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Case Report

Surgical Case Report: Colloid Adenocarcinoma of the Lung

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Abstract

We report a rare case of primary colloid adenocarcinoma in a 59-year-old woman. A computed tomography (CT) scan of the chest showed a round, well-defined nodule in the ligulae of the left upper lobe that slowly enlarged over 6 months from 1.0 cm to 1.2 cm. Wedge resection of the left upper lobe was performed to obtain a definitive diagnosis using video-assisted thoracoscopic surgery. Macroscopically, the cut surface showed a well-demarcated nodule filled with a yellow-white gelatinous substance. The postoperative histological diagnosis was primary pulmonary colloid adenocarcinoma. Two months after, the patient requested additional extirpation, and lingual segment resection was performed.

Keywords: *Colloid Adenocarcinoma; Lung Cancer; Variant of Adenocarcinoma; Mucinous Cystadenoma; Invasive Mucinous Adenocarcinoma*

Introduction

Primary pulmonary colloid adenocarcinoma is rare. Colloid adenocarcinoma is described as a variant of adenocarcinoma in the latest edition of the World Health Organization (WHO) classification of lung neoplasms [1]. We report a case of primary pulmonary colloid adenocarcinoma that consisted mostly of mucin and was histopathologically similar to adenocarcinomas of the gastrointestinal tract.

Case report

An asymptomatic 59-year-old woman underwent a computed tomography (CT) scan of the chest, which showed an abnormal shadow in the left ligulae lung field during a regular checkup. The CT scan showed a round, well-defined homogeneous nodule measuring 1.0 cm (Figure 1a). The patient's clinical status included Graves' disease and a bilateral ovariectomy for benign tumors. Clinical examinations and routine laboratory tests were within normal ranges, except for elevated carcinoembryonic antigen (CEA) serum levels (25.4 ng/ml (normal; ~5 ng/ml).

Radiologically, the lesion was suspected to be either a metastatic or benign lung tumor, such as a hamartoma. Contrast enhanced abdominal CT scans, gastroduodenoscopy, and fiber optic colonoscopy revealed no apparent gastrointestinal tumors and positron emission tomography with ^{18}F-fluorodexyglucose showed no radiotracer accumulation in the lung lesion.

We carefully observed the lesion for 6 months. A follow up chest CT showed that the nodule had slightly increased in size to 1.2 cm (Figure 1b). Bronchoscopy and bronchoscopic biopsy specimens showed no unusual findings.

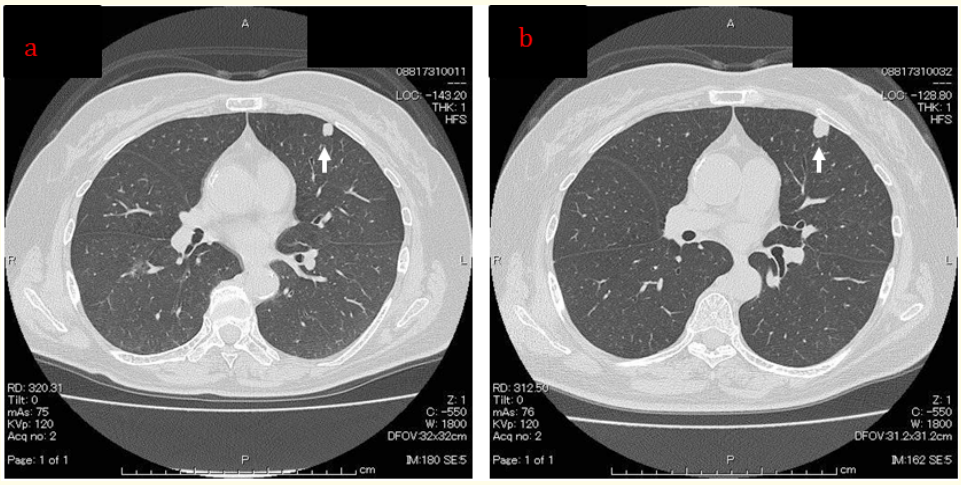

Figure 1: *(a) CT scan of the chest showing a round, well-defined homogeneous nodule measuring 1.0 cm, which (b) slightly increased in size to 1.2 cm after 6 months.*

Because a malignant tumor could not be ruled out, video-assisted thoracoscopic surgery and wedge resection of the left upper lingual lobe with sufficient surgical margins were performed to obtain a definitive diagnosis. The cut surface showed a well demarcated nodule filled with a yellow-white gelatinous substance (Figure 2a).

Histopathologically, the tumor consisted of abundant pools of mucin in the alveolar spaces and some neoplastic cells floating within the pools. Columnar mucinous epithelial cells lined the thickened alveolar walls (Figure 2b). Postoperative histopathological findings were in accordance with the diagnosis of primary pulmonary colloid adenocarcinoma. The patient was discharged on the fourth day after surgery without any complication.

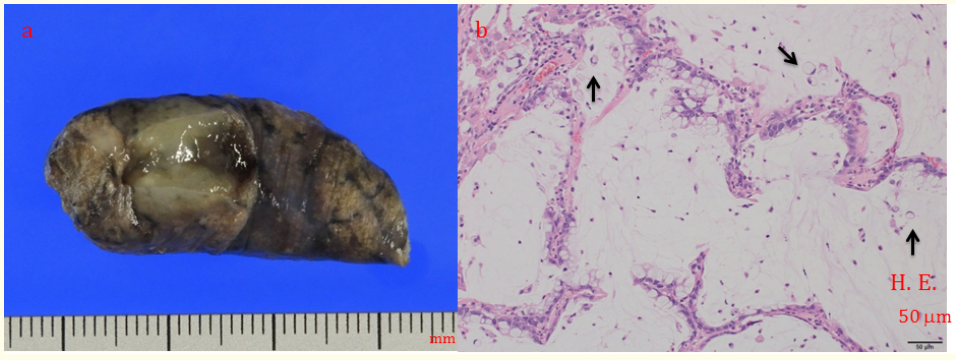

Figure 2: *(a) Cut surface shows a well-demarcated nodule and filled with a yellow-white gelatinous substance. (b) The tumor consisted of abundant mucin filling the alveolar spaces and some neoplastic cells floating in mucin pools (H. E. stain). Columnar mucinous epithelial cells line the thickened alveolar walls.*

Two months after surgery, the patient requested additional extirpation and lingual segment resection was performed. Results were negative for malignant cells at the surgical margins and in regional lymph nodes. The patient did not have recurrences after 12 months of careful follow-up, and serum CEA levels had decreased to 7~8 ng/ml.

Discussion

Primary pulmonary colloid adenocarcinoma is an extremely rare subtype of pulmonary adenocarcinoma. Primary pulmonary mucinous ("colloid") adenocarcinoma of the previous edition was reclassified as colloid adenocarcinoma in a latest edition of the WHO classification [2]. Colloid adenocarcinomas have abundant mucin pools that replace air space and are mucinous cystic tumors with borderline malignancy and mucinous cystadenocarcinomas [1]. The WHO classification characterizes mucinous cystadenoma lesions as cysts with fibrous walls lined by a well-differentiated columnar mucinous epithelium. When a lesion shows invasive growth into the lung, it is considered a colloid adenocarcinoma. Colloid adenocarcinomas have abundant extracellular pools mucin, which distend alveolar spaces and destroy the alveolar walls, leading to an overtly invasive growth pattern into alveolar spaces. Mucin deposits enlarge and dissect the lung parenchyma, creating pools of mucin-rich matrix, and tumor elements consist of foci of tall columnar cells with goblet-like features growing in a lepidic fashion. Tumor cells may float into the mucoid material. Mucinous tumor cells do not typically completely line the alveoli and may be extremely well differentiated, resulting in very challenging diagnostic conditions based on small biopsy or intraoperative examination [3].

Colloid adenocarcinoma differs from invasive mucinous adenocarcinoma in that mucin pools replace the underlying alveolar architecture, and scattered clusters of mucinous tumor cells line the air spaces. The mucin producing tumors on the latest version, the tumors of non-atypical cells were mucinous cyst adenoma, the tumors of atypical cells without massive invasion were colloid adenocarcinoma and the large tumor of atypical cells with massive invasion were invasive mucinous adenocarcinoma were diagnosed. The colloid adenocarcinomas were no symptom because the tumors were small and little invasive. If they were increased in size with massive invasion and the symptoms, the tumors were named the invasive mucinous adenocarcinoma.

Clinical correlation is needed to exclude metastasis from the digestive tract, pancreas, ovary, or breast. In this case, positron emission tomography with ^{18}F-fluorodeoxyglucose, contrast enhanced abdominal CT scans, gastroduodenoscopy, and fiber optic colonoscopy did not reveal any apparent gastrointestinal tumors.

The most effective treatment for colloid adenocarcinoma is surgical resection. Lobectomy is considered the standard surgical modality for colloid adenocarcinoma [4]. However, wedge resection with sufficient surgical margins may also be acceptable as a first surgery. In a series reported by Rossi., *et al*. 7 of the 13 patients underwent wedge resection and none reported local recurrence [5,6]. In the present case, the patient requested additional extirpation and lingual segment resection was performed.

Additional reports of such cases are needed to clarify the optimal surgical modality for this rare low-grade malignant tumor. Primary pulmonary colloid adenocarcinoma is rare, the case presented herein had a similar outcome to other cases reported in the literature.

Conflict of Interest Statement

The authors declare that they have no conflicts of interest.

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