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Case Report

Pathological Complete Response after Neoadjuvant Chemo-Immunotherapy for Tracheobronchial Mucoepidermoid Carcinoma: A Case Report

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Abstract

A 26-year-old female was hospitalized due to incidental pulmonary neoplasm. Chest CT and bronchoscopy showed the neoplasm located at the opening of the left upper bronchus, completely blocking the airway with atelectasis. Biopsy pathology confirmed Tracheobronchial Mucoepidermoid Carcinoma (TMEC), cT2aN0M0 IB, negative for EGFR, ALK with PD-L1 (20%). After interventional bronchoscopic treatment, the patients underwent two cycles of neoadjuvant pembrolizumab plus chemotherapy. Then left upper sleeve lobectomy was planned. However, only R0 resection of left upper lobectomy was performed, with complete pathology relieve. In this case, we provide a real-world case of systematic treatment for TMEC.

Keywords: Tracheobronchial mucoepidermoid carcinoma; Pathology; Pathologic complete response; Neoadjuvant pembrolizumab; Chemotherapy

Introduction

Tracheobronchial Mucoepidermoid Carcinoma (TMEC) is an exceedingly rare salivary gland-type neoplasm with no standard treatment [1]. It can occur at any age, but nearly half of patients are less than 30 years old. MECs usually originate from the parotid or submandibular salivary glands, while most pulmonary MECs arise in the main stem bronchi or proximal lobar bronchi. Currently, complete surgical resection is accepted as the optimal treatment for this disease, such as lobectomy, bilobectomy, trachea resection, and sleeve resection [2]. Even in some case, it is difficult to resect with negative margins, and pneumonectomy needs to be considered.

Inhibiting Programmed Death 1 (PD-1) or its ligand, Programmed Death Ligand 1 (PD-L1), has revolutionized the treatment for patients with advanced solid tumor [3]. Neoadjuvant immunotherapy can shrink the tumor, help to clarify Minimal Residual Disease (MRD) and reduce the recurrence rate. Here, we report a case combining pembrolizumab and chemotherapy as neoadjuvant treatment for TMEC located at the opening of the left upper bronchus, which achieved pathologic complete response.

Case Presentation

A 26-year-old young female was hospitalized because of incidental finding of a neoplasm in the lung 3 months ago. She was a non-smoker, with no family history of cancer. Computed Tomography (CT) of the chest in our hospital showed left upper bronchial discontinuity and atelectasis. Bronchoscopy revealed a smooth, well-defined tumor at the opening of left-upper bronchus that completely blocked the airway, and the airway was partially unobstructed after bronchoscopic intervention. PET/CT and pathologic evaluation confirmed TMEC with a clinical stage of T2aN0M0 IB. Immunohistochemistry (IHC) results PD-L1 (20%). In order to determine whether there were potentially available targeted drugs, we performed Next-Generation Sequencing (NGS) on the tissue which indicated that the Epidermal Growth Factor Receptor (EGFR) and Anaplastic Lymphoma Kinase (ALK) fusion gene were wild type.

Given that direct left-upper lobectomy even left Pneumonectomy could result in bronchus margin with residual tumor, which is not acceptable for a young woman who are willing to live a long life with better quality. We recommended neoadjuvant therapy to patients, although the current treatment scheme is experimental, we fully informed patients and their families of the advantages and disadvantages, and obtained their informed consent. We offered two cycles of neoadjuvant pembrolizumab (200 mg on day 1) and chemotherapy (paclitaxel (313 mg) and carboplatin (765 mg) on days 1). CT scans following 2 cycles. Preoperative bronchoscopy and pathology evaluation showed that the left main branchus and the carina were negative after the two cycles, and then left-upper sleeve lobectomy was planned. After exposing the main bronchi during the surgery, the bronchi were cut off at the distal end of the lesion, no obvious tumor was found. Intraoperative frozen pathology showed no malignant evidence. The bronchial stump was then sutured, and only left-upper lobectomy and mediastinal lymph node dissection were performed. The patient had no postoperative complications and was discharged on the 6th day after operation. Pathological examination of the left-upper lobe showed complete pathology relieve with fibrosis, congestion, inflammatory exudates in the lung tissue, no tumor tissue, and no evidence of resected lymph node metastases (ypT0N0M0).

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Discussion

Most TMEC occur in the main bronchus, which is a great challenge for thoracic surgeons [4]. Although TMEC had unique characteristics and the majority of TMEC tumors present with an excellent prognosis after radical surgical treatment [5], complete dissection of TMEC by surgery alone is sometimes difficult. In clinical practice, repeated radiotherapy or bronchoscopic interventions is an alternative treatment if radical surgical treatment is not possible. Generally, TMEC tends to recur repeatedly after treatment. Neoadjuvant immunotherapy helps to prevent recurrence by eliminating MRD before operation and maintaining substantial postoperative immune response. Preoperative interventional bronchoscopic therapy is not only helpful to alleviate the symptoms but also helpful to evaluate the true degree of tumor invasion of trachea and bronchus.

Conclusion

The success of this case, interventional bronchoscopic therapy combined with neoadjuvant immunotherapy, provides a new treatment idea for TMEC located at the main bronchi, which avoided non-radical resection and pneumonectomy without affecting the oncological effect. Systematic therapy combined with neoadjuvant chemo-immunotherapy may provide a promising comprehensive treatment for TMEC.

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References

1. Falk N, Weissferdt A, Kalhor N, Moran CA. Primary Pulmonary Salivary Gland-type Tumors: A Review and Update. Adv Anat Pathol. 2016;23(1):13-23.
2. Resio BJ, Chiu AS, Hoag J, Dhanasopon AP, Blasberg JD, Boffa DJ. Primary Salivary Type Lung Cancers in the National Cancer Database. Ann Thorac Surg. 2018;105(6):1633-9.
3. Forde PM, Spicer J, Lu S, Provencio M, Mitsudomi T, Awad MM. Neoadjuvant Nivolumab plus Chemotherapy in Resectable Lung Cancer. N Engl J Med. 2022;386(21):1973-85.
4. Dell'Amore A, Chen L, Monaci N, Campisi A, Wang Z, Mammana M. Total Lung-sparing Surgery for Tracheobronchial Low-grade Malignancies. Ann Thorac Surg. 2021;112(2):450-58.
5. Wang Y, Cai S, Xue Q, Mu J, Gao Y, Tan F, et al. Treatment outcomes of patients with tracheobronchial mucoepidermoid carcinoma compared with those with adenoid cystic carcinoma. Eur J Surg Oncol. 2020;46(10 pt A):1888-95.