Successful Treatment of Gastric Adenocarcinoma in a Meckel’s Diverticulum with Pemetrexed Plus Carboplatin

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A 42-year-old man was found to have an adenocarcinoma arising from ectopic gastric mucosa in Meckel’s diverticulum, as diagnosed with surgical pathology. Recurrence was recognized with massive ascites at 1 year and 6 months after surgery. Chemotherapy in the first and second lines was not effective. In the third line of chemotherapy, pemetrexed and carboplatin were both administered and this resulted in a good response for massive ascites. This palliative therapy was effective and safe.

Key words: Meckel’s diverticulum – adenocarcinoma – chemotherapy – pemetrexed – carboplatin

INTRODUCTION

Meckel’s diverticulum is the one of the most common congenital anomalies of the gastrointestinal tract (incidence 0.5–2% in autopsy series). This diverticulum develops by incomplete obliteration of the omphalomesenteric duct, which typically disappears during the fifth to sixth week of gestation. Neoplasms within the Meckel’s diverticulum are rare; carcinoids are the most common malignant tumors occurring in this site. Adenocarcinomas are extremely uncommon and prognosis has been reported as very poor (1). There is no standard chemotherapy treatment for this cancer. We report here a case of advanced adenocarcinoma arising from the gastric mucosa in a Meckel’s diverticulum for which treatment with pemetrexed and carboplatin was effective.

CASE REPORT

A 42-year-old man was admitted with complaints of pain in the right lower abdomen and vomiting. A computed tomography (CT) scan revealed an area of narrowing in the distal ileum, with wall thickness and severe proximal dilatation (Fig. 1). Barium contrast radiography of the small bowel indicated the same findings. Surgical treatment was necessary because of the small-bowel obstruction.

During surgery, a small tumor arising from a diverticulum in the antimesenteric border of ileum was noted, approximately 40 cm proximal from the ileocecal valve (Fig. 2A). Partial resection of the ileum was performed.

The pathological diagnosis was adenocarcinoma arising from ectopic gastric mucosa in the Meckel’s diverticulum (Fig. 2B). The final stage was T3, N0, M0, stage II according to the UICC classification.

S-1 was administrated as adjuvant chemotherapy for 1 year. Recurrence was recognized with severe abdominal distention at 6 months after adjuvant chemotherapy. CT showed massive ascites and cytological examination of the ascites revealed adenocarcinoma, resulting in a diagnosis of peritonitis carcinomatosa.

The patient was started on chemotherapy to target the gastric adenocarcinoma.

He received paclitaxel + cisplatin in the first line and S-1 + docetaxel in the second line. The initial dose and administration schedule were as follows: the first line—paclitaxel (140 mg/m²) was administered in 90 min followed by cisplatin (30 mg/m²) in 90 min. This treatment was repeated every 2 weeks. The second line- S-1 (80 mg/m²/day) was given orally twice daily for the first 2 weeks of a 3-week cycle. Docetaxel (40 mg/m²) was administered in 90 min on day 1 of each cycle. The best result of chemotherapy was to halt the progression of the disease. After chemotherapy, CT scans revealed a drastic increase of ascites (Fig. 3A). The patient’s chief complaints were severe abdominal distention and anorexia. The performance status (PS) was rated as three due to peritonitis carcinomatosa with massive ascites and paralytic ileus. Since clinical symptoms were similar to those presented in malignant peritoneal mesothelioma, pemetrexed and carboplatin were suggested. The patient agreed with this.

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treatment plan by written informed consent. This treatment was approved by the institutional review board in our hospital.

In the third line of chemotherapy, pemetrexed and carboplatin were both administered on day 1, every 21 days. Pemetrexed was administered intravenously at a dose of 500 mg/m² over 10 min, followed 30 min later by carboplatin, which was administered as a 30-min intravenous infusion at an AUC of 5 mg/ml/min (2). The patient was supplemented with folic acid and vitamin B12; folic acid was taken orally at the beginning at least 1 week before the first dose of chemotherapy and was continued throughout the duration of treatment. Vitamin B12 was administered intramuscularly at least 1 week before the first dose of chemotherapy and was administered approximately every 9 weeks. After one cycle of the regimen, CT scans revealed marked reduction of ascites (Fig. 3B) and this status was maintained for 5 months. When the response to the first cycle of combination therapy was evaluated for effectiveness, the patient’s chief complaint of severe abdominal distention had subsided. He continued to receive the chemotherapy without any serious adverse effects, except for mild anorexia (limited to grade 1). After five cycles of the regimen, the paralytic ileus was released and PS was improved from 3 to 1. The patient is doing well 6 months after the start of the third-line chemotherapy and has not indicated increased ascites.

DISCUSSION

Meckel’s diverticulum is frequently found to contain heterotopic tissue. The frequency of ectopic gastric tissue in Meckel’s diverticulum is 10–34% (3,4). The usual tumors that arise in the Meckel’s diverticulum are stromal tumors, carcinoid tumors and fibroma. Adenocarcinoma is extremely rare, and is thought to arise mainly from heterotopic tissue present in the tissue of the diverticulum.

The preoperative diagnosis is difficult, because clinical features and radiological findings are nonspecific and may mimic those of Crohn’s disease or other small-bowel tumors. The prognosis of adenocarcinoma in Meckel’s diverticulum is poor because of extended local invasion and/or lymph node metastasis, as seen at the time of surgery (1).

In the third line of chemotherapy, I will choose the drug which has the different mechanism of action. Pemetrexed, a novel multitargeted antifolate, was shown to have activity as a single agent in a phase II trial in patients with advanced gastric cancer (5). Our case had massive ascites which was not controllable with diuretics. Clinical symptoms were similar to those presented in malignant peritoneal mesothelioma. Treatment with pemetrexed and carboplatin is active and is well tolerated in patients with malignant mesothelioma (2). The combination of pemetrexed and carboplatin has the potential advantages of having a lower adverse effect profile and an increased ease of administration. There is no evidence-based standard chemotherapy for adenocarcinoma in a Meckel’s diverticulum. We herein presented a patient who was administered combination chemotherapy with pemetrexed and carboplatin and this resulted in a good response for massive ascites. Additionally, no serious adverse effect occurred. These results are very important for palliative treatment. With its effectiveness and tolerability, pemetrexed/carboplatin combination therapy can be a

Figure 1. Computed tomography (CT) showed the stricture of the distal ileum (arrow) and severe proximal dilatation.

Figure 2. (A) Gross resection specimen of ileum, showing Meckel’s diverticulum (white arrow) with a stricture. (B) Photomicrograph of ileal specimen, showing a tumor arising from Meckel’s diverticulum. (C) Histopathological examination revealed moderately differentiated adenocarcinoma (gastric cancer like) (H&E, ×200). A colour version of this figure is available as supplementary data at http://www.jjco.oxfordjournals.org.
promising treatment of choice for adenocarcinoma in a Meckel’s diverticulum.

Conflict of interest statement
None declared.

References


