

Rectal Carcinoid with Huge Multiple Liver Metastasis

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Carcinoid tumor arising from the rectum was reported accompanying multiple liver tumors, which simulated a presence of double cancer of independent cystoadenocarcinoma on CT picturing.

In analysis of DNA content, an aneuploid pattern was displayed in both specimens of the liver and the rectum in reflection of the fact that carcinoid tumor has high grade of malignancy and the liver tumor originated from the same cell line is to be metastatic.

Carcinoid tumor arising from the small intestine was a tumor named by Oberndorfer in 1907, which showed a slow growth with well differentiated histologic pattern.

It is well known that carcinoid tumor arises preferentially from the rectum, the stomach and the duodenum.

Recent studies focus on early detection of carcinoid tumor of less than 10 mm in diameter to prevent its metastasis and to improve its prognosis. It is necessary to identify carcinoid tumor from other submucosal tumors at an early stage.

This report, emphasized that some of carcinoid tumors showed a potent malignant behaviors. This report aimed at clarifying a clinicopathologic pattern of carcinoid tumor with respect of biological malignancy.

Patients

A 68-years-old male complained of melena since March 1990. Colonoscopy revealed a presence of polyp in the rectum. Polypectomy was performed and no malignant pattern was revealed by histology. In June 1991, he recomplained of melena. Careful examination showed a tumor of the rectum with concomitant multiple tumors of the liver. (Fig. 1, 2)

Therefore, he was admitted to our clinic to undergo a surgical resection. No anemia and jaundice were observed. In the right hypochondrium region, an irregular hard mass was palpated, and at the digital examination of the rectum an elastic hard mass was palpated 5 to 6 cm proximal to the anal verge.

No abnormal value of the tumor marker of CEA, CA

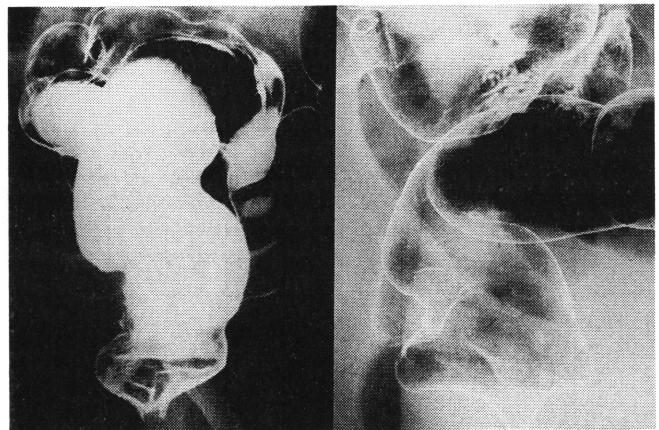


Fig. 1. Barium-enema revealed a filling defect of rectal wall

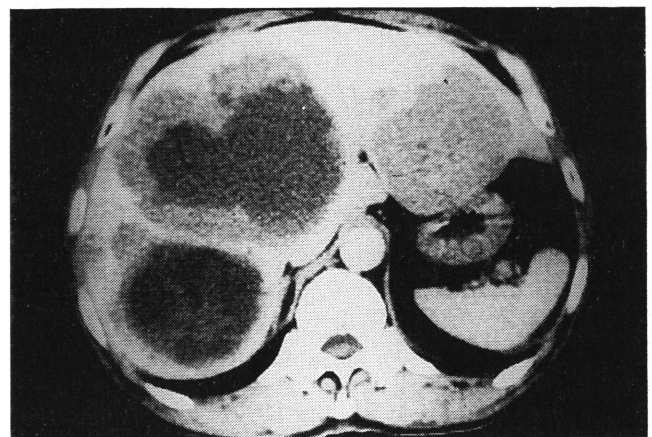


Fig. 2. CT showed a multiple foci with low density masses of the liver

19-9 and AFP was preoperatively detected except slightly high value of the serum bilirubin. Barium enema revealed rigidity of the wall 2.5 cm long on the right lateral side in a Rb region below the peritoneal reflection with irregular protruded tumor mass (Fig. 1).

Colonoscopy demonstrated an irregular ulcer of yellowish, so called, Borrmann II type. Histology from biopsied specimen revealed the findings compatible with adenocar-

cinoma.

Ultrasonography (US) and CT showed multiple tumors with varying sizes situated in the both lobes of the liver. Some revealed a cystic pattern in the central portion which simulates a cystic lesion with low density (Fig. 2). There was on finding of accumulation of ascitic fluid and lymph-node swelling around the abdominal aorta.

Celiac angiography showed the presence of multiple hyper vascular tumors in the both lobes of swollen liver. The course of the hepatic artery was displaced and stretched by the tumor. There was on finding of definitive encasement (Fig. 4). Preoperative diagnosis was rectal cancer with either liver metastasis or concomitant cystoadenocarcinoma of the liver which was found by a CT picture.

The rectal tumor in Rb was removed by anterior resection with N_1 node dissection by using double stapling technique. The tumor size was 2.5 x 2.3 cm and cancer infiltration reached apparently to the surface of the adventitia (a_2) (Fig. 5). The nodes of n_1 (#251) were histologically involved. Multiple irregular tumors were visualized on the

subcapsular surface of the liver.

A part of the tumors was biopsied. Cholecystectomy and ligation of the right gastric artery were performed to prevent tissue damage by leakage of infused anticancer agent. A catheter with implantable port was introduced into the hepatic artery.

Positive Grimelius and negative Fontana-Masson staining were recognized in the surgical specimens from the rectum and the liver, respectively. Final histologic diagnosis was confirmed as carcinoid tumor (Fig. 6).

In the analysis of nuclear DNA content, aneuploid pattern was revealed in both primary rectal and metastatic liver tumor (Fig. 7).

Postoperative levels of the serum serotonin, 5-HIAA and kallikrein in urine were within normal limit.

Postoperative course was uneventful except for minor leakage at anastomosis site in which special treatment was unnecessary to heal completely. He is living well 8 months after surgery.

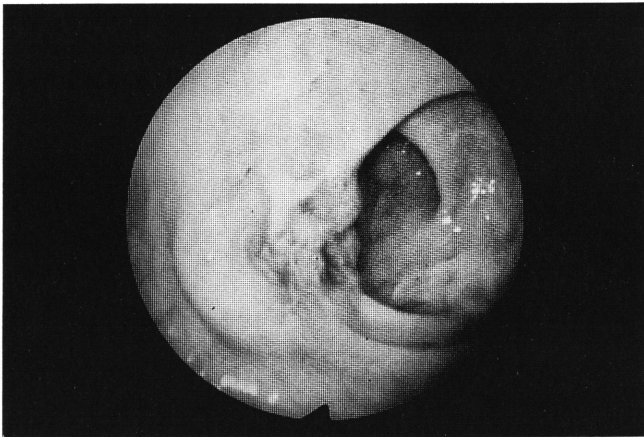


Fig. 3. Colonoscopy demonstrated a ulceration of carcinoma like Borrmann II type on the left lateral wall of the rectum, approximately 6 cm proximal to the anal verge.



Fig. 5. Surgical specimen revealed a Borrmann II-like carcinoma, 2.5 x 2.3 cm in size in the rectum with a_2 and n_1 .

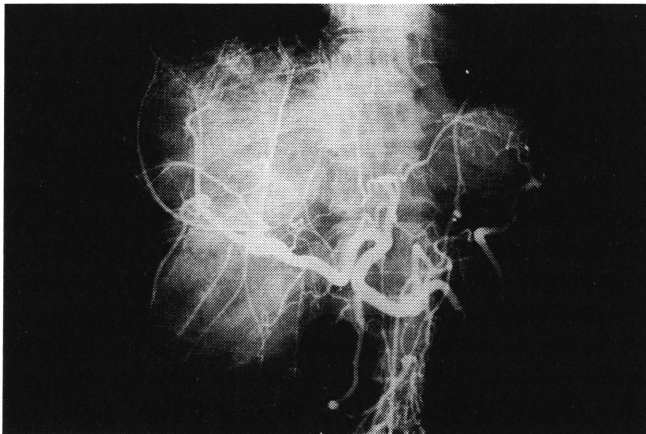


Fig. 4. Celiac angiography disclosed multiple hypervascular lesions with stretching findings.

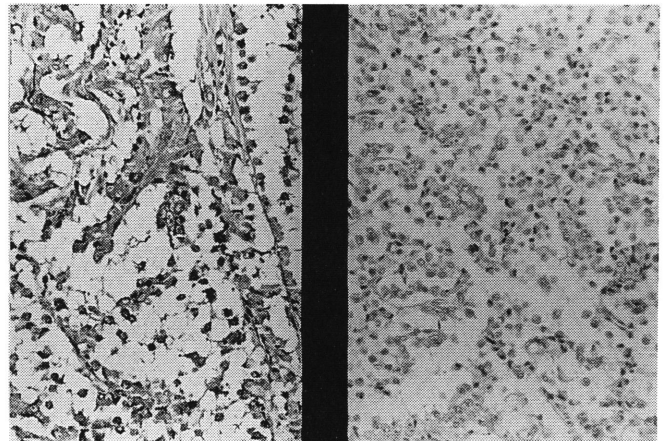


Fig. 6. Histologic findings
Right: positive Grimelius staining
Left: negative Fontana-Masson staining

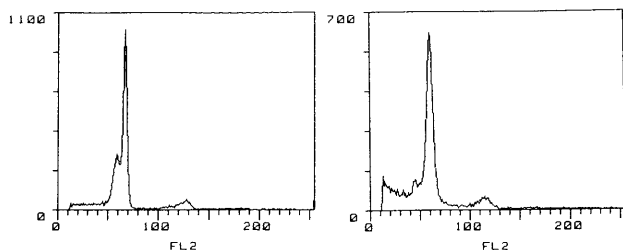


Fig. 7. Histogram of the resected rectal and hepatic lesions in nuclear DNA analysis

Right: primary rectal carcinoma

Left: Metastatic hepatic tumor which was biopsied during operation

Discussion

Oberndorfer first described in 1907 that carcinoid tumor is characteristic of a slow growth tumor with the low grade of cell atypism and the low grade of cell atypism which is different from carcinoma.

It is generally accepted that carcinoid tumor is originated in the submucosal layer with infiltrative growth of the tumor. Therefore, it is not so easy to make a precise diagnosis in the early stage of carcinoid tumor. CT and EUS are indispensable tools for precise diagnosis. When there is erosion in the mucosal surface, biopsy is helpful in making a precise diagnosis, in contrast, it is very rare for carcinoid tumor of the rectum to metastasize to the liver, and also it is accepted that typical carcinoid tumor is a most common and less metastatic in carcinoid tumor arising from the rectum.

However, metastasis in the liver occurs in some cases in spite of satisfactory in most cases. Histologic malignancy of carcinoid tumors was defined by relatively large and pachychromatic nucleus despite no particular pattern of cell atypism with respect to occurring metastasis.^{1,2)} There are many reports that histologic findings fail to indicate the malignant grade of biologic behavior. It is believed that clinical features of more than 2 cm in diameter, a central hollow and histologic lymph vessel invasion are of great value to know malignant potential of carcinoid tumor.^{3,4)}

Sasano⁹⁾ reported that the metastatic rate of Japanese nationwide collected 241 patients with carcinoid tumor is as high as 10%. However, it was only 2.4% in case of the tumors of less than 1 cm in diameter. Nauheim⁶⁾ also reported that carcinoid tumor of less than 2 cm in diameter comprises of metastasis in 5 patients (1.6%) among the collected 595 patients with no invasion into the muscular layer.

Itabashi⁷⁾ experienced one patient with distant metastasis to the lung and bone after polypectomy. On the other hand, atypical type of carcinoid tumor showed a potent biological behavior with poor prognosis, accompanying liver metastasis by rapid growth. In the case that tumor infiltration

without lymph vessel invasion does not reach the muscular layer, local excision with wide resection of the muscular layer is sufficient to achieve a complete resection. Needless to say, node dissection is required for even the small sized tumors.

Atkin⁸⁾ described that nuclear DNA content reflects the prognosis of patients with carcinoma. There are few reports concerning rectal carcinoid tumor because of a few occurrence. Cohn⁹⁾ reported that most of rectal carcinoid tumors show a diploid pattern and there is no correlation with the tumor size, 5HIAA in urine and the survival time. In contrast, Falkmer¹⁰⁾ confirmed that DNA content in patients with poor prognosis displays non-diploid cells (over 2.5 c).

It is generally accepted that carcinoid tumor with a diploid pattern demonstrates a low-grade malignancy despite demonstrating high-grade malignancy in patients with an aneuploid pattern. As to malignancy, histologic findings are classified by Sasano,⁹⁾ that is, A: nodular, B: trabecular, C: tubular, D: poorly differentiated, E: mixed. In view of clinicopathology, there is a close correlation between the survival time and the tumor size, in particular, the tumor size of less than 2 cm in diameter is in good relation to the survival time.

In this series, DNA analysis was made for the primary and metastatic tumors. Both showed a diploid pattern which was identical each other in reflection of the same stem cell origin.

DNA analysis for carcinoid tumor contributes to assessment of the grade of malignancy as well as to the judgement of independent tumor for concomitant liver tumor and the occurrence of metastasis.

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