Oncocytic carcinoid tumor of the lung complicated by tuberculosis

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To the Editor: Oncocytic carcinoid tumor of the lung (OCTL) is a rare type of neuroendocrine carcinoma. Here we report a case of OCTL complicated by pulmonary tuberculosis (TB).

A 53-year-old woman who was a non-smoker with no notable medical history was admitted to The First Norman Bethune Hospital of Jilin University in June 2017. She reported a 20-day history of intermittent coughing, phlegm, and fever up to 38.7°C after having a "cold." Her condition improved with antibiotic treatment (penicillin and cephalosporin). She described having similar symptoms 6 months previously with fever, coughing, chest tightness, and shortness of breath, which was aggravated by vigorous activity and improved with medication. Her physical examination showed sinus tachycardia with a pulse rate of 118 beats/min. Her vital signs included a normal body temperature, respiratory rate of 19 breaths/min, and blood pressure of 108/71 mmHg, and her breath sounds were equal and normal. On admission, she underwent chest computed tomography scanning, which showed shrinkage of the lower lobe of her left lung with some areas of calcification [Figure 1A]. The sub-ordinate bronchi were narrow or warped, and a shadow with increased density was observed [Figure 1B]. Fiberoptic bronchoscopy revealed a new occupying lesion with smooth surface in a sub-branch of the lower lobe of the right lung, which was causing closure of the bronchial tube [Figure 1C]. Purulent secretion was seen within the terminus of the left main bronchial tube, where the lumen showed marked stenosis and the mucosa was rough and swollen [Figure 1D]. Immunohistochemical analysis revealed positive staining for Ki-67 (+ 1%), ck-pan (scattered +), CD56 (+), CgA (+), and Syn (+). The pathological and immunohistochemical results were consistent and confirmed that the sub-bronchial neoplasm in the lower lobe of the right lung was OCTL [Figure 1E]. Biopsy of the mucosa of the lower lobe of the left lung showed granulomatous inflammation, necrosis, epithelioid cells, and polynucleated giant cells, consistent with TB [Figure 1F]. Furthermore, acid-fast staining revealed the presence of bacilli, confirming pulmonary TB. Blood tests revealed elevated CA125 and C-reactive protein levels, an increased erythrocyte sedimentation rate, and a normal leukocyte count.

First reported in 1937, OCTL is a specific type of bronchial carcinoid tumor that accounts for 1% to 2% of all lung malignancies and is characterized by neuroendocrine differentiation.[1] It is derived from the bronchial mucosal Kulchitsky cells, which exhibit eosinophilic cytoplasm due to compensatory hyperplasia of the mitochondria in addition to neurosecretory granules. Mitochondrial lesions are considered the cause of OCTL.

Diagnosis of OCTL depends mainly on pathological examination as the gold standard combined with clinical and imaging results. Under light microscopy, multiple eosinophilic granules are seen in the tumor cells, and neurosecretory granules are seen under electron microscopy. Moreover, the cells are rich in bulky cytoplasmic mitochondria, and positive for neuron specific enolase, synapse, pheochromin A, and cytokeratin on immunohistochemistry. In the present case, OCTL was diagnosed based on the typical appearance of the biopsied cells under light microscopy along with the immunohistochemical results.

In this case, OCTL and TB were distributed in different lobes of the lung. No studies exploring the relationship between these conditions could be found in the literature, and information regarding the survival and clinical characteristics of patients with both diseases is limited. We suspect that OCTL may be related to TB, given that TB lesions increase the lung cancer risk and survival among lung cancer patients is reduced by a history of pulmonary

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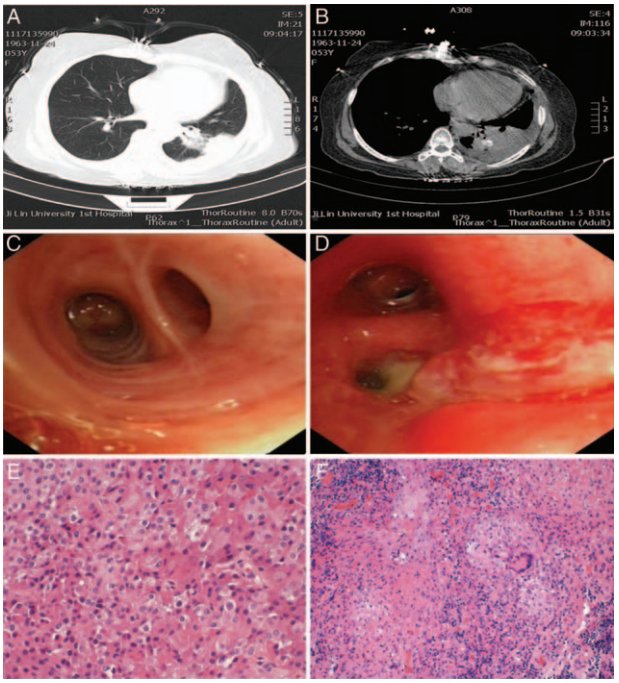

Figure 1: Computed tomography of the chest (A, B). A lesion was seen in the sub-branch of the lower lobe of the right lung, with a smooth surface and causing closure of the bronchial tube cavity (C). Purulent secretion was seen within the terminus of the left main bronchial tube, where the lumen showed marked stenosis and the mucosa was rough and swollen (D). Detection of two types of tumor cells. One type had abundant, strongly eosinophilic cytoplasm. The nuclei were small, eccentrically located, and intensely stained. The other type had an unclear boundary with abundant finely granular and light-pink cytoplasm. The nuclei were vesicular, and nucleoli were prominent (E, hematoxylin and eosin staining, original magnification ×400). Microscopically, the lesion showed granulomatous inflammation, necrosis, epithelioid cells, and polynucleated giant cells (F, hematoxylin and eosin staining, original magnification ×200).

TB.[2] One study suggested that carcinoma may reactivate TB.[3] Additionally, patients with concomitant TB and lung cancer had a higher mortality rate than those with TB only.[4] It is also likely that immunity is impaired by the tumor, which could contribute to the clinical course of TB.

OCTL is a low-grade malignant lung tumor that is often treated with surgery due to its insensitivity to chemotherapy.[1,5] Among the reported cases treated with surgical resection, no metastasis or death occurred during follow-up. Because the prognosis of controlled TB is good, our patient was advised to receive TB treatment first and then treatment of OCTL once the TB was controlled. Due to the rarity of OCTL, the lack of follow-up data, and the fact that OCTL with TB has not been reported previously, the patient's prognosis is still unclear.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. With the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initial will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

Conflicts of interest

None.

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