

# Intrathoracic Endotracheal Metastasis from Nasopharyngeal Carcinoma: A First Case Report and Review of the Literature

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## Key Words

Metastatic disease · Endotracheal malignancy · Nasopharyngeal carcinoma · Radiotherapy

## Abstract

Intrathoracic endotracheal metastasis from a very distant site is extremely rare. We report the first case of such a disease in a 68-year-old man with nasopharyngeal carcinoma who presented with a cough and hemoptysis 34 months after finishing radiotherapy. Prior to tracheal metastasis, he developed a solitary metastasis in the lung and underwent chemotherapy followed by radiotherapy. Computed tomography showed the presence of an enlarged lymph node in the para-aortic arch. Fiberoptic bronchoscopy revealed an endotracheal tumor 1 cm above the carina. Histological and immunohistochemical analyses confirmed its nasopharyngeal origin. He was treated with conventional radiotherapy and three-dimensional conformal radiotherapy; complete tumor remission was achieved. He died of nonmalignant disease with no signs of tumor recurrence 2 years after treatment completion. Radiotherapy may be an appropriate management approach to achieve long-term tumor control for this disease.

## Introduction

Nasopharyngeal carcinoma (NPC) is an endemic disease within specific regions in the world. The highest incidence is found among Southern Chinese people, especially those of

Cantonese origin, whereas among Caucasians from North American and other Western countries it is sporadic [1].

Radiation therapy (RT), alone or combined with chemotherapy, is a paramount approach as initial treatment option for NPC [2]. Distant metastasis, however, remains one of the major problems after radical treatment in patients with locally advanced disease. The predominant distant metastatic sites are bone, liver, and lung [3]. We report a case of a 68-year-old patient with advanced NPC who developed intrathoracic endotracheal metastasis after RT. We believe this to be the first reported case of intrathoracic endotracheal metastasis in an NPC patient.

### Case Report

A 68-year-old man presented at our in-patient department on September 21, 2004, with a 3-month history of headache and hearing loss. Computed tomography (CT) revealed a nasopharyngeal mass extending into the left parapharyngeal space, left carotid sheath, and skull base. An enlarged cervical lymph node, about 2 × 2 cm, was found in the left level II. Pathology showed nasopharyngeal undifferentiated nonkeratinizing carcinoma. According to the 2002 American Joint Committee on Cancer Staging System, he was staged as T3N1M0 stage III.

The patient received an initial dose of 66 Gy by conventional RT and a boost dose of 10 Gy by three-dimensional conformal radiation therapy (3D-CRT) to the primary site. Prophylactic radiation was given to his bilateral neck with doses of 63.3 Gy to the upper neck and 50 Gy to the lower neck. Concomitant chemotherapy was not given due to his refusal.

A complete tumor response was achieved at the end of RT. However, 2 months later, a metastatic nodule about 1.5 × 1.1 cm was found in the left lower lobe of the lung. It was a peripheral lesion adjacent to the chest wall as judged by CT. He received 4 cycles of chemotherapy with vinorelbine and cisplatin, 2 cycles of chemotherapy with docetaxel and cisplatin, and a 3D-CRT dose of 66 Gy to the nodule in 33 fractions over 6.5 weeks. Dramatic tumor regression was observed after the treatment.

Thirty-four months after the initial RT, the patient presented with a cough and hemoptysis. CT showed the presence of an enlarged lymph node measuring approximately 1.5 × 1.5 cm in the para-aortic arch. Fiberoptic bronchoscopy revealed an endotracheal tumor 1 cm above the carina ([fig. 1](#)). Histological diagnosis indicated undifferentiated nonkeratinizing carcinoma ([fig. 2](#)). Immunohistochemical analysis found CK (++) , CK7 (–) , CK20 (–) , TTF-1 (–) , and EBER (+++) , confirming the tumor's nasopharyngeal origin. He was treated with conventional RT with anterior-posterior/posterior-anterior fields to 40 Gy to his mediastinum. An additional dose of 24 Gy was delivered to the tumor site thereafter.

The patient tolerated the treatment well with no significant acute side effects and no treatment interruption. He died of nonmalignant disease with no signs of tumor recurrence in August 2008, 2 years after treatment completion.

### Discussion

Metastatic tracheal tumors are extremely rare; they usually arise from direct invasion by neighboring primary lesions such as carcinomas of the bronchus, larynx, thyroid, or mid-esophagus [4]. Similarly, tracheal metastasis from a very distant site has also been poorly documented and the upper trachea is the most frequently involved site [5]. To the best of our knowledge, there is no report on intrathoracic endotracheal metastasis with nasopharyngeal origin.

Distant metastasis after treatment is the main problem in NPC patients with advanced disease. In a large cohort study by Lee et al. [6], 2,687 consecutive patients were irradiated with 6-MV photons, and the median total dose was 66 Gy. After a median follow-up of 3.4 years, 732 patients (27%) were found with progressive disease, 16% of whom had

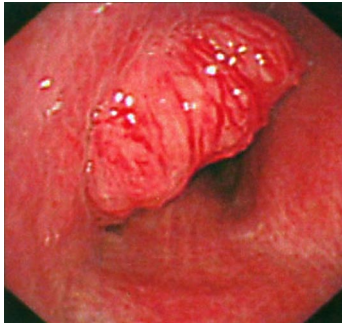
distant failure – a predominant pattern of treatment failure. However, the specific sites of distant failure in that study were not given. Yi et al. [3] found the bone to be the most common site of distant metastasis, followed by the liver and the lung.

The patient we presented here developed solitary metastasis both in the lung and in the para-aortic arch prior to the presence of an intrathoracic endotracheal lesion. It is not certain whether the secondary tracheal tumor is the consequence of the lung metastasis. Anatomically, lung malignancies may spread to the mediastinum and result in mediastinal lymph node involvement through intrapulmonary and hilar lymphatic drainage. However, this does not occur frequently in patients with metastatic lung cancer. The enlarged tracheal nodule in this patient was not likely to be caused by direct invasion of the mediastinal lymph nodes since they were separated anatomically. The presence of endophytic tumor growth and the intact outer layer of the trachea found on CT images suggest that it was most likely a separate metastatic deposit.

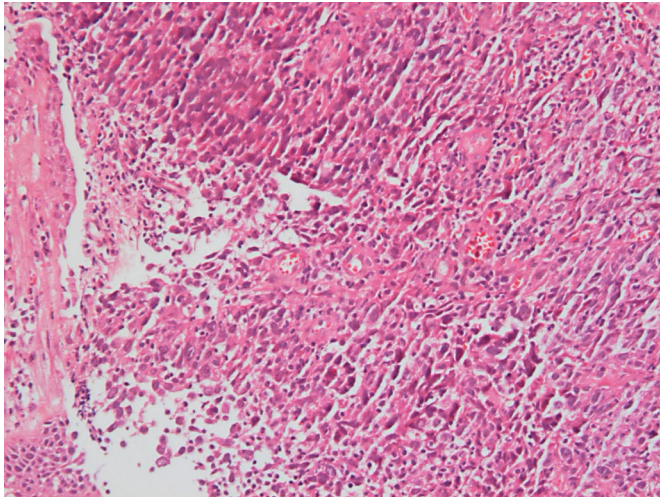
Hemoptysis with coughing is the most common symptom in patients with endotracheal or endobronchial metastasis, with an incidence of 41–62% [7]. Some patients may experience wheezing or shortness of breath. However, the symptoms are nonspecific, which often results in a delayed diagnosis. Although CT provides valuable information about the tumor location and its effect on the distal lung parenchyma, lymph node status and other metastatic lesions, and helps us to plan further management, bronchoscopy remains the gold standard for quickly establishing the diagnosis and management [8, 9].

The appropriate management of patients with endotracheal metastases depends on tumor stage, tumor location, histopathology, patient's performance, and coexisting disease(s). Since these patients usually present with advanced disease, surgery should not be routinely performed unless the patient is in an emergency situation that needs prompt symptom relief. Bronchoscopic treatment can be considered as an alternative to surgery to avoid excessive morbidity and mortality associated with the procedure. However, if the treatment is not emergent, other modalities such as brachytherapy, external beam radiotherapy and chemotherapy can be considered [10–12]. In our case, long-term complete tumor control was achieved by conventional RT plus 3D-CRT, suggesting external beam RT may be an appropriate management approach to achieve long-term tumor control for this disease.

**Fig. 1.** Fiberoptic bronchoscopy showing an endotracheal mass 1 cm above the carina in the NPC patient.



**Fig. 2.** Photomicrography of pathologic specimen revealing undifferentiated nonkeratinizing carcinoma (H&E,  $\times 10$ ).



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