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Case report

Ascending colon cancer associated with deposited ova of Schistosoma japonicum in non-endemic area

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ABSTRACT

Some reports suggest the positive correlation between Schistosoma japonicum infection and colorectal cancer, however the sufficient evidence that supports a causal relationship between them has not been established. Japan used be an endemic area of *S. japonicum* infection for 40 years ago. But now all of Japan is a non-endemic area of *S. japonicum* infection. We report a case of ascending colon cancer associated with deposited ova of *S. japonicum* in non-endemic area.

Introduction

Colorectal cancer (CRC) is one of the most prevalent malignancies in developed countries [1]. The incidence of CRC has increased over the last few decades by two to four-fold in Asian countries [2–4]. Schistosoma japonicum which is common in Southeast Asia [5], is regarded as a risk factor of CRC development, but the causal relation between *S. japonicum* and CRC has not been established. We present a case who developed ascending colon cancer with deposited ova of *S. japonicum*. All of Japan is a non-endemic area of *S. japonicum* infection, but used be an endemic area for 40 years ago.

Presentation of case

A 90-year-old woman had noticed abdominal pain and appetite loss for several months. She consulted a local clinic and anemia was detected. She was referred to Yokosuka general hospital Uwamachi for further examination and was diagnosed with ascending colon cancer by colonoscopy, but she did not want to receive any treatment. She did not have any familial history of liver diseases or malignant diseases.

One year later, she felt severe appetite loss and vomited several times she came to our hospital again. Her heart rate was 82 per minute, blood pressure was 170/87 mmHg, respiratory rate was 16 per minute on arrival. A tumor was palpable in her right lower quadrant but she did not have rebound tenderness in her abdomen. No lymph nodes were palpable. The CEA serum tumor marker level was elevated to 89.3 ng/dl but CA19-9 was within the normal range. Colonoscopic examination revealed a type 2 tumor in the ascending colon (Fig. 1). Abdominal computed tomography (CT) revealed a 5 cm tumor enhanced heterogeneously located in the ascending colon (Fig. 2A). The small intestine was dilated. There was no evidence of ascites, but were swollen lymph nodes around the colon tumor and liver metastases in the segment III (Fig. 2B). The patient was diagnosed with ascending colon cancer T2 N1 M1 stage IV according to the tumor, node, and metastasis (TNM) classification, of the American Joint Committee on Cancer (7th edition) [6]. She underwent ileocecal resection as a palliative surgery.

Macroscopically, the size of the tumor was 40 × 63 mm. (Fig. 3A). Histological findings showed that the tumor was moderately differentiated adenocarcinoma (Fig. 3B). Additionally,

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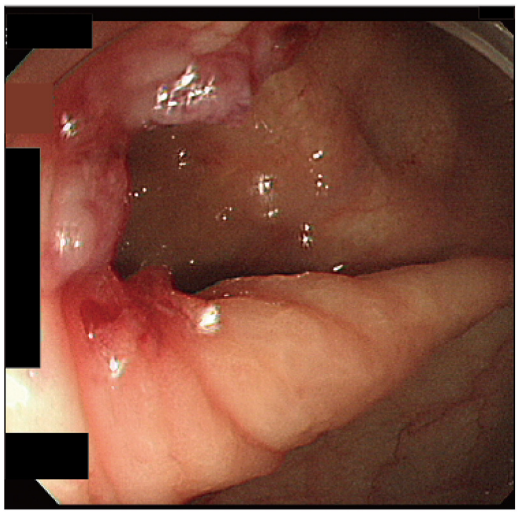

Fig. 1. Colonoscopy revealed type 2 tumor in the ascending colon, biopsy specimen revealed tubular adenocarcinoma.

there were numbers of schistosomal ova in the muscular layer surround tumor (Fig. 3C) and also in the submucosa of adjacent mucosa (Fig. 3D). Postoperative course of the patient was complicated by a surgical site infection, and she was discharged from the hospital 30 days after the surgery. The patient has survived 2 years after surgery with liver metastasis without receiving any chemotherapy.

Discussion

We reported a patient who underwent surgery for ascending colorectal cancer associated with deposited ova of *S. japonicum* in the resected colon. The last patient with deposited ova of schistosoma japonicum was reported in 1978 in Japan. The presented patient had lived Yamanashi prefecture in Japan for 70 years ago where schistosomiasis was an endemic parasitic disease in 1940s [7]. All of Japan is a non-endemic area of *S. japonicum* infection. Even in patients living in non-endemic area, a history of travel as well as where the patient has previously lived is important.

In IARC classification, *S. japonicum* is regarded as a carcinogenic risk to humans as attributed to group 2B (possibly carcinogenic) [8]. The consensus of available pathological data implicates an association between *S. japonicum* infestation and induction of colorectal cancer. Several reports in Japan and China have been published about the positive correlation between *S. japonicum* infection and colorectal carcinoma [9–13]. Recent molecular analyses have suggested the association between *S. japonicum* and colorectal cancer. Zhang et al. studied the mutation pattern in the TP53 gene in *S. japonicum*-associated rectal cancer that showed the majority of mutation in TP53 gene were detected in exon 7 in schistosomal group compared to exon 5 in non-schistosomal group [14]. Another study showed that *S. japonicum* ova-induced colorectal epithelial proliferative polyps have a high percentage of atypical hyperplasia (64.9%) and elevated CEA (90%) [15].

The relationship, however, between schistosomiasis and colorectal cancer has been debated for decades. If there is an increase in the risk of colorectal cancer, it is small [16]. Further epidemiological and molecular analyses are needed to clarify the cause and effect relationship between *S. japonicum* and colorectal cancer carcinogenesis.

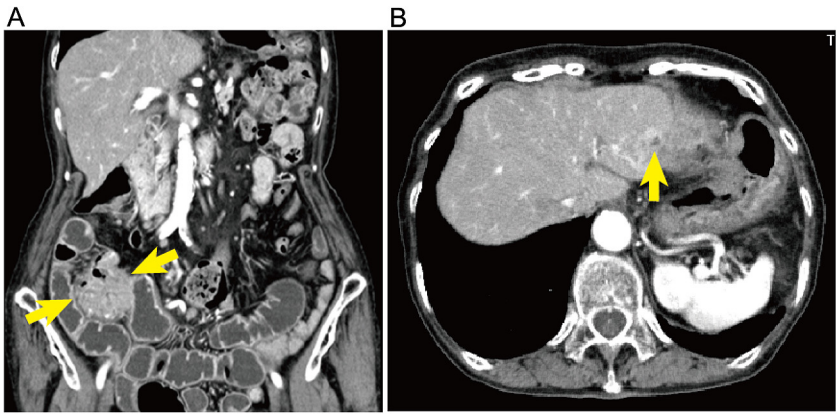

Fig. 2. Abdominal CT revealed an irregular mass enhanced heterogeneously in the right side colon with size of 5 × 4 cm (A) and a liver tumor in the segment III (B)..

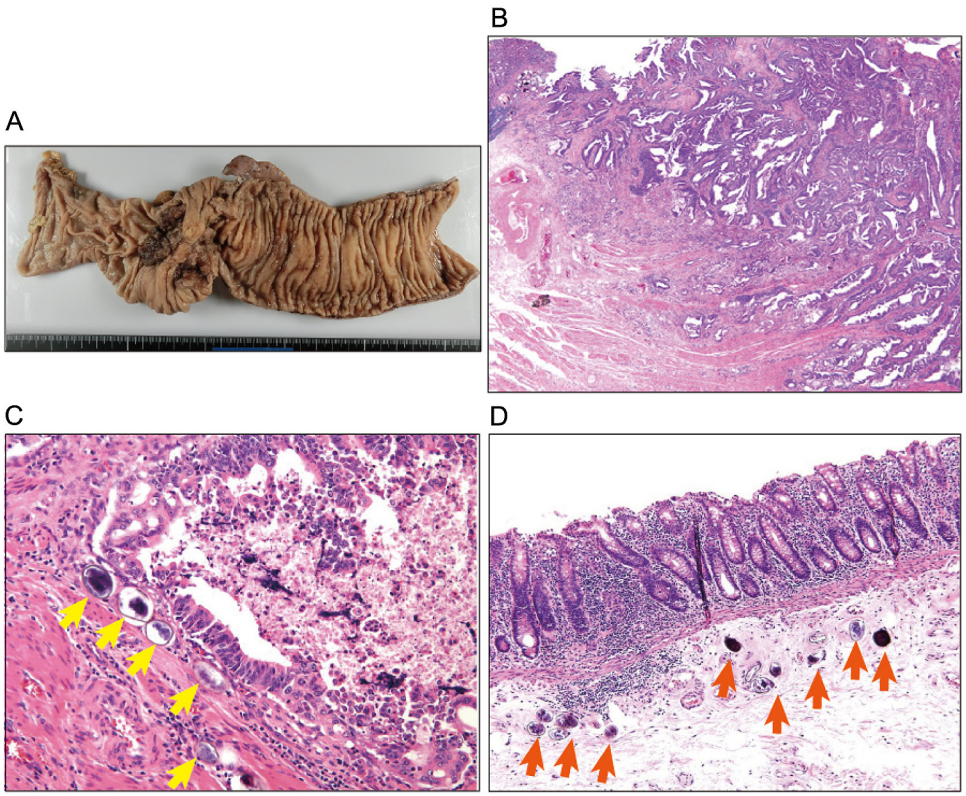

Fig. 3. Resected specimen showed a type 2 tumor with the size of 40 × 63 mm in the ascending colon (A). Histological analysis of the resected specimen showed moderately differentiated adenocarcinoma invaded into sub serous layer (×100 H.E.) (B). The several ova of *S. japonicum* was detected in the muscular layer surround the tumor and sub mucosa in the adjacent colon (arrows in C and D).

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