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Case Report

Synchronous Quadruple Colon Cancer in an Elderly Patient: A Case Report and Review of Literature

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SUMMARY

Synchronous colorectal cancer (CRC) is characterized by multiple cancer lesions found in a single patient upon diagnosis. We report about a 68-year-old male patient with quadruple colon cancer who initially presented with intermittent abdominal pain and with positive fecal occult blood test. Preoperative colonoscopy and computed tomography scan have suggested synchronous colon cancer lesions. He underwent subtotal colectomy with ileorectal anastomosis and recovered well. No major complications were noted. Pathological examination confirmed the diagnosis of quadruple colon cancer. Synchronous CRC is a rare type of cancer. Thus, in this study, its distinctive clinicopathological features as well as diagnosis, management, and prognosis were assessed.

1. Introduction

Synchronous colorectal cancer (CRC) is characterized by more than one primary cancer lesion found at initial presentation. It is a rare and special type of CRC compared with solitary lesion. Herein, we report a rare case of an elderly patient with synchronous quadruple colon cancer. Moreover, a review of literature about such condition was conducted.

2. Case report

A 68-year-old man came to our hospital due to intermittent abdominal pain and dyspepsia for weeks. He had no family history of CRC or any systemic diseases. Physical examination revealed a soft abdomen without a palpable mass or peritoneal sign. Laboratory examinations showed a hemoglobin level of 9.0 g/dL, a positive immunochemical fecal occult blood test (> 400 ng/mL), and an elevated carcinoembryonic antigen (CEA) value of 18.94 ng/mL. Colonoscopy revealed four polypoid tumor lesions in the ascending, descending, proximal and distal sigmoid colon. Biopsy results showed adenocarcinoma of the ascending and distal sigmoid colon lesion, and the other two lesions were at least carcinoma in situ. Computed tomography scan from the chest to the abdomen revealed prominent tumor lesions in the ascending and sigmoid colon without evidence of distant metastasis.

Based on preoperative assessment, the patient underwent laparotomy with subtotal colectomy. A segment of the terminal ileum, and the entire colon to the upper rectum were all resected with lymph node dissection. An ileorectal anastomosis was established by using staplers in an end-to-end fashion. Pathological examination revealed quadruple well-differentiated invasive adenocarcinomas. Tumor A was 5.5 cm × 3 cm mass in the proximal ascending colon with invasion into pericolic tissues (pT3). Tumor B was 2 cm × 2 cm lesion in the descending colon with invasion to the submucosa (pT1). Tumor C and D were 3 cm × 2 cm and 3 cm × 3 cm lesions in the proximal and distal sigmoid colon both with invasion to muscularis propria (pT2), respectively. The surgical margins were uninvolved and no perineural or lymphovascular invasion was observed. Moreover, lymph node metastasis was not noted. The pathological staging was pT3N0M0, stage IIA. No severe complication was noted, and the patient was discharged smoothly. Further investigation of the mismatch repair deficiency revealed microsatellite stability (MSS) via immunohistochemistry test. The patient had regular surveillance and received oral fluorouracil (5-FU) as adjuvant therapy. No disease recurrence or CEA elevation was observed after1 year of follow-up until date.

3. Discussion

Synchronous CRC is characterized by more than one cancer lesion detected in a single patient at initial presentation. A more generalized definition is tumor lesions found either before, during, or after surgery by colonoscopy within less than 6 months.[1] The prevalence rate ranges from 1.1% to 8.1%. Overall, pooled data from 39 studies have revealed the incidence rate of synchronous CRC is 3.5%.[2] Synchronous CRC is more often observed in male patient. The male to female ratio was 1.8 according to previous studies.[2,3] So far, the reason for the difference in terms of sex remains unknown. The mean age at presentation was inconclusive. In previous studies, the mean age for synchronous CRC was higher than that of single colon cancer. However, some recent series have reported that the age at diagnosis for solitary and synchronous colon cancer was similar.[2,3]

The proximal colon, particularly the ascending colon, is more

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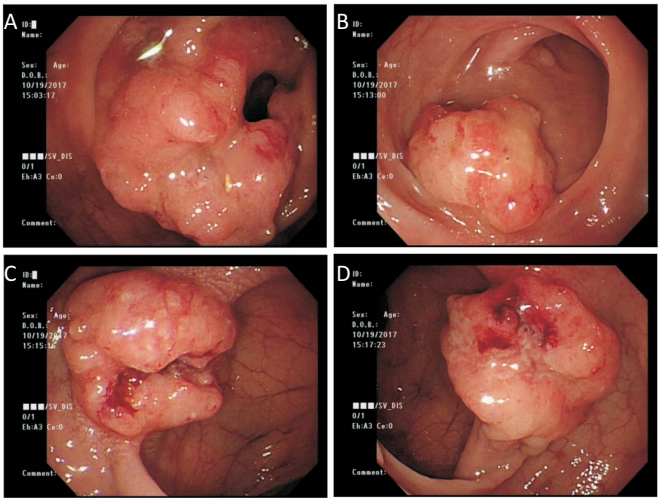

Fig. 1. Preoperative colonoscopy of the patient. A. An ulcerative tumor mass in the ascending colon. B. A polypoid tumor in the descending colon. C. A polypoid tumor with central ulceration in the proximal sigmoid colon. D. Tumor mass in the distal sigmoid colon.

often involved in synchronous carcinoma compared with solitary colon cancer (43% vs. 37%).[3] In addition, most synchronous lesions develop in different portions of the colon, whereas few lesions develop in the same segment.[2,3] Regarding the numbers of tumor lesion, three or more primary lesions account for 1.8% to 16.7% of all synchronous colorectal carcinoma cases.[3] Fegiz et al. have reported the presence of six synchronous lesions in a single patient,[4] and Kaibara et al. have shown a patient with seven simultaneous colon cancers.[5] Moreover, a higher incidence of concurrent adenomas was observed in patients with synchronous colon cancer. Latournerie et al. have reported that 34.1% of patients with synchronous CRC had adenomas.[6]

Patients with hereditary non-polyposis colorectal cancer (HNPCC) or inflammatory bowel disease (IBD), especially ulcerative colitis, are at higher risk of developing synchronous CRC. Greenstein et al. have reported that synchronous cancer accounts for 2.5% of de novo colon cancer, 18% of IBD-related cancer, and 21% of familial adenomatous polyposis-related cancer.[7] This phenomenon may be attributed to the multiple locations of mucosal dysplasia owing to IBD or HNPCC. However, patients with these known risk factors only account for more than 10% of synchronous cancer cases,[2] which indicated that there are still other unknown factors for synchronous CRC.

In terms of pathological features, mucinous carcinoma is slightly more common in patients with synchronous CRC.[2] Mucinous carcinoma is also the feature of HNPCC, which is a predisposing factor of synchronous CRC. In the research of molecular biology on synchronous colon cancer, some studies have shown a higher proportion of patients with MSI-H status than those with solitary cancer.[2] Microsatellite instability high (MSI-H) indicates DNA mismatch repair deficiency. In patients with HNPCC, germline mutation of genes causes failure of mismatch repair system. However, in sporadic CRC, such phenomenon is caused by the methylation of mismatch repair genes, particularly BRAF-related methylation on MLH1 promoter.[3] It is likely that the higher percentage of MSI-H cancers in synchronous colorectal carcinomas is sporadic and may be related to the local carcinogenic environment of large bowel.[2]

Accurate preoperative diagnosis of synchronous CRC is challenging, even with colonoscopy. Some lesions may be ignored or missed due to their small size. Not to mention in cases of tumor obstruction or poor colon preparation, complete colonoscopy is often

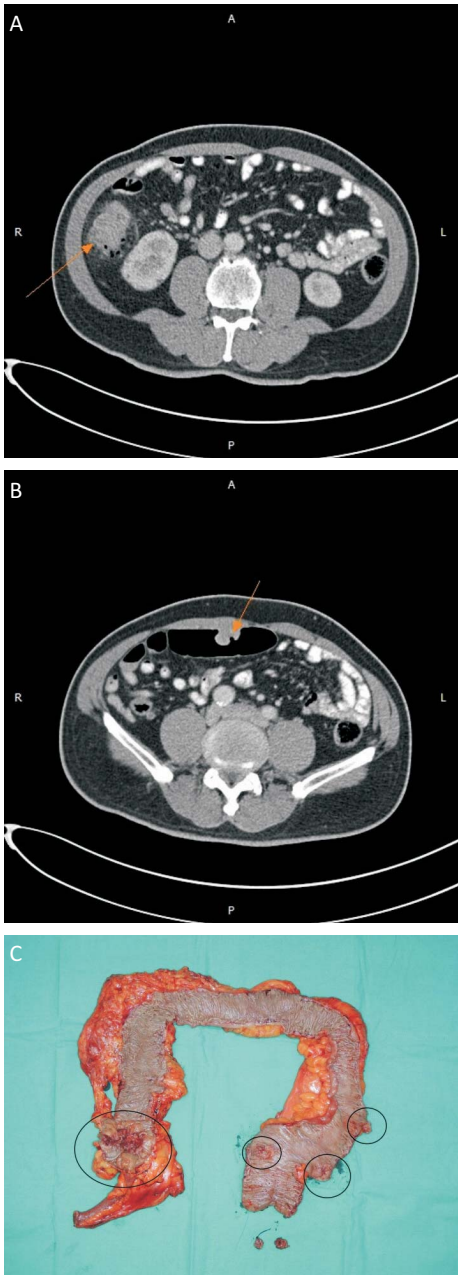

Fig. 2. Abdomen computed tomography of this patient and the resected specimen. A. Irregular wall thickening involving proximal ascending colon about 6.0 cm in length which suggested colon cancer (arrow). B. Another 2.2 cm polypoid lesion in the sigmoid colon (arrow). C. Gross picture of the resected colon with quadruple cancer lesions (circle).

not feasible. Computed tomography colonography and magnetic resonance colonography can be considered as alternative methods in such situations. Intraoperative endoscopy can be performed in cases in which preoperative colonoscopy is not feasible.[5] A precise detection of all synchronous cancer lesions before surgery is important, as the results may affect surgical procedure. Surgery should be individualized, based on the tumor locations and patient's general condition. Some studies have suggested total or subtotal colectomy, whereas others recommend a more conservative approach of multiple segmental resections. The whole colon must be examined by palpation, and the specimen must be cautiously assessed during surgery to avoid miss-diagnosis.[8] Minimal invasive surgery is also a feasible option for selected patients and by experienced surgeon. In our patient, due to distant lesion sites and his general

good health condition, subtotal colectomy with ileorectal anastomosis was performed.

The prognosis of synchronous CRC was inconsistent based on previous studies. Recent population-based studies have revealed no difference in terms of the survival of patients with synchronous or solitary colon cancer.[6] The prognosis of colon cancer is more likely to depend on different factors, and synchronous tumor lesion is not a strong independent prognostic factor according to current evidence. In this case, the pathology report revealed stage II cancer without any high-risk features. Considering the patient's good health condition and MSS cancer status, we took a more aggressive approach and initiated oral 5-FU based chemotherapy as adjuvant treatment.

4. Conclusion

In summary, synchronous CRC is a rare type of cancer and is unique in several ways. A detailed understanding of its clinicopathological and molecular features is important. Comprehensive preoperative studies lead to a precise diagnosis. Moreover, a sound treatment plan, including radical resection and postoperative surveillance, is the key to increase the overall survival of patients with such condition.

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