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Laparoscopic right hemicolectomy for metastatic renal cell carcinoma in the ascending colon: A case report

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ABSTRACT

INTRODUCTION: Renal cell carcinoma (RCC) arises from the renal parenchyma and is the most common primary malignancy of the kidney. RCC frequently metastasizes to the lung, bone, lymph nodes, and other locations, but rarely to the colon. We report a case of metastatic RCC of the ascending colon that was successfully resected with laparoscopic right hemicolectomy.

PRESENTATION OF CASE: The patient is a 65-year-old man who developed hip joint pain and was diagnosed with polymyalgia rheumatica during the first year after laparoscopic right nephrectomy for right RCC. A screening colonoscopy was performed and a tumor was found in the ascending colon. Biopsy strongly suggested metastatic RCC. No other distant metastases were found, and laparoscopic right hemicolectomy was performed. The tumor extended from the mucosa to the subserosa and was diagnosed histopathologically as colonic metastasis of RCC. There were no lymph node metastases in the simultaneously resected mesentery, but venous invasion was observed.

DISCUSSION: RCC can metastasize to various organs, but metastasis to the colon is extremely rare. In cases of colon metastasis, abdominal symptoms, hematochezia, or anemia may occur, and their occurrence should be checked during follow-up. Based on past reports, resection of metastatic lesion is considered the most appropriate treatment.

CONCLUSION: Although it is rare for RCC to metastasize to the colon, it is possible. Resection can be recommended for colon metastasis with no other metastases, and colectomy with R0, including the regional mesocolon, may provide a favorable long-term prognosis.

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1. Introduction

Renal cell carcinoma (RCC) is the most common malignancy arising from the kidney and accounts for 2–3% of all malignancies in adults [1]. Nephrectomy can be curative in cases of RCC without distant metastasis, but metastases occur in 20–40% of cases even after curative resection with R0 [2]. The most common sites of metastasis are lung, bone, lymph nodes, liver, adrenal glands, and brain [3]. The gastrointestinal tract, particularly the colon, is an uncommon location for metastasis. In this case, we present a patient who was successfully treated with laparoscopic colectomy for colonic metastasis.

2. Presentation of case

A 65-year-old man originally presented with symptoms of right back pain and hematuria. Computed tomography (CT) pointed out a 55-mm diameter right renal tumor.

The imaging findings were strongly suggestive of right RCC, and the patient underwent laparoscopic right nephrectomy at our hospital. The histopathological diagnosis of the resected tumor was clear cell RCC, pT3, pNX, cM0, v1, ly0, and Stage III according to the Japanese Renal Cell Carcinoma Treatment Code 4th Edition. After surgery, the patient was being monitored by serial CT.

Six months after nephrectomy, bilateral hip joint pain appeared. As a result of close inspection, the patient was diagnosed with polymyalgia rheumatica. Steroid treatment was started, and the joint pain improved. Subsequently, screening upper gastrointestinal endoscopy and colonoscopy were performed. Upper gastrointestinal endoscopy showed no abnormalities, but colonoscopy revealed a tumor in the ascending colon (Fig. 1), and the endoscopic biopsy was strongly suggestive of metastatic RCC.

Abbreviations: RCC, renal cell carcinoma; CT, computed tomography.

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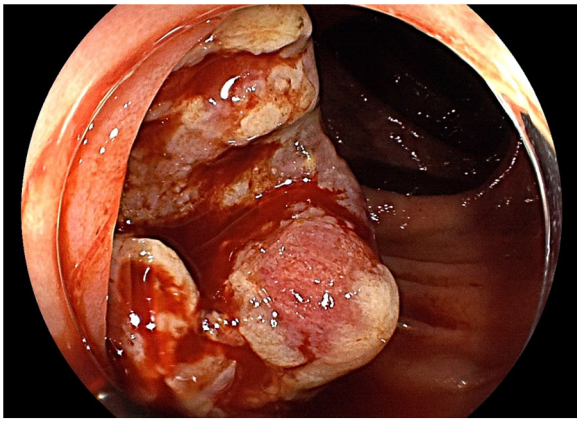


Fig. 1. The tumor in the ascending colon at colonoscopy.



Fig. 2. Computed tomography shows wall thickening in the ascending colon.

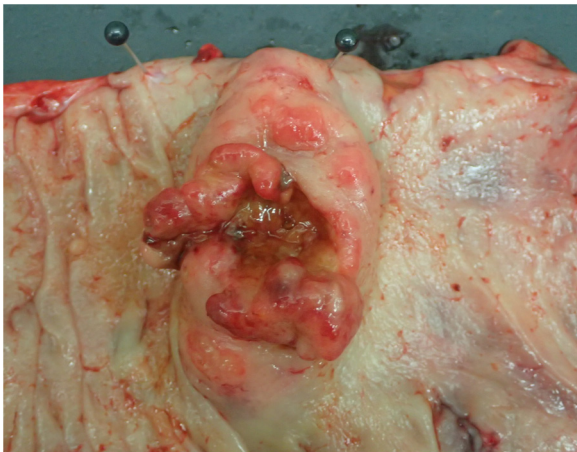


Fig. 3. Macroscopic inspection of the mass lesion with ulceration in the resected ascending colon.

A CT scan showed a thickened wall in the ascending colon (Fig. 2). There was no lymphadenopathy in the ascending mesocolon and no distant metastases in the lungs or liver.

Since it was a single recurrence without other distant metastasis, we performed laparoscopic right hemicolectomy and lymph node dissection by our standard procedure. The operation time was 240 min and the intraoperative blood loss was 75 mL. The tumor in the resected colon was raised and ulcerated in the center (Fig. 3). The histopathological examination confirmed the ascending colon

tumor was a metastatic clear cell RCC (Fig. 4A). The tumor extended from the mucosa to the subserosal layer in the ascending colon and the surgical margins were intact.

There was no lymph node metastasis in the mesentery that was resected with the colon, but venous invasion was found at two sites (Fig. 4B).

There were no complications during the postoperative course, and the patient was discharged on the sixth postoperative day. We are currently continuing to follow up with him.

3. Discussion

RCC is the most common malignant tumor arising from the renal parenchyma [4]. It is not unusual for RCC to metastasize, and RCC recurrence is reported in 20–40% of patients even after curative resection [2]. Most recurrences occur during the first 5 years after surgery, but at least 5–10% of recurrences are reported after 5 years [5].

RCC is known to metastasize to various organs lymphatically and hematogenously. The most common sites of RCC metastasis are, in descending order, lung (45.2%), bone (29.5%), lymph nodes (20.8%), liver (20.3%), adrenals (8.9%), and brain (8.1%) [3]. Colonic metastases are thought to occur by the hematogenous pathway, but the details are unclear. In our case, there were no suspicious findings of lymph node metastasis or direct invasion, and hematogenous metastasis was suspected. The site of RCC metastasis varied, and no specific trends of colonic metastasis were noted.

A systematic review reported in 2014 showed that complete resection of metastatic RCC was beneficial for overall and cancer-specific survival [6]. Resection of the metastatic lesion is the most appropriate local therapy for most organs, and poor prognosis has been reported for unresected cases [7]. As for colonic metastases, the results from other organs may point to a good long-term prognosis if resected with negative surgical margins.

Postoperative follow-up is important for patients with RCC because of the high incidence of recurrence. There is no clear guidance on follow-up beyond the 5-year post-operative follow-up recommended by the National Comprehensive Cancer Network. However, Stewart et al. have found that surveillance beyond 5 years reduces the risk of missed recurrence [7], and longer-term follow-up may be necessary for RCC.

In the English-language literature between 1995 and 2020, there are only 10 reports of patients undergoing colorectal resection for metastatic RCC after curative nephrectomy [8–15]. A summary of these cases with our case is shown in Table 1. Most of the patients were male (81.8%), and the median age was 65 years (35–84). The leading symptoms included abdominal pain (27.3%) and hematochezia (27.3%), and the sites of metastasis included sigmoid colon (27.2%), hepatic flexure (18.2%), and transverse colon (18.2%). Right hemicolectomy was performed in 5 patients (45.5%), transverse colectomy in 2 patients (18.2%), left hemicolectomy in 2 patients (18.2%), and anterior resection in 2 patients (18.2%).

The median time to recurrence after nephrectomy was 5 years (1–13). Four of the cases recurred more than 5 years after nephrectomy, and this result emphasizes the importance of long-term follow-up.

Laparoscopic surgery was performed only in our case. In our case, venous invasion was found at two sites in the resected regional mesocolon without lymph node metastasis, and it was suspected to have spread from the colon. There are no references to regional lymph node metastasis in other cases, but there is one other patient with venous invasion in the resected mesocolon. While en-bloc resection of the colon and its regional mesocolon has generally been considered unnecessary in the treatment of metastatic colon tumors, the presence of mesocolic venous invasion in these

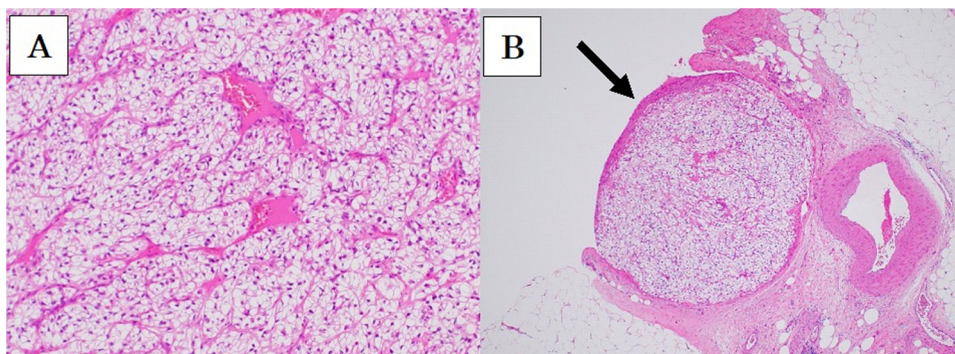


Fig. 4. A: The tumor was composed of clear cell renal cell carcinoma (hematoxylin and eosin [H&E]; ×100) B: Venous invasion was observed in the resected mesocolon (H&E; ×40).

Table 1
Summary of reported cases of colonic metastases from renal cell carcinoma after nephrectomy.

Publication year	Author	Sex	Age	Time to Recurrence (years)	Symptoms	Site	Operation	Prognosis
1996	Tokonabe et al. [8]	Male	83	7	Melena, abdominal mass	Transverse colon	Transverse colectomy	Not stated
1998	Avital et al. [9]	Female	72	5	Abdominal pain	Hepatic flexure	Right hemicolectomy	Not stated
2008	Yetkin et al. [10]	Male	60	5	Fatigue, dyspepsia, abdominal pain	Hepatic flexure	Right hemicolectomy	Not stated
2010	Jadav et al. [11]	Female	65	9	Abdominal pain, collapse	Transverse colon	Transverse colectomy	No recurrence (6 years after colectomy)
2013	Milovic et al. [12]	Male	63	2	Irregular stools, bloating	Sigmoid colon	Left hemicolectomy	Not stated
2013	Milovic et al. [12]	Male	35	2	Nausea, vomiting	Not stated	Right hemicolectomy	Recurrence (bone, brain), died 2.5 years after primary operation
2013	Milovic et al. [12]	Male	39	4	Constipation	Ileocecal valve	Right hemicolectomy	No recurrence (9 months after colectomy)
2016	Vo et al. [13]	Male	67	9	Nausea, vomiting, abdominal distension, hematochezia	Sigmoid colon	Anterior resection	Recurrence (6 months after colectomy, liver metastasis)
2019	Zhang et al. [14]	Male	84	13	Hematochezia	Sigmoid colon	Anterior resection	No recurrence (9 months after colectomy)
2019	Subasi et al. [15]	Male	63	5	Hematochezia	Splenic flexure	Left hemicolectomy, splenectomy	No recurrence (6 months after colectomy)
	Our case	Male	65	1	Arthritic pain	Ascending colon	Laparoscopic right hemicolectomy	No recurrence (3 months after colectomy)

two cases suggests that metastatic RCC may cause hematogenous metastasis and indicates a necessity for en-bloc resection of the colon and its regional mesocolon.

Of the 11 cases, there were 2 recurrences after resection of colon tumors, one of which was reported as death from the original disease. Four patients were free of recurrence for more than 6 months, and one patient had a long-term survival of 6 years. The presence of a case with a favorable long-term prognosis suggests that colectomy with sufficient margins for metastatic RCC may be useful.

4. Conclusion

The colon is an uncommon but potentially site of metastasis for RCC. If abdominal symptoms, hematochezia, or anemia are observed during postoperative follow-up for RCC, colon metastasis should be considered. Colon metastasis with no other distant metastases should be considered for en-bloc resection of colon and its regional mesocolon, and complete resection with negative margins may result in long-term survival.

This study has been presented in line with SCARE criteria [16].

Declaration of Competing Interest

The authors report no declarations of interest.

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Ethical approval

This study is exempt from ethical approval in our institution.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Masahiro Kataoka: Writing original graft.
 Yasumitsu Hirano: Supervision, review and editing.
 Hiroka Kondo: Reviewing.
 Shintaro Ishikawa: Reviewing.
 Shigeki Yamaguchi: Supervision, review and editing.

Registration of research studies

N/A.

Guarantor

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