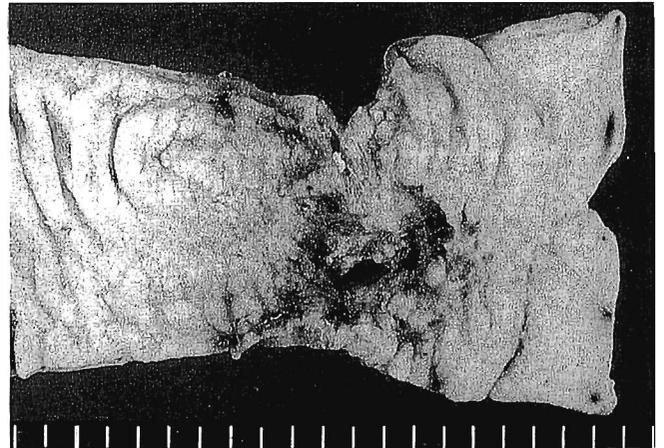


Fig. 2 The resected colon showing a macroscopic Type 2 tumor measuring 4×4 cm in size.

to have increased⁴). Many studies have previously reported that patients who received radiotherapy for gynecologic cancers tend to develop colorectal cancer more frequently than those who do not receive radiotherapy²⁻⁶). Although it is difficult to elucidate the relationship between radiotherapy and the development of colorectal cancer, both clinical and experimental evidence of this phenomenon exists. In a clinical series^{1, 7, 8}), many reports documented that the patients who were irradiated for gynecologic cancer with a total dose of more than 30 Gy demonstrated an increased risk of subsequent colorectal cancer, which was from 2.0 to 3.6 times that of the general population. In animal experiments, the development of colorectal cancer due to irradiation was also reported⁹). As a result, both clinical and experimental evidence suggests a causal relationship between irradiation and the development of colorectal cancer.

Nevertheless, it is difficult to morphologically differentiate radiation-associated cancer from new second primary cancer following radiotherapy because radiation-associated cancer has no specific histologic features. Therefore, Black and Ackerman¹⁰) suggested three strict principal criteria for the diagnosis of radiation-associated cancer: (1) a minimum of 10 years between radiation exposure and subsequent tumor development, (2) severe radiation-associated changes in the immediate vicinity of the tumor, and (3) a relatively large amount of radiation exposure to the colon and rectum. Our case fulfilled all the criteria of radiation-associated cancer mentioned above.

Unexpectedly, the histologic type of radiation-associated cancer has previously gained little attention. The development of mucinous adenocarcinoma in radiation-associated colorectal cancer patients also occurs more frequently, accounting for 26 to 58 % of all radiation-associated colorectal cancers^{4, 6}). In animal experiments, all the colon cancers induced by radiation in rats were characteristically mucinous adenocarcinoma⁹). Both our experience and other reports in the literature support these histologic characteristics

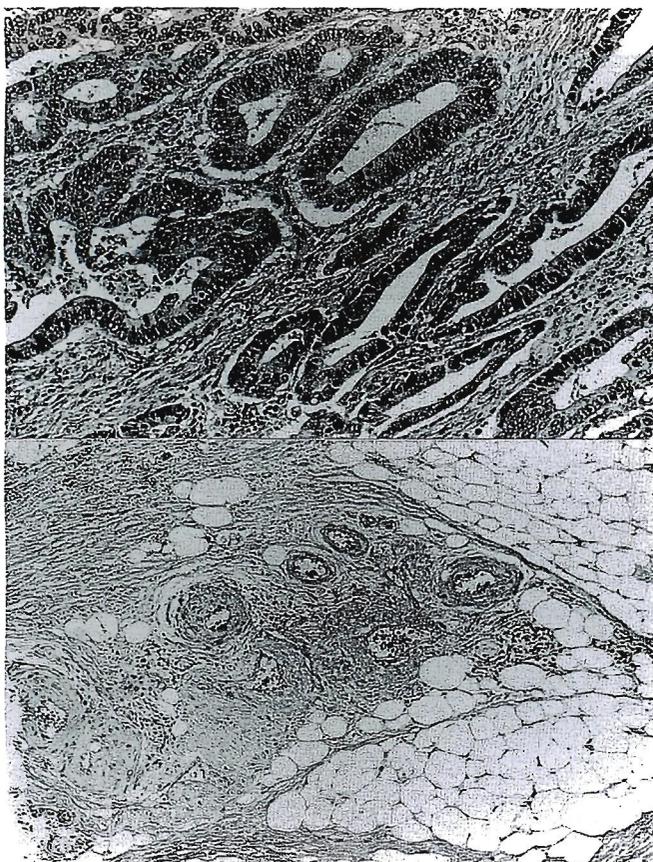


Fig. 3 Microphotographs of the tumor revealing well-differentiated adenocarcinoma (left) and endoarteritis in the immediate vicinity of the tumor (right) (HE, $\times 50$).

of radiation-associated colorectal cancer. On the other hand, the tumor in our case showed well-differentiated adenocarcinoma. However, radiation damage, especially endoarteritis^{5, 6)}, was also observed in the immediate vicinity of the tumor. It is generally accepted that one of the most important indicators of severe radiation damage is endoarteritis. Thus, our case was fulfilled the criteria for radiation-associated colorectal cancer.

In general, radiotherapy for gynecologic cancer may result in an increase in the incidence of radiation-associated cancer, and the survival in patients with radiation-associated cancer is poor. From our experience, we recommend a

careful long-term follow-up and periodical biopsies for patients with radiation damage in order to achieve a better outcome.

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