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Long-term survival after pulmonary resections for multiple metastases from gastric cancer: A case report

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ABSTRACT

INTRODUCTION: The prognosis of pulmonary resection for metastatic gastric cancer is poor even though solitary metastasis. Long-term survival after pulmonary resections for multiple pulmonary metastases from gastric cancer is extremely rare.

CASE PRESENTATION: The patient was 67-year old man who underwent a distal gastrectomy for early gastric cancer. Wedge resections of the right upper and lower lobes and right lower lobectomy were performed for metastases from gastric cancer at 29 months and 55 months after the gastrectomy, respectively. As of 96 months after the first pulmonary metastasectomy, this patient continues to be recurrence-free.

DISCUSSION: Multiple pulmonary metastases after gastrectomy are not considered candidates for surgery. Although systemic chemotherapy is the standard therapy for metastatic gastric cancer, the prognosis is extremely poor. In this case with favorable prognostic factors, such as long disease-free intervals or absence of extrapulmonary metastasis, pulmonary metastasectomy could be a therapeutic option in patients despite the presence of multiple pulmonary metastases.

CONCLUSIONS: Our case suggests that even in cases involving multiple pulmonary metastases, pulmonary metastasectomy might be an effective therapeutic option that can improve survival.

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1. Introduction

Pulmonary metastases after curative resection for gastric cancer often present as carcinomatous pleuritis or carcinomatous lymphangitis [1], and solitary metastasis is rare [2,3]. In addition, the prognosis of pulmonary resection for solitary metastasis of gastric cancer is extremely poor [3]. Therefore, few patients are candidates for pulmonary resection. Furthermore, multiple pulmonary metastases are generally managed with systemic chemotherapy, and such patients are not considered candidates for pulmonary resection. Here, we describe a case of long-term survival after pulmonary resections for multiple metastases from gastric cancer.

This work has been reported in line with the SCARE criteria [4].

2. Case presentation

A 67-year old man underwent a distal gastrectomy for early gastric cancer. The lesion was of type 0-IIc, 1.2 cm in

diameter, and located at the greater curvature of the pylorus of the stomach. On microscopic examination, the lesion was identified as a well to moderately differentiated tubular adenocarcinoma invading the submucosa (Fig. 1a, b). No lymph node metastasis was observed. The pathological stage was T1bN0M0, stage IA. Twenty-six months after the gastrectomy, chest computed tomography revealed two coin lesions. One was a 1.2-cm nodule in the right upper lobe (Fig. 2a), and the other was a 0.9-cm nodule in the right lower lobe (Fig. 2c). A bronchoscopic biopsy failed to yield a definitive diagnosis. Since primary lung cancer could not be ruled out, we performed wedge resections of the right upper and lower lobes. Pathological examination revealed that both nodules were moderately differentiated adenocarcinoma, immunohistochemically negative for thyroid transcription factor-1, thereby, suggesting that they were pulmonary metastases from gastric cancer (Fig. 2b, d). Adjuvant chemotherapy with tegafur/gimeracil/oteracil potassium was administered for 1 year. Fifty-one months after the gastrectomy, chest computed tomography revealed a new nodule in the central superior segment of the right lower lobe. This nodule increased in size over next 3 months (Fig. 3a). Right lower lobectomy was performed at 26 months after the first pulmonary metastasectomy. Histologically, the 0.8-cm

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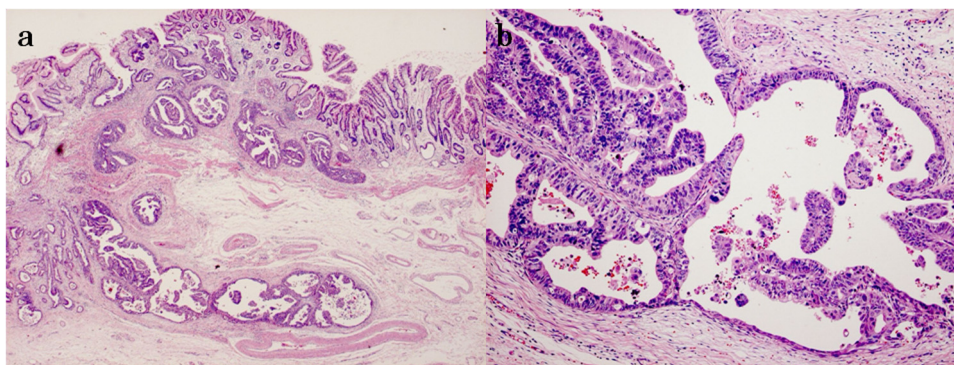


Fig. 1. a and b: Microscopic examination revealed well to moderately differentiated tubular adenocarcinoma invading the submucosa.

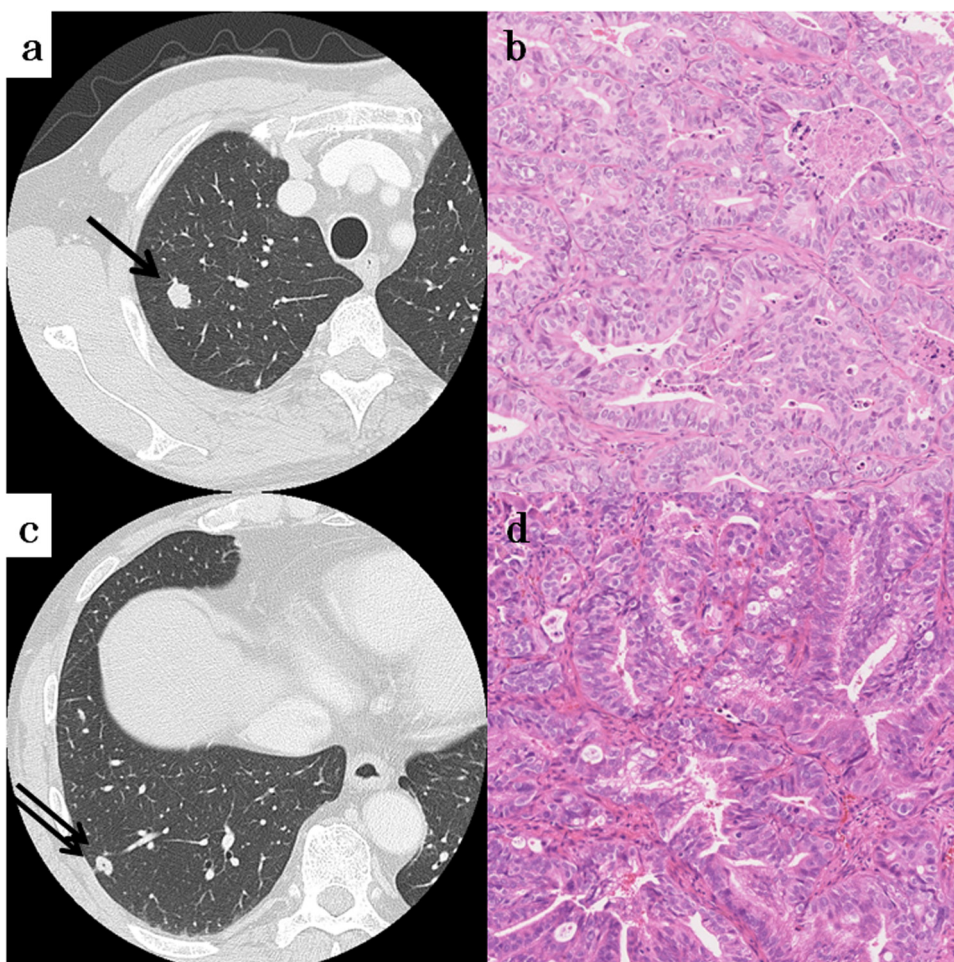


Fig. 2. Chest computed tomography revealed a 1.2-cm nodule in the right upper lobe (a, single arrow) and 0.9-cm nodule in the right lower lobe (c, double arrows). On pathological examination, each lesion was identified as a moderately differentiated adenocarcinoma (b, d).

nodule was identified as a moderately differentiated adenocarcinoma, which was diagnosed as pulmonary metastasis from gastric cancer (Fig. 3b). Adjuvant chemotherapy with cisplatin and tegafur/gimeracil/oteracil potassium was administered for 3 cycles. As of 96 months after the first pulmonary metastasectomy, this patient continues to be recurrence-free.

3. Discussion

The lung is one of the most frequent sites of distant metastasis from gastric cancer. According to a recent review, approximately

16% of patients develop pulmonary metastases after curative gastrectomy [5]. However, these metastases typically present as carcinomatous pleuritis or carcinomatous lymphangitis [1], and the reported incidence rate of surgically resectable solitary metastasis is only 0.1% [2,3]. In addition, the prognosis of pulmonary resection for solitary metastasis of gastric cancer is extremely poor. Kane-mitsu et al. reported that 4 patients who underwent pulmonary metastasectomy from gastric cancer were all dead at a median follow-up of 24.3 months [3].

Recently, cases of long-term survival after pulmonary resection for solitary metastasis from gastric cancer have been reported.

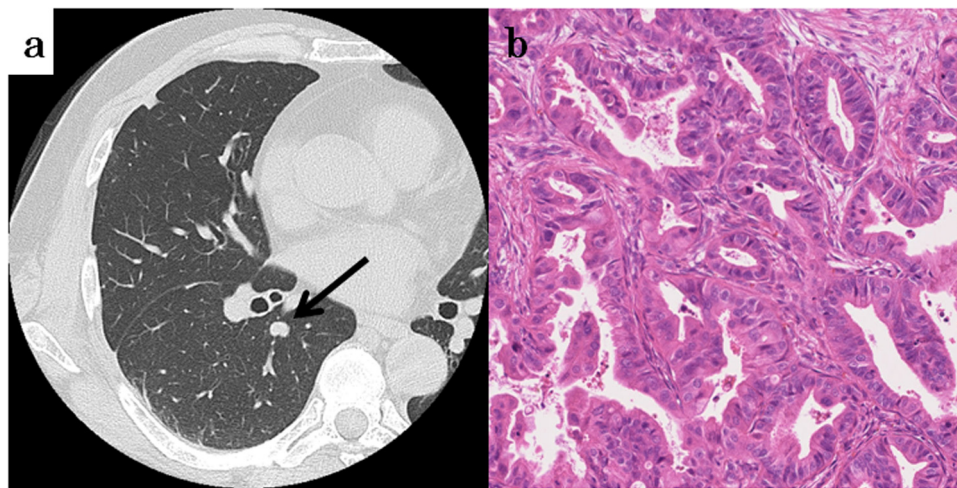


Fig. 3. Chest computed tomography revealed a 0.9-cm nodule (coin lesion) in the right lower lobe (a, single arrow). Pathological examination indicated moderately differentiated adenocarcinoma (b).

Tanai et al. reported a patient who survived over 5 years after pulmonary metastasectomy for solitary metastasis and concluded that patients with solitary completely resectable pulmonary metastasis without any evidence of extrapulmonary metastasis had a good chance of improved survival [6].

By contrast, only one case of long-term survival after pulmonary resections for multiple pulmonary metastases from gastric cancer has been reported in the English language. Nakayama et al. described a patient who died from a cerebral infarction 65 months after pulmonary metastasectomy, without recurrence [7]. Generally, multiple pulmonary nodules after gastrectomy are managed as pulmonary metastases. Therefore, systemic chemotherapy is typically administered, and such patients are not considered candidates for pulmonary resection. Surgery is mainly performed in cases in which primary lung cancer cannot be ruled out, such as that reported by Nakayama et al. and the present case.

Although systemic chemotherapy is the standard therapy for metastatic gastric cancer, the prognosis is extremely poor (reported 5-year survival was only 2%) [8]. Recently, several reports have been published concerning favorable prognostic factors of pulmonary resection for gastric cancer. Iijima et al. reported that early pathological stage of gastric cancer and absence of extrapulmonary metastasis were favorable prognostic factors [9]. Shiono et al. reported that relatively good surgical outcome could be expected for patients with disease-free intervals longer than 12 months, and their observed 5-year survival rate of pulmonary metastasectomy was 28% [10].

Our case suggests that pulmonary metastasectomy could be a therapeutic option in patients with favorable prognostic factors, such as long disease-free intervals or absence of extrapulmonary metastasis, despite the presence of multiple pulmonary metastases. Additionally, repeated pulmonary resection for metastatic gastric cancer may improve survival in certain patients. Further studies aimed at identifying the patients who may benefit from surgery are warranted to improve the current poor prognosis of this disease.

4. Conclusions

We describe a case of long-term survival after repeated pulmonary resections for multiple metastases from gastric cancer. We believe that even in cases involving multiple pulmonary metastases, pulmonary metastasectomy might be an effective therapeutic option that can improve survival in certain patients.

Conflicts of interest

The all authors declare that they have no competing interests.

Funding

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Ethical approval

This study was approved by the Shizuoka Cancer Center Institutional Review Board (29-J31-29-1-3).

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author contribution

HK designed the study, conducted the investigation, and wrote the manuscript. MI performed the surgery. MI, ST, NM, KF, and YO supervised the work.

Registration of research studies

This case report is not research study, therefore approval was not given.

Guarantor

Hideaki Kojima accept full responsibility for the work.

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