Esophageal Cancer with Solitary Renal Metastasis Treated with Multidisciplinary Therapy: A Case Report and Mini Review of the Literature

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Solitary renal metastasis of esophageal cancer is rarely encountered. Herein, we report the case of a 47-year-old man who developed a solitary renal metastasis after concurrent chemoradiotherapy followed by esophagectomy with esophagogastrostomy for esophageal squamous cell carcinoma, and treatment with nephrectomy and subsequent chemotherapy. Histopathological evaluation after operation revealed that the kidney mass was a metastatic lesion from esophageal cancer. He completed 15 cycles of palliative chemotherapy after nephrectomy and remained cancer-free for 36 months. Although lymph node metastasis occurred during regular follow-up, no evidence of lymph node metastasis was found on the imaging study after 9 cycles of chemotherapy with radiotherapy. (Korean J *Helicobacter* Up Gastrointest Res 2017;17:39-44)

Key Words: Esophageal cancer; Neoplasm metastasis; Survival; Multidisciplinary therapy

INTRODUCTION

Esophageal cancer is a malignant disease with aggressive behavior which is characterized by a high recurrence rate, advanced stage at diagnosis, and poor 5-year overall survival that rarely exceeds 30%.^{1,2} There are several treatment options for esophageal cancer, including surgical resection, preoperative or definitive chemoradiotherapy, or systemic chemotherapy.³ Although 50% to 70% of patients can be treated surgically with curative intent, half of these patients suffer from local recurrence or distant metastasis after complete resection.⁴ The most common sites of metastasis are the liver, lungs, bones, and adrenal glands through the hematogenous route.^{4,5} However, the development of a solitary renal metastasis of esophageal cancer has rarely been reported. Herein, we report a case of solitary renal metastasis after esophagectomy of advanced esophageal cancer treated by multimodality.

CASE REPORT

A 47-year-old man visited the outpatient clinic for an evaluation of dysphagia for about 2 months. On the esophagogastroduodenoscopy, an ulceroinfiltrative mass was found in the mid-esophagus, which suggested advanced esophageal cancer, Borrmann type 3. Histopathological examination determined the mass was moderately differentiated squamous cell carcinoma (Fig. 1). CT scan of the chest showed diffuse wall thickening of the mid-esophagus and enlargement of the paratracheal lymph node, and these lesions were found to be hypermetabolic lesions in fluorodeoxyglucose (FDG) PET-CT scan. There was no distant metastasis. The patient was diagnosed as an advanced esophageal cancer without distant metastasis which was clinical stage IIB or IIIA.

The patient underwent two cycles of chemotherapy with 5-fluorouracil (5-FU; 1,000 mg/m²) on day 1 to 4 and cisplatin (75 mg/m²) on day 1. Concurrently, he received radiotherapy with a total dose of 5,040 cGy divided by 28 fractions. After chemoradiotherapy, he underwent esophagectomy and esophagogastrostomy (Ivor-Lewis operation) of curative intent. After the surgery, he suffered from benign anastomotic stricture. He underwent

Received: December 6, 2016 Revised: January 3, 2016 Accepted: January 4, 2017

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Fig. 1. (A, B) Endoscopic and histopathological findings of primary esophageal cancer. At the 29 to 35 cm from the upper incisor, about 6 cm in size, circumscribed mass with overlying friable depressed ulceration is found in the upper endoscopy. (C, D) The histological finding of biopsy specimens shows moderately differentiated squamous cell carcinoma (H&E; C: $\times 100$, D: $\times 200$).

two sessions of balloon dilatation and temporary metal stent placement. Sixteen months later, a 5-cm-sized left renal mass was identified on regular surveillance CT and PET-CT scans (Fig. 2). For the best option of treatment for left renal mass, a multidisciplinary team meeting was held. After discussion, because of the difficulty of differentiate between renal cell carcinoma and metastasis, left nephrectomy was performed. On histopathological examination, the renal mass was revealed to be a metastatic lesion from esophageal cancer that was similar to the histological findings of the previously resected esophageal squamous cell carcinoma (Fig. 3). There was no recurrence on scheduled follow-up examinations during palliative chemotherapy with 5-FU and cisplatin after nephrectomy. Complete remission was achieved after 15 cycles of chemotherapy, the treatment was discontinued due to drug toxicity. Three years after the last chemotherapy, a lymph node enlargement appeared at the subcarinal area on a chest CT, which also demonstrated high uptake of FDG in PET-CT scan. As a result of consultation with clinicians of department of oncology and radiation oncology, docetaxel monotherapy and additional

radiotherapy was performed. After 9 cycles of chemotherapy, the size of the lymph node decreased and became almost invisible on the CT scan, and FDG uptake was no longer observed on PET-CT scan. He is currently undergoing chemotherapy without any other recurrence. The flow of the treatment was summarized in Fig. 4.

DISCUSSION

The prevalence of esophageal cancer is highest in east Asia, eastern and southern Africa, and some countries of Europe.⁶ Esophageal squamous cell carcinoma is the eighth most common cancer and the sixth leading cause of death in 2012.² Most patients with esophageal cancer die of recurrence or metastasis, with the 5-year overall survival rate ranging from 15% to 25%.¹ Once disseminated, metastases from esophageal cancer occur in various organs, including the liver, lungs, bones, and adrenal glands.^{4,5}

Metastatic renal tumors are rare and are mainly detected at autopsy. Bracken et al.⁷ reviewed 11,328 autopsies and identified 816 (7.2%) cases of metastatic tumor in

Fig. 2. Abdominal CT and a whole body fluorodeoxyglucose (FDG)-PET scans of the patient performed at 17 months after esophagectomy. (A) An approximate 4.7×3.6-cm-sized ill-defined low density mass is detected on the mid to lower pole of the left kidney. (B) Single mass with high FDG uptake is found on the lateral cortex area of the left kidney. The mass correlates with the mass detected on the abdominal CT scan.

the kidney. The sites of primary tumors include the lung, breast, skin, genitourinary, gastrointestinal, and gynecologic tracts in order of decreasing frequency. Because renal metastasis occurred through a hematogenous route, renal metastases usually present with multiple and bilateral lesions of less than 3 cm in size, which are widely spaced throughout the renal parenchyma. Previous report

showed that only 10% of metastatic renal tumors are more than 3 cm in size at the diagnosis.⁷ In addition, metastatic lesions tend to be less exophytic and wedge-shaped compared to the primary tumor of the kidney because of their subcapsular location.⁸ In the present case, renal metastasis appeared as a solitary, wedge-shaped mass located in the subcapsular area.

Fig. 3. (A, B) Gross and microscopic findings of resected kidney mass. Subcapsular mass is identified at the mid to lower pole of the left kidney. The tumor is whitish in color with an infiltrating margin, and 5 cm at its greatest dimension (A: white color arrows). (C, D) Microscopic examination of the resected renal mass shows a metastatic squamous cell carcinoma with nuclear irregularity (black color arrows) and compact laminated keratin (keratin pearls) (grey color arrow), which is similar to the histological findings of the previously resected esophageal squamous carcinoma (H&E; C: $\times 100$, D: $\times 200$).

Most renal metastases are asymptomatic despite extensive growth, and therefore they are generally detected late.⁹ In one study, only 33% of patients had microscopic hematuria and 15% developed gross hematuria.¹⁰ Therefore, the diagnosis of renal metastases is very difficult, particularly in patients with esophageal cancer, and is often established accidentally on surveillance exams. Although previous study based on autopsy findings showed that 13% of esophageal cancer had metastatic lesions in the kidney,¹¹ such cases are rarely encountered in the clinical practice because they are asymptomatic. The present case in addition to the other 11 previously re-

ported cases of esophageal cancer with renal metastasis and their treatment are briefly summarized in Table 1.^{8,12-20} Some cases had undergone surgical treatment because the differentiation between metastasis and primary renal tumor was difficult. Others were treated with surgical resection followed by chemotherapy and showed longer survival than those received surgical treatment alone, although this difference was not statically significant.

In this case, the patient achieved a partial response after concurrent neoadjuvant chemotherapy with irradiation. About 17 months after the curative esophagectomy, recurrence occurred with a solitary renal metastasis.

Fig. 4. Treatment course of this patient. 5-FU, 5-fluorouracil; RTx, radiotherapy; Dx, diagnosis; CCRT, concurrent chemoradiotherapy; Op., operation; Postop., postoperative; CTx, chemotherapy; LN, lymph node; CTx, chemotherapy; NED, no evidence of disease.

Table 1. Reported Cases of Esophageal Squamous Cell Carcinoma with Renal Metastasis

Case	Year	Age (yr)/gender	Tumor type	Interval between metastasis from primary tumor (mo)	Survival time after renal metastasis (mo)	Treatment of renal metastasis
Kitami et al. ¹²	1987	61/male	SCC	11	2	Left nephrectomy
Nagai et al. ¹³	1989	50/male	SCC	24	4	Radiotherapy and right nephrectomy
Shimizu et al. ¹⁴	1990	62/male	SCC	5	NA	Left nephrectomy
Miyoshi et al. ¹⁵	1997	57/male	SCC	2	>24	Right nephrectomy
(two cases)		57/male	SCC	12	2	Right nephrectomy
Matsushita et al. ¹⁶	1998	74/male	SCC	13	3	Right partial nephrectomy
Lim et al. ⁸	2004	61/male	SCC	24	NA	Right radical nephrectomy and chemotherapy
Ku et al. ¹⁷	2005	65/male	SCC	21	>6	Right nephrectomy and chemotherapy
Lai et al. ¹⁸	2012	46/male	SCC	24	24	Chemotherapy
Sun et al. ¹⁹	2014	64/male	SCC	9	3	Right nephrectomy
Chang et al. ²⁰	2016	53/male	SCC	31	2	Left nephroureterectomy
This present case	2016	47/male	SCC	17	47	Left radical nephrectomy and chemotherapy

SCC, squamous cell carcinoma; NA, not available.

Regarding the treatment of renal metastasis, it is often difficult for clinicians to decide whether to proceed a surgery or palliative chemotherapy because no definitive diagnosis can be made based on the findings of imaging studies. Radical nephrectomy could be justified in limited situations, such as refractory hematuria with anemia.

Moreover, the role of chemotherapy after radical nephrectomy with clear resection margins has not been established. Multidisciplinary team approach is crucial in making a decision for the treatment that can lead to optimal outcomes and prolonged survival. In our case, we performed chemotherapy for one year and discontinued

treatment when no measurable lesion was observed on periodic CT scans. Finally, he completed 15 cycles of palliative chemotherapy after nephrectomy and remained cancer-free for 36 months. Lymph node metastasis occurred during regular follow-up, and complete remission was achieved after 9 cycles of chemotherapy and radiotherapy. The treatment based on multidisciplinary team approach that incorporates clinicians in the departments of thoracic surgery, oncology, radiation oncology, urology, and gastroenterology contributed to longer survival of patient. Our case confirmed that comprehensive assessment is beneficial in the diagnosis and treatment of the patients with esophageal cancer.

In summary, we reported a case of advanced esophageal cancer with solitary renal metastasis treated with multidisciplinary team approach which lead to long-term survival. Although the prognosis of metastatic esophageal cancer is poor, more aggressive treatment including surgery can be beneficial.

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