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CASE REPORT

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Resection of a colloid adenocarcinoma of the lung: A case report

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Abstract

Colloid adenocarcinoma of the lung is a rare subtype of lung adenocarcinoma, accounting for only about 0.24% of lung cancers. Because of its rarity, long-term postoperative prognostic reports are limited. In this report, we describe a case of colloid adenocarcinoma of the lung with a 5-year recurrence-free follow-up. The patient is a 66-year-old woman. During postoperative follow-up for ovarian cancer, chest CT showed a 45 × 30 mm sized mass in the left lung with mixed low-absorption areas inside that were suspicious of cystic lesion. We suspected metastatic lung tumour, and performed lower lobectomy. Pathological examination revealed pale tumour cells forming a glandular lumen with internal mucus production. Based on the results of immunostaining we diagnosed colloid adenocarcinoma of the lung. She received postoperative adjuvant chemotherapy and is alive 4 years postoperatively without recurrence. Colloid adenocarcinoma of the lung, even if large, may have a good prognosis if completely resected.

KEYWORDS
colloid adenocarcinoma, cyst, lung cancer

INTRODUCTION

Colloid adenocarcinoma of the lung is a rare subtype of lung adenocarcinoma that accounts for approximately 0.24% of primary lung cancers.[1] Because of the rarity of this tumour, long-term prognostic reports are limited. In this time, we experienced a surgical case of colloid adenocarcinoma of the lung with suspected pulmonary metastasis from ovarian cancer, and we report a 4-year follow-up of the patient.

CASE REPORT

A 66-year-old woman was treated for ovarian borderline tumour (Stage1A) 4 years ago with total hysterectomy and bilateral salpingo-oophorectomy. A chest CT at that time showed no lung lesions. Her other medical history was hypertension. She had no history of smoking and no subjective symptoms.

Blood tests showed only an elevated CEA of 8 ng/mL with no other obvious abnormal findings. A chest X-ray showed a 2.8 × 3.7 cm large mass in the left lower lung field, and a chest CT scan showed a 4.5 × 3.0 × 2.2 cm large mass with slightly irregular margins in the left lung S8. The interior of the mass was a mixture of cyst-like hypodense areas and hyperdense areas that were thought to be substantial components (Figure 1A). Considering metastatic lung tumour or primary lung cancer, video-assisted thoracoscopic surgery (VATS) lung resection was planned.

Thoracoscopy revealed a white mass with indistinct margins at S8 (Figure 1B). Since partial resection was difficult due to the size and location of the tumour, VATS left basal segment resection was first performed. Because the possibility of primary lung cancer could not be ruled out by intraoperative rapid pathological examination, the patient underwent VATS left lower lobectomy and lymph node dissection (ND2a-2), and surgery was completed.

Pathology findings are shown below. The overall diameter was 5.5 × 4.0 × 2.8 cm in size, most of which was a cystic lesion. Haematoxylin and eosin staining showed pale, atypical nuclei of tumour cells with mucus production inside, forming a glandular lumen with a small amount of

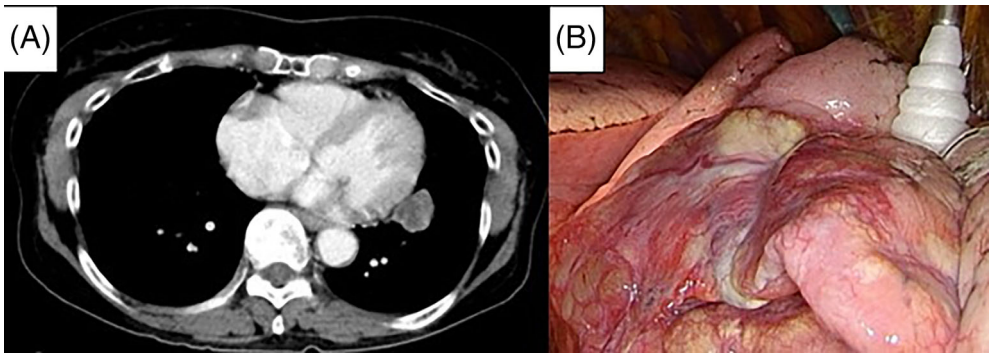

FIGURE 1 (A) Contrast CT scan. A 45 × 30 × 22 mm large mass with slightly irregular margins was observed in S8 of the left lung. The interior was a mixture of cyst-like hypodense areas and hyperdense areas that were thought to be substantial components. (B) Intraoperative image. A white mass with indistinct margins was found in the lower lobe of the left lung. There was no pleural effusion, exposure to the pleura, or pleural seeding

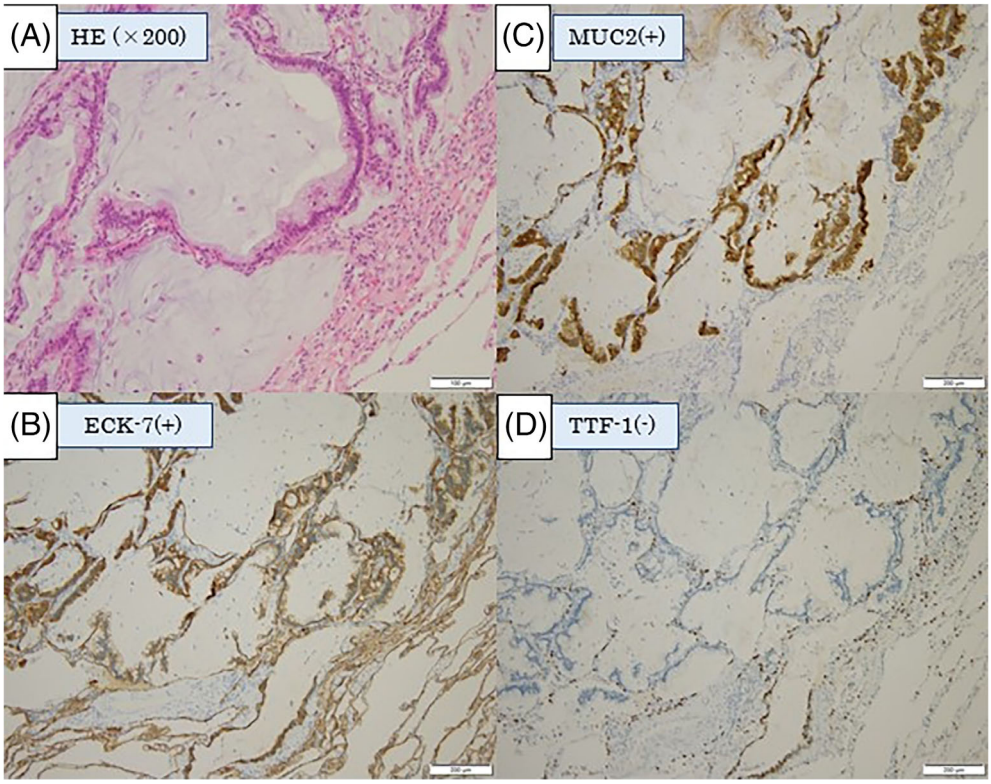

FIGURE 2 (A) Haematoxylin and eosin staining, (B) MUC2 staining positive, (C) ECK-7 staining positive, and (D) TTF1 staining negative

tumour cells floating in the lumen. There was no lymphatic vascular invasion and no lymph node metastasis (Figure 2A). Immunostaining was performed and was CK20 positive, MUC2 positive (Figure 2B), CDX2 positive, and ECK-7 positive (Figure 2C). It was also negative for TTF1 (Figure 2D) and PAX8. These findings were different from the previous borderline ovarian tumour and we diagnosed colloid adenocarcinoma of the lung (pT3N0M0 pStage IIB). In addition, epidermal growth factor receptor (EGFR) mutation, echinoderm microtubule-associated protein-like 4-anaplastic lymphoma kinase (EML4-ALK) fusion gene and ROS1 rearrangement were not detected in this case.

She had a good postoperative course, and the thoracic drain was removed on day 2, and she was discharged on day 8. She was treated with UFT for 2 years postoperatively and is currently under observation for 4 years postoperatively without recurrence.

DISCUSSION

Common clinical manifestations of colloid adenocarcinoma of the lung are cough, hemoptysis, and chest pain. However, it may be incidentally discovered during routine physical

TABLE 1 Case series of colloid adenocarcinoma of the lung with documented postoperative follow up

Reference		Cases (M[a]/F[b])	Age (mean)	Size (mean)	SUVmax (mean)	LN[c] metastasis	Pathological stage				Recurrence	Follow up (mean)	Outcome (A[d]/D[e])
							Stage I	Stage II	Stage III	Stage IV			
Rossi G[1]	2004	13 (7/6)	50–79 (64.5)	1–5.5 (2.8)	N/A	1	2	10	1	–	2 (N/A)	9-95m[f] (33 m)	11/2
Maryam J[2]	2015	13 (4/9)	48–86 (64.1)	1.8–6.5 (3.5)	N/A	2	9	2	1	1	3(LN (2), lung (1))	35-128 m (60.7 m)	10/3
Masai K[3]	2016	6 (2/4)	35–68 (59.6)	1.5–3.8 (2.6)	1.2–8.6 (4.51)	2	3	1	2	–	1(LN)	15-40 m (24.7 m)	6/0
Han K[4]	2018	7 (4/3)	54–74 (66)	1.7–8.2 (2.9)	1.5–4.5 (3.17)	2	2	3	2	–	1(lung)	2-60 m (27.6 m)	7/0
Our case	2023	1(0/1)	65	5.5	N/A	–	–	1	–	–	–	48 m	1/0

[a]Male.
[b]Female.
[c]Lymph node.
[d]Alive.
[e]Dead.
[f]Months.

examinations because it is asymptomatic. Colloid adenocarcinoma of the lung is defined in the WHO Classification of Tumours as an adenocarcinoma in which abundant mucin pools replace air spaces. Tumour cells typically show few mitotic figures and no necrosis. Immunostaining is positive for intestinal markers such as CDX2, MUC2, CK20, and CK7. TTF-1 is negative or weakly positive and focal.

There were 39 cases reported in 4 case series with a stated follow-up of more than 1 year after surgery (Table 1).[1–4] The men age of patients with colloid adenocarcinoma was 63.9 (35–86) years, and the mean tumour diameter was 3.0 cm (1.0–8.2 cm). Most colloid adenocarcinomas show low-absorption tumour or cystic shadows on chest CT. It should be differentiated from other low-absorption masses such as bronchial cysts, echinococcosis, and pulmonary aneurysms. When cyst wall irregularities or mural nodules are observed, resection biopsy should be considered with malignant disease in mind, as in this disease. In addition, PET/CT findings suggest that FDG accumulation in the tumour is relatively low, and FDG accumulation along the septal wall may be observed in some cases.[2] The mean SUVmax of FDG accumulation in the cases described was 3.8 (1.2–8.6). Seven of the 39 cases of postoperative recurrence were lymph node, lung, or bone metastases. Of these seven cases, four had lymph node metastases at the time of surgery. If the tumour is localized, postoperative recurrence may be less frequent, even if the tumour is relatively large. Russell et al. estimated a 5-year survival rate of 51% for nine patients with colloid adenocarcinoma of the lung who underwent surgical resection, which is better than for other subtypes.[5] This indicates that when colloid adenocarcinoma is localized, complete surgical resection may improve prognosis.

The tumour diameter of lung cancer is defined as the invasive diameter, but in cases with cystic lesions, the tumour diameter is considered to include the cyst. On the other hand, pancreatic cancer and ovarian cancer are malignant diseases with cystic lesions in other organs. In the case of pancreatic cancer, the T factor is determined by the maximum diameter of the invasive area, while in the case of ovarian cancer, the T factor is determined by the degree of invasion into the surrounding area regardless of the overall diameter. In the case of colloid adenocarcinoma of the lung, it may be useful to determine T-factors similarly rather than overall diameter. However, this would require more case–control studies. If more precise pathologic staging can predict prognosis, it may have a significant impact on the choice of adjuvant therapy.

In this report, we report a case of colloid adenocarcinoma of the lung that has remained recurrence-free for 5 years after surgery. Colloid adenocarcinoma may have a good prognosis if it is localized and completely resected, even if the overall diameter is large.

AUTHOR CONTRIBUTION STATEMENT

Yuya Kogita: Conceptualization; writing-original draft. **Naoko Ose**: Conceptualization, writing-review & editing, supervision. **Kawagishi Kotaro**: Resources. **Eiichi Morii**: Resources. **Shintani Yasushi**: Supervision.

CONFLICT OF INTEREST STATEMENT

None declared.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The study protocol was approved by the Ethical Review Board for Clinical Studies at Osaka University (control number 10026–3). The authors declare that appropriate written informed consent was obtained for the publication of this manuscript and accompanying images.

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