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Case Report

Extranodal nasal NK/T cell lymphoma with bronchial mucoepidermoid carcinoma and lung adenocarcinoma: a case report ^{☆,☆☆}

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ABSTRACT

Extranodal nasal NK/T cell lymphoma (ENKTCL) is a relatively rare type of non-Hodgkin's lymphoma. It is highly malignant, highly invasive, and easy to relapse. Most patients have a poor prognosis. We report a 48-year-old woman who presented with irritant dry cough that had persisted for 6 m. CT showed a mass in the right nasal cavity, with uneven density similar to soft tissue, with slight uneven enhancement. The mass and the upper, middle, and lower turbinates were not clearly demarcated, involving multiple adjacent sinus cavities, and the local bone showed osteolytic destruction; MRI showed isosignal on T1WI and slightly hypersignal on T2WI and DWI. In addition, there was a mass of soft tissue density at the bronchial opening in the right middle lobe, showing uneven and obvious enhancement; a cavity was seen in the nodule of the right lower lobe, and the adjacent pleura was stretched, showing moderate enhancement. The nasal mass was diagnosed as extranodal NK/T cell lymphoma, the right middle lobe mass was diagnosed as mucoepidermoid carcinoma, and the right lower lobe mass was diagnosed as lung adenocarcinoma. ENKTCL rarely invades the lungs. If a patient has a lung occupying lesion similar to it, biopsy confirmation should be considered to avoid misdiagnosis as a chest metastasis that affects the treatment effect.

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Introduction

Extranodal nasal NK/T cell lymphoma (ENKTCL) belongs to a special type of mature T cell and NK cell tumors in the 2016 edition of the World Health Organization (WHO) Lymphoid Tumor Classification [1]. It is a malignant lymphoproliferative disease characterized by progressive and destructive features. This type mainly occurs outside the nodules, most often in the nasal cavity. It is a special type of non-Hodgkin's lymphoma and is part of the extranodal lymphoma of the head and neck [2]. Bronchial mucoepidermoid carcinoma (BMEC) often occurs in the main bronchus, lobar bronchus or segmental bronchus, is a very rare lung malignant tumor, accounting for about 0.1%-0.2% of primary lung cancer [3]. The symptoms are mostly related to secondary tumor infection and airway obstruction. It is difficult to distinguish early from respiratory diseases such as pneumonia, bronchitis, chronic obstructive pulmonary disease, and asthma. The clinical diagnosis of this disease depends on bronchoscopy and pathological biopsy, which is easy to be missed and misdiagnosed.

Case report

A 48-year-old woman presented to the Department of Respiratory, complaining of intermittent dry cough for half a year, worsened for 2 days. The patient reported that he had an irritating dry cough 6 months ago, which was a continuous cough, and was heavy at night, accompanied by itchy throat, and severe chest pain during coughing. Laboratory examinations showed white blood cell count ($16.0 \times 10^9/L$, norm: $4-10 \times 10^9/L$), C-reactive protein 14.39 mg/L (norm: 0-10 mg/L), CA125 116.60 U/mL (norm: 0.01-35 U/mL), CA15-3 26.05 U/mL (norm: 0-25 U/mL), CA72-4 9.35 U/mL (norm: 0-6.9 U/mL), and CEA 6.15 ng/mL (norm: 0-5 ng/mL) were slightly elevated.

The CT examination of the nasopharynx showed the density shadow of the soft tissue with unclear borders in the right nasal cavity, with a CT value of about 43 HU, which was unclear from the upper, middle, and lower turbinates, with uneven density, involving the right frontal sinus, maxillary sinus, ethmoid sinus, and sphenoid sinuses. The adjacent ethmoid sinus and the inner wall of the maxillary sinus were compressed and thinned, and the local area showed osteolytic destruction (Fig. 1A), and the enhancement were uneven and mild (Fig. 1B). MRI examination of the sinuses showed that the tumor in the right nasal cavity was iso-signal on T1WI, and both T2WI and DWI showed slightly high signal (Fig. 1C), with uneven and mild enhancement (Fig. 1D). PET-CT examination showed that the radioactive distribution of the right nasal cavity and paranasal sinus mass was concentrated, and the maximum standard uptake value (SUVmax) was 22.8 (Fig. 1E). A needle biopsy was performed on the right nasal cavity and paranasal sinus mass. A large number of lymphoid cell infiltrations were seen in the interstitium of the mucosal tissue under the pathological microscope, and mitotic figures were more common (Figure 1F). The immunohistochemical staining results were CK (epithelial +), CD3 (+), CD20 (scattered +),

CD30 (scattered +), CD56 (+), TIA-1 (+), CD21 (-), Granzyme (+), Ki-67 (40%+). The pathological diagnosis was ENKTCL.

Chest CT examination revealed a mass of soft tissue density shadow at the bronchial opening of the right middle lobe, about $3.0 \text{ cm} \times 2.8 \text{ cm} \times 3.6 \text{ cm}$, with uneven edges and lobular signs and burrs, uneven density, and internal cystic low-density shadows. The plain scan CT value was 34 HU, which was obviously enhanced, and the CT value of arterial phase and venous phase was 103 and 92 HU (Fig. 2A). A $1.4 \text{ cm} \times 2.1 \text{ cm} \times 1.6 \text{ cm}$ nodule was seen in the lower lobe of the right lung, with a cavity inside, and traction adjacent to the pleura. The solid part had a CT value of 38 HU, showing uneven and moderate enhancement (Fig. 2B). In the previous PET-CT examination, it was also observed that the tumors in the right hilum and the right lower lobe showed a concentration of radioactivity, and the SUVmax was 14.3 (Fig. 2C) and 12.9 (Fig. 2D), respectively. There was a slight concentration of radioactivity in enlarged lymph nodes beside the right upper trachea of the mediastinum, and the SUVmax was 4.0. In addition, whole-body bone imaging showed abnormally active bone metabolism in the sixth anterior rib on the left and the left acetabulum, and bone infiltration or metastasis was considered. Bronchoscopy showed that the right middle lobe bronchus showed a hypertrophic mucosal swelling, and the lumen was occluded (Fig. 2E). Bronchoscopy biopsy showed that a large number of mucous cells under the bronchial mucosa epithelium were arranged in adenoids, and mucus was seen in part of the cavity. The pathological diagnosis was high-grade mucoepidermoid carcinoma (Fig. 2F). The pathology of the lung tissue biopsy in the lower lobe of the right lung was consistent with lung adenocarcinoma (Fig. 2G).

The patient received 2 cycles of chemotherapy with cisplatin, dexamethasone, guitaribine, and peaspertase regimen. The nasal mass and the right lower lung mass were reduced in size. After the chemotherapy, CT-guided right hilum radioactive seed implantation was performed. Three months later, the CT scan showed that the lower right lung cancer lesions were larger than before. At the same time, the abnormal changes in bone metabolism were observed on the bone scan. Subsequently, the chemotherapy was switched to pemetrexed and carboplatin. After 4 cycles of chemotherapy, CT follow-up showed that the right lower lung lesion was enlarged compared to the front, the ribs were destroyed and soft tissue formed, which was enlarged compared to the front, and the enlarged lymph node with a diameter of about 2 cm was palpable under the left armpit. The patient then received a cycle of chemotherapy with docetaxel and nedaplatin regimen. The patient was discharged after the last chemotherapy, and the patient died at follow-up 8 months later.

Discussion

ENKTCL is a clinically rare peripheral NK/T cell lymphoma. It is highly aggressive and prone to recurrence and metastasis. It accounts for 5.3%-16.0% of malignant lymphomas [4]. It has atypical clinical symptoms and may manifest as sinusitis in the early stage of the disease. BMEC is a rare malig-

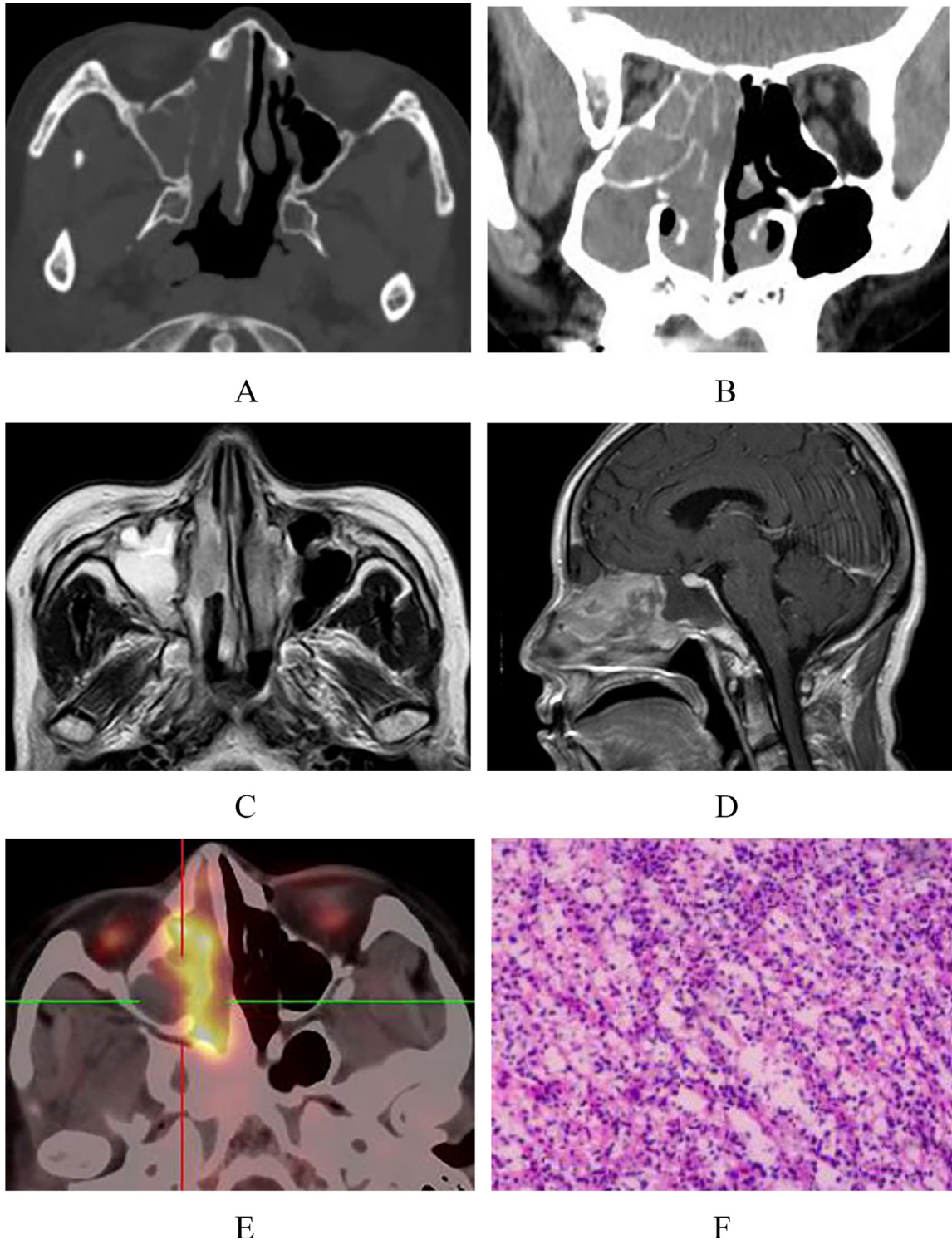


Fig. 1 – Nasopharyngeal CT, MRI, PET-CT, pathological examination images. (A) CT plain scan bone window showed local osteolytic destruction of the lesion adjacent to the ethmoid sinus and the inner wall of the maxillary sinus; (B) The soft tissue density in the right nasal cavity was not significantly enhanced, the coronal view showed that the lesion was unclearly separated from the upper, middle and lower turbinates, involving the right maxillary sinus, ethmoid sinus, and sphenoid sinus; (C) MRI plain scan showed that the lesion was slightly high signal on T2WI; (D) MRI enhancement showed uneven enhancement of abnormal signals in the right nasal cavity; (E) The density of soft tissues in the right nasal cavity and the right ethmoid sinus was concentrated with radioactive distribution, SUVmax was about 22.8; (F) A large number of lymphoid cells infiltrated in the interstitium of mucosal tissues, and mitoses were more common (hematoxylin and eosin, x 200).

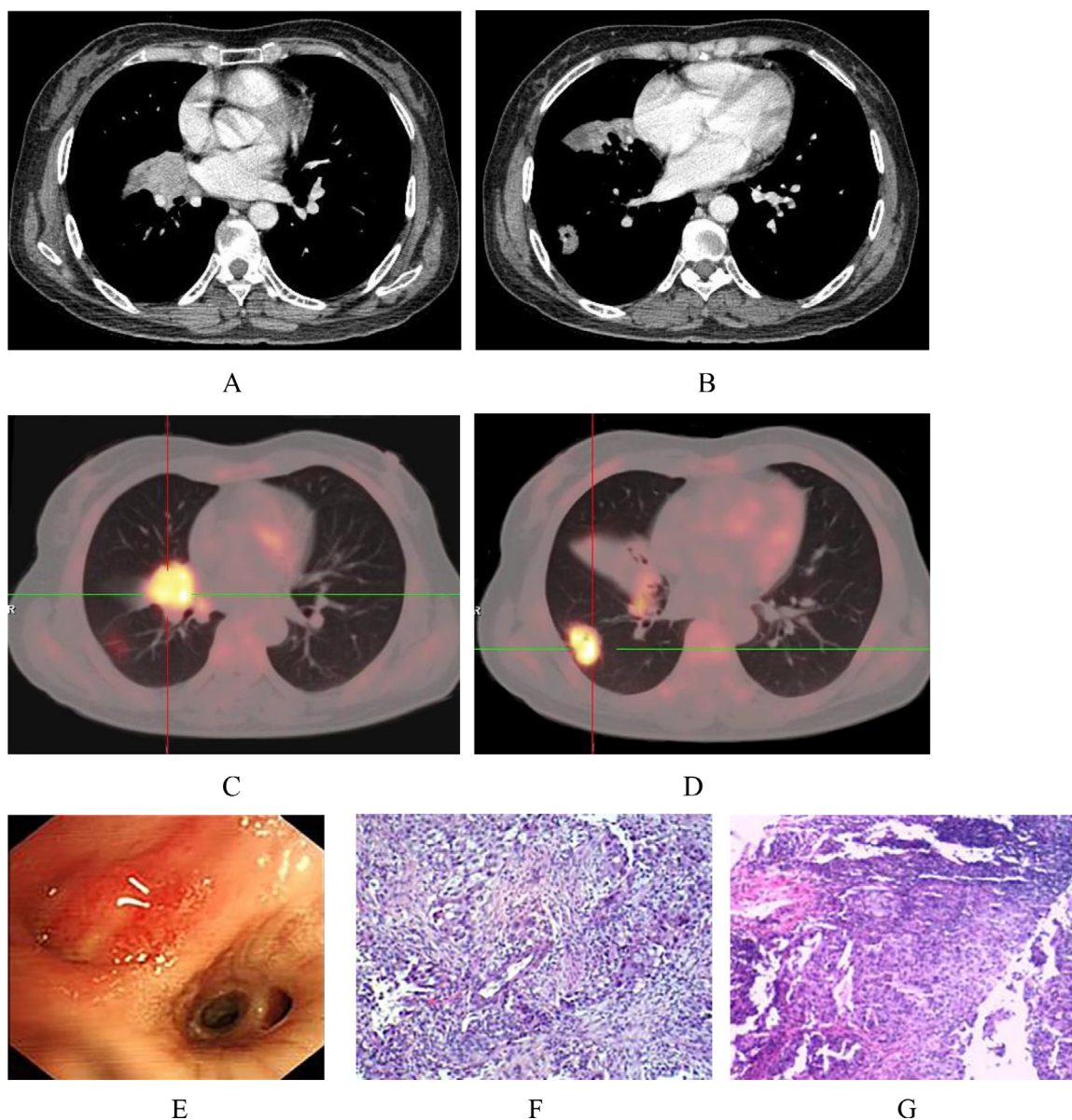


Fig. 2 – CT, PET-CT, bronchoscopy and pathological examination images of chest masses. (A) The CT-enhanced axial image showed the mass of soft tissue density at the bronchial opening of the right middle lobe, with uneven edges and uneven density. Cystic low density was seen inside, and the mass was obviously enhanced; (B) Axial CT enhancement of the chest showed a cavity in the right lower lobe nodule, and the adjacent pleura was stretched, and the enhancement was uneven and moderate; (C) Irregular mass of the right hilar with concentrated radioactivity, SUV was about 14.3, and lobes and burrs were seen on the edge; (D) In the lower lobe of the right lung, there was concentrated radioactive distribution of soft tissue nodules, the SUV was about 12.9, and a cavity was seen inside; (E) Bronchoscopy showed that the right middle lobe bronchial mucosa was hypertrophic and raised, and the lumen was occluded; (F) A large number of mucous cells were arranged adenoid under the epithelium of the bronchial mucosa, and mucus can be seen in part of the cavity (hematoxylin and eosin, x 200); (G) The tissue interstitium was widened, and the tumor cells were round and round-like arranged into adenoid structures (hematoxylin and eosin, x 200).

nant tumor of salivary glands, which occurs more frequently in young people, and the incidence of men and women is similar [5]. Recurrent pneumonia or coughing is a common onset of BMEC. The clinical manifestation of this case is an irritating dry cough. ENKTCL is prone to invasion of extranodal organs, most commonly in the ipsilateral maxillary sinus, and

less regional lymph nodes or distant metastasis. Both BMEC and lung adenocarcinoma can have lymph node metastasis [6]. In this case, the patient had metastasis to the right upper mediastinal paratracheal lymph node, and the left subaxillary lymph node enlarged, which was considered to be caused by lung tumor.

ENKTCL is easy to infiltrate bone, and CT can help to show bone destruction. MRI has an advantage over CT in reflecting the extent of lesion infiltration, and it is easy to distinguish the lesion from the accompanying obstructive inflammation. The plain CT scan of ENKTCL showed the density of soft tissue without obvious cystic transformation, ossification, and calcification. The density was slightly higher than that of the brain parenchyma. The bone changes were mostly compressed and thinned, and local osteolytic bone destruction. MRI examination of nasal lesions showed isosignal on T1WI, slightly higher signal on T2WI and DWI, and uneven mild enhancement on enhanced scan, which was consistent with the histological characteristics of ENKTCL's microscopic infiltration and destruction of blood vessels centered on tumor cell tubes. Besides, the uptake of 18F FDG in the lesion was significantly increased, suggesting that ENKTCL had the characteristics of high glucose metabolism.

The CT scan of BMEC is equal or slightly low density, and some cystic and grid-like mucus embolism or calcification is seen in some masses. After enhancement, the lesion and the enhancement are uneven, which can be manifested as smooth knots attached to the edge of the bronchial wall. The segmental thickening of the nodules or bronchial wall is uneven. In this case, CT showed that the right hilar space occupied, the mass blocked the bronchus of the right middle lobe, and obstructive pneumonia was seen around. Furthermore, whole body bone imaging is also helpful for follow-up and prognosis, bone infiltration, or metastasis was considered in the patient.

There is some controversy in the treatment of NK/T-cell lymphoma. Some scholars believe that radiotherapy is the main treatment. In recent years, some scholars have proposed that the combined use of platinum or L-asparaginase-containing chemotherapy drugs can help improve the prognosis [7]. Surgical resection is the first choice for BMEC. Imaging examination can observe lymph nodes and distant metastasis, understand the resectability of surgery and determine the scope of lymph node dissection. Surgical resection is the first choice for BMEC [8]. Imaging examination can observe lymph nodes and distant metastasis, understand the resectability of surgery and determine the scope of lymph node dissection. In this case, the lesion was locally reduced after chemotherapy containing pegaspargase. The lung lesion was implanted with radioactive seeds under CT guidance. The right lower lung adenocarcinoma was misdiagnosed as a metastasis and no surgery was performed.

Conclusion

This case was a multiorgan multiple tumor, which needs to be differentiated from chest metastases. The differentiation mainly depends on puncture and postoperative pathology. It is rare for ENKTCL to invade the lungs. If there is a lung space-

occupying lesion in the body, biopsy should be considered to avoid misdiagnosis as a chest metastasis and affect the treatment effect.

Authors' contributions

Conceived and designed the experiments: Yi-jing Han, Jianbo Gao and Zhi-hao Yang; performed the experiments: Wen-peng Huang; wrote the paper: Yi-jing Han. All authors read and approved the final manuscript.

Ethics approval

This study was approved by the Research Ethics Committee of the First Affiliated Hospital of Zhengzhou University, and informed consent was obtained from each patient.

Patient consent statement

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