Retroperitoneal Liposarcoma with Colonic Involvement: A Case Report

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A 72-year-old male visited a local hospital on presentation of melena. Colonoscopy revealed a protruded lesion in the ascending colon, and computed tomography revealed a 20 cm retroperitoneal tumor. Biopsy failed to provide a definitive diagnosis of the colonic lesion. He was diagnosed as having a retroperitoneal liposarcoma and an ascending colon tumor using computed tomography, and referred to our hospital. Biopsy of the ascending colon lesion showed spindle cells with fibrosis. On immunohistochemical staining, tumor cells were positive for cyclin-dependent kinase 4 and murine double minute 2, and the lesion was diagnosed as a well-differentiated or dedifferentiated liposarcoma. The retroperitoneal liposarcoma, which had infiltrated the ascending colon, was resected along with the right colon and the right kidney. Macroscopically, the tumor had infiltrated the ascending colon, forming a multinodular solid mass in the lumen and the right kidney. Microscopic finding of the main tumor revealed a well-differentiated liposarcoma, and that of the colonic lesion revealed a dedifferentiated liposarcoma with nuclei of different sizes and shapes and increased spindle cell morphology. The right kidney and ureter were surrounded by tumor cells but were not infiltrated, and there was no lymph node involvement. The diagnosis of retroperitoneal liposarcoma is often difficult because symptoms appear only after the tumor becomes very large. Some retroperitoneal liposarcomas are found on computed tomography by chance. The clinical course of this case was very rare because of the presentation of melena as the first symptom and the detection of an invasive mass in the ascending colon using colonoscopy.

Key words: retroperitoneal liposarcoma — colonic invasion — surgical resection

INTRODUCTION

Retroperitoneal liposarcoma is the most common subtype of retroperitoneal tumor, but it is rare with an incidence of only 2.5 per million population (1, 2). Early diagnosis is often difficult because symptoms appear only when the tumor becomes very large (3). Usually, the tumor grows expansively; therefore, the involvement of other organs is relatively rare, and retroperitoneal liposarcoma with colonic involvement has been reported only twice in the English literature (3, 4). We report a rare case of retroperitoneal liposarcoma with colonic involvement. The patient developed melena and was diagnosed, using colonoscopy, as having a retroperitoneal liposarcoma that had invaded the colon.

CASE REPORT

A 72-year-old male visited a local hospital on presentation of melena. Colonoscopy revealed a protruded lesion in the ascending colon, and a 20 cm retroperitoneal tumor was revealed using computed tomography (CT). Biopsy of the
A colonic lesion was performed, but it failed to provide a definitive diagnosis. He was diagnosed with a retroperitoneal liposarcoma and an ascending colon tumor on the basis of CT evaluation and was referred to our hospital. Colonoscopy performed in our institution revealed a protruded lesion in the ascending colon that was milky white, multinodular and 4 cm in size (Fig. 1). The base of the lesion was surrounded by mucosa, which was not typical for colon cancer. Contrast-enhanced CT demonstrated an ill-defined, heterogeneously enhanced, soft-tissue lesion, ~25 × 20 × 10 cm in size, that caused displacement of the bowel loops and right kidney. In addition, a highly attenuated multinodular mass was detected in the ascending colon (Fig. 2). Biopsy of the ascending colon lesion showed spindle cells with fibrosis (Fig. 3A). On immunohistochemical staining, the tumor cells were positive for cyclin-dependent kinase 4 and murine double minute 2 (Fig. 3B and C) and negative for c-kit (Fig. 3D). Therefore, the lesion was diagnosed as a well-differentiated or dedifferentiated liposarcoma. The tumor was judged to be resectable on the basis of CT evaluation, and a surgical resection was performed. Intraoperatively, the tumor was found to be located in the retroperitoneum and had infiltrated the right kidney and ascending colon. After proximal ligation of the ileocolic vessels and the right branch of the middle colic vessels, the retroperitoneal tumor was resected together with the right colon and the right kidney. The course of recovery after surgery was uneventful.

Figure 1. Colonoscopic findings. Colonoscopy revealed a protruded lesion in the ascending colon that was multinodular and 4 cm in size.

Figure 2. Contrast-enhanced computed tomographic (CT) findings. Contrast-enhanced CT scan showing an ill-defined, heterogeneously enhanced, soft-tissue-attenuated lesion ~25 × 20 × 10 cm in size that caused displacement of the bowel loops and right kidney, and a highly attenuated multinodular mass is seen in the ascending colon (white arrows).

Figure 3. Microscopic and immunohistochemical findings of the colonic lesion. (A) Microscopic findings of the colonic lesion. Biopsy of the lesion in the ascending colon showing spindle cells with fibrosis after hematoxylin and eosin staining. (B) The tumor cells are positive for cyclin-dependent kinase 4 and (C) murine double minute 2, (D) and negative for c-kit on immunohistochemical staining.
Macroscopically, the tumor was ≈25 cm in size, had infiltrated the ascending colon and formed a multinodular solid mass in the lumen (Fig. 4). Microscopic finding of the main tumor revealed a well-differentiated liposarcoma (Fig. 5A), and that of the colonic lesion revealed a dedifferentiated liposarcoma with nuclei of different sizes and shapes and increased spindle cell morphology (Fig. 5B) compared with those of the main tumor. Although preoperative CT demonstrated a heterogeneously enhanced tumor surrounding the right kidney, the dedifferentiated component existed only at the ascending colon microscopically. The right kidney and ureter were surrounded by tumor cells, but there was no infiltration to these organs and lymph node involvement was absent. Dorsal, caudal and medial sides of the surgical margin were positive for well-differentiated liposarcoma. The patient showed no recurrence 19 months after surgery.

DISCUSSION

Retroperitoneal liposarcoma is the most common subtype of retroperitoneal tumor, but it is a rare tumor that has an incidence of only 2.5 per million population (1, 2). Histologically, liposarcoma is classified into five subtypes: well-differentiated, myxoid, round cell, pleomorphic and dedifferentiated (5, 6). Evans introduced dedifferentiated liposarcoma as a tumor containing distinct areas of well-differentiated, high-grade, pleomorphic and non-lipogenic sarcoma (7). The diagnosis of liposarcoma is often difficult because of the late appearance of symptoms (3), and the absence of a specific tumor marker. Usually, patients with retroperitoneal liposarcoma notice gradual abdominal distension over many years, and gastrointestinal or genitourinary symptoms are rare. Some retroperitoneal liposarcomas are found at routine medical examination by chance with the help of imaging findings (8), and the appearance of the lesions on CT is reported to be diagnostic (2). The present case had a rare clinical course because of the presentation of melena as the first symptom and detection of an invasive mass in the ascending colon using colonoscopy.

Surgical resection is the treatment of choice for liposarcoma because there is no evidence that chemotherapy or radiotherapy is effective (2). Complete surgical removal of the tumor remains the most important predictor of local recurrence and overall survival (9). However, it is often difficult to obtain a margin-negative tumor resection for retroperitoneal liposarcoma because most tumors are huge at the time of diagnosis, and the liposarcoma is difficult to distinguish from normal fat tissue because of the high degree of adipocyte differentiation (10). Consequently, the local recurrence rate for retroperitoneal liposarcoma is as high as 41% (2, 11).

To achieve macroscopic clearance at primary surgery, it is reported that over half of the patients who underwent surgical resection required combined resection of the surrounding organ, and the most commonly resected organ was the kidney (32%) followed by the colon (25%) (2). In the present case, the retroperitoneal tumor had macroscopically infiltrated the right kidney and ascending colon, and en bloc resection was performed. However, microscopic findings showed that the tumor had infiltrated only the ascending colon. Liposarcoma is an expansively growing tumor, and so invasion to other organs is relatively rare, with an incidence rate of 4% (2, 12). Retroperitoneal liposarcoma with colonic involvement is extremely rare and has been reported only twice in the English literature (3, 4) (Table 1). In both cases, symptoms caused by tumor growth were absent, the tumors were composed of well-differentiated and dedifferentiated components. Additionally, a subtype of malignant fibrous histiocytoma was present in one of the cases. In both cases, the tumor had infiltrated the fixed colon near the perinephric fat, which is a site favored by retroperitoneal liposarcoma for infiltration. Although the kidney was not infiltrated in the present case, the tumor had infiltrated the ascending colon and formed a multinodular solid mass in the lumen. Interestingly, microscopic finding of the main tumor revealed a well-differentiated liposarcoma, and that of the colonic lesion revealed a dedifferentiated liposarcoma. Dedifferentiated liposarcomas are characterized by the histological coexistence of a well to poorly differentiated liposarcoma and non-lipomatous differentiated areas (13). Dedifferentiated liposarcoma has been reported to have a...
worse prognosis than other subtypes because it has a higher risk of local recurrence and distant metastasis (10), and because the recurrent tumors also tend to dedifferentiate over time (2). Therefore, the dedifferentiated subtype will have higher malignant potential than other histological subtypes. Reflecting its malignant potential, dedifferentiation of well-differentiated liposarcomas may occur when a tumor infiltrates other organs and when it recurs.

In conclusion, we report a rare case of retroperitoneal liposarcoma with colonic involvement. Considering the nature of the retroperitoneal liposarcoma and pathological findings of the present case, the patient will require close follow-up.

Table 1. Review of reported cases of retroperitoneal liposarcoma with colonic involvement

<table>
<thead>
<tr>
<th>Author</th>
<th>Age</th>
<th>Sex</th>
<th>Size (cm)</th>
<th>Symptom</th>
<th>Pathology</th>
<th>Site of invasion</th>
<th>Primary or recurrence</th>
<th>Other organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case 1</td>
<td>51</td>
<td>M</td>
<td>15</td>
<td>None</td>
<td>Dedifferentiated with well differentiated</td>
<td>Ascending colon</td>
<td>Primary</td>
<td>Pancreas, rt. Kidney duodenum</td>
</tr>
<tr>
<td>Case 2</td>
<td>61</td>
<td>M</td>
<td>9.5</td>
<td>Fever</td>
<td>Well differentiated with dedifferentiated</td>
<td>Descending colon</td>
<td>Recurrence</td>
<td>None</td>
</tr>
<tr>
<td>Present case</td>
<td>72</td>
<td>M</td>
<td>25</td>
<td>Melena</td>
<td>Well differentiated with dedifferentiated</td>
<td>Ascending colon</td>
<td>Primary</td>
<td>None</td>
</tr>
</tbody>
</table>

Figure 5. Microscopic findings of the tumor. (A) Microscopic finding of the main tumor revealed a well-differentiated liposarcoma with anisonucleosis fat cells and atypical stromal cells. (B) Microscopic finding of the colonic lesion revealed a dedifferentiated liposarcoma, with nuclei of different sizes and shapes, and increased spindle cell morphology.

Conflict of interest statement
None declared.

References