

Case Report

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Mucoepidermoid Carcinoma of the Lung: A Case Report

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Abstract

Introduction: Mucoepidermoid carcinoma (MEC) of the lung is a rare form of lung cancer that is classified into low grade and high grade based on histological features. MEC and adenoid cystic carcinoma are considered to be salivary gland-type neoplasms. Surgical resection is the primary treatment for low-grade MEC with excellent outcomes, while high-grade MEC is a more aggressive form of malignancy.

Clinical Case

We reported a case of a 44-year-old woman who was admitted due to spontaneous bacterial peritonitis from alcoholic cirrhosis, Child-Pugh-score of 7. She was incidentally found left upper lung atelectasis from chest radiograph (CXR). Computerized tomography of the chest revealed a 2 centimeters (cm) enhancing intrapulmonary nodule involved left apicoposterior bronchus with intraluminal extension caused subsegmental atelectasis with fluid filled bronchi distal to lesion. Left paratracheal (4L) and subcarina (7) lymph nodes were enlarged. Endobronchial ultrasound guided transbronchial needle aspiration (EBUS-TBNA) was performed at station 7 and 4L revealed benign lymphoid tissue. Bronchoscopy with endobronchial biopsy surgical resection, and pathological examination revealed a low-grade MEC with tumor-free margins. No intrathoracic lymph node metastasis.

Conclusion

Primary pulmonary MEC is a rare type of lung cancer with only few reported cases. This case illustrated a low-grade MEC wherein surgical resection is considered curative. In contrast, high-grade MEC is a more aggressive malignancy with a poorer outcome.

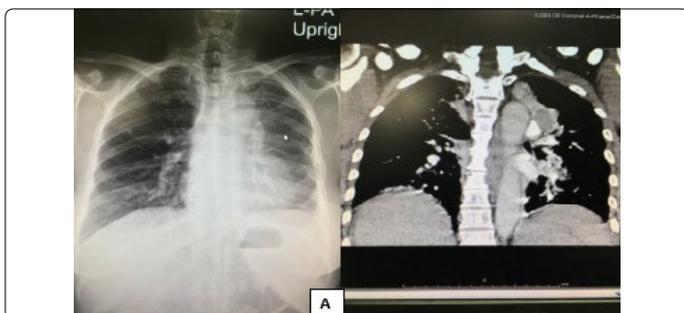
Keywords: Mucoepidermoid Carcinoma; Lung cancer; Surgical resection; Aggressive malignancy.

Background

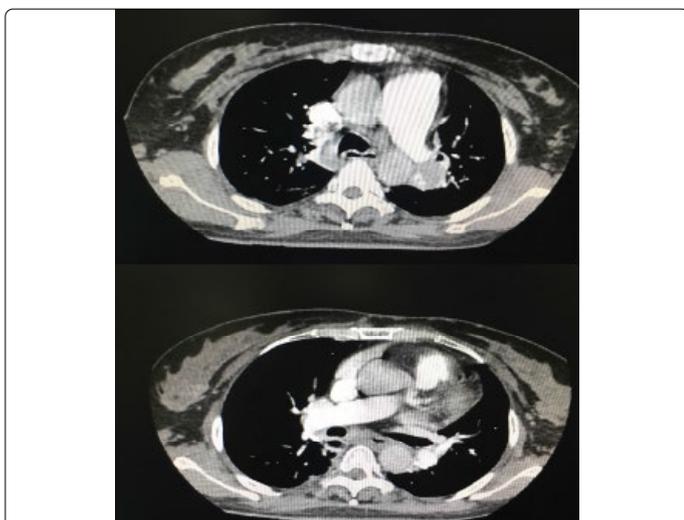
Mucoepidermoid carcinoma (MEC) is a rare pulmonary tumor that occurs for 0.1 to 0.2% of all pulmonary tumors [1]. MECs most often arise from the parotid or submandibular salivary glands. Most pulmonary MECs arise in the proximal bronchi. Histologically, MEC is characterized by a combination of mucus secreting, squamous, and intermediate cell types. Low grade MECs are comprised predominantly of glandular elements and mucin-secreting cells, while high grade MEC consists largely of sheets or nests of squamoid and intermediate cells intermixed with smaller populations of mucus-secreting cells. Pulmonary MEC patients typically present in the third and fourth decade of life and commonly present with symptoms related to bronchial obstruction and atelectasis, such as cough, hemoptysis, wheezing, and post obstructive pneumonia [2]. Complete surgical resection is associated with excellent prognosis. In this report, we describe the case of a 44 year-old woman who incidentally found endobronchial lesion at left upper lobe bronchus which was diagnosed as mucoepidermoid carcinoma of the lung.

Case Presentation

A 44-year-old Thai female, who was diagnosed alcoholic cirrhosis, Child-Pugh score of 7 for 2 years, presented with clinical of high grade fever, abdominal pain and abdominal distension. The abdominal paracentesis was performed and diagnosed spontaneous bacterial peritonitis (SBP). She was given intravenous cefotaxime for SBP treatment. During work up for cause of fever, the chest radiograph (CXR) was done and showed left upper lung nodule closed to aortic knob and the decrement of left lung volume which deferred for left upper lobe atelectasis (Figure.1A). She had no history of respiratory symptoms and no history of tuberculosis or tuberculosis exposure. She is non-smoker. Her past medical history was not significant except her liver condition which was treated with low dose spironolactone 50 mg per day. Her family history was noncontributory. Her physical examination was slightly decrease breath sound at left upper lung. Laboratory studies showed leukocytosis of 17,800 cells/ul. Sputum and blood culture were negative. Sputum smear acid fast bacilli for three days were negative. Sputum culture for tuberculosis was negative. Computerized tomography (CT) of the chest was performed and revealed a 2 centimeters enhancing intrapulmonary nodule involved left apicoposterior bronchus with intraluminal extension caused sub segmental atelectasis with fluid filled bronchi distal to lesion (Figure.1B). There were left paratracheal (4L) and subcarina (7) lymph nodes enlargement, 1 and 1.4 cm, respectively (Figure. 2A and B). No evidence of metastatic disease was seen.

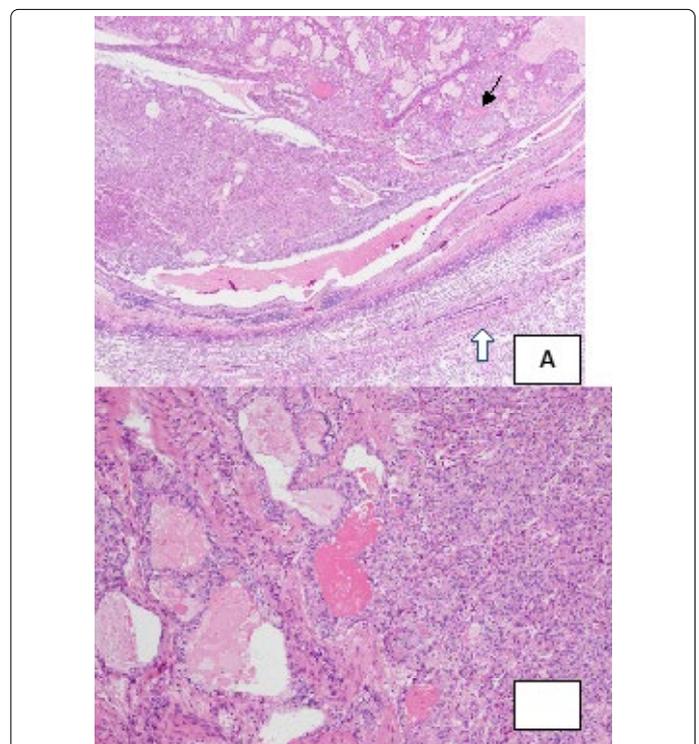


Figureure 1. (A) Chest radiograph frontal view: A left upper lung (LUL) nodule with left upper lung atelectasis (subsegmental). (B) CT chest coronal view: LUL nodule



Figureure 2. (A) CT chest cross sectional view: LUL nodule with 4L and 7 lymph node enlargement.

Bronchoscopy was performed and demonstrated a smooth, well-circumscribed tumor at the apico posterior segment of left upper lobe orifice, obstructed its lumen. Endobronchial biopsy was performed and revealed low grade mucoepidermoid carcinoma (mucin, CK7, P63 were negative and CK20 and TTF1 were negative). Her spirometry with diffusing capacity of the lung for carbon monoxide (DLCO) was done and showed FEV₁ 1.84 liters (L) (75%predicted), FVC 2.25 L (78% predicted) with DLCO 60% predicted. After discussed with patient, she agreed to be performed left upper lung lobectomy and mediastinal lymph node dissection. Pathological examination revealed 2.2 cm tan-yellow, well-circumscribed mass within the bronchial lumen that did not grossly invade into the surrounding lung parenchyma. Microscopic examination showed low grade mucoepidermoid carcinoma without lymphovascular invasion of LUL. (Figure 3A & B.)



Figureure 3. (A) Low power (40x) microscopic image showing well-demarcated tumor with microcysts (black arrow) and normal lung tissue. (White arrow) (B) Higher power (100x) image showing tumor cells admixed with the glandular component and sheets of squamoid cells and no lymphovascular or perineural invasion. The cells lack significant mitotic activity, nuclear pleomorphism, and cellular necrosis characteristic of a low-grade mucoepidermoid carcinoma.

Bronchial and vascular margin were free of tumor without intrathoracic lymph nodes metastasis (interlobar, peribronchial, inferior pulmonary ligament, AP window and subcarinal lymph nodes). The patient tolerated surgery well without complication. No adjuvant treatment was recommended and the patient continues to follow up with surveillance imaging.

Discussion

The World Health Organization (WHO) classifies pulmonary MECs as "salivary gland type" tumors along with pulmonary adenoid cystic carcinomas and epimyoepithelial

lung carcinoma [3]. There are a few cases of primary pulmonary MEC reported and presented as a mass in trachea, carina or in a mainstem bronchi and occasionally as a peripheral nodule. It is most occurring in younger age groups as compared to the other more common types of lung cancer and affects males and females equally and the median age of the presentation is 40 years [4]. The commonly presentations are cough, dyspnea, hemoptysis, wheezing and pneumonia. Some cases were asymptomatic. The diagnosis is often delayed due to slow growth, non-specific signs and symptoms and occasionally subtle findings on thoracic imaging. At bronchoscopy, mucoepidermoid carcinomas may appear as pink, polypoid masses that can be confused with carcinoid tumor. Histologically, MEC is comprised of a mixture of different cell types including mucin-secreting glandular cells, squamous cells, and intermediate cells. Low grade MEC is distinguished from high grade MEC based on the lack of cytological atypia including nuclear pleomorphism and absence of significant mitotic activity and cellular necrosis. Histological grade is an important prognostic indicator. The ratio of high grade and low grade variants is different in the several publications [5]. High-grade MECs demonstrating a greater risk for metastases, tumor recurrence, and death [6]. TNM staging was a significant independent predictor of prognosis in patients with tracheobronchial mucoepidermoid tumors.

While surgical resection remains the standard therapy for patients with pulmonary MEC, different operative approaches have been used. Recently, video-assisted thorascopic surgery (VATS) has become the most frequently used technique for resection of MECs. Breyer et al. treated five patients with MEC with different surgical approaches including thoracotomy with conventional lobectomy, sleeve lobectomy, and lobectomy, with bronchoplastic closure. No differences in outcome were observed among the various surgical modalities [7]. The goal of surgery is to obtain a complete resection with negative surgical margins. Adjuvant radiotherapy is required in cases of unresectable or incompletely resectable tumors. Patients with low-grade MECs have a generally excellent prognosis with a five-year survival rate approaching 95%. In contrast, high grade MECs carry a much poorer prognosis [8,9].

Our patient was a symptomatic case for a low grade MEC, a single centrally located well-circumscribed endobronchial tumor without evidence of local regional or distant metastasis. The tumor was resected by left upper lobe lobectomy in combination with mediastinal lymph node dissection. Histopathological findings were diagnostic of a low grade MEC with a confirmed complete tumor resection with negative surgical margins and no evidence of metastatic spread to lymph nodes. Based on the experience of multiple groups in treating low-grade MEC [2,6,8,9] surgical treatment is curative in this group of patients.

Conclusions

Primary pulmonary MEC represents a rare type of lung cancer. Patients with low-grade MECs, like the patient presented in this report, generally have a good prognosis

after primary surgical resection.

Conflict of Interests

The author declares that there is no conflict of interests.

Disclosure

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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