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Bronchial carcinoid tumour: a report of three cases

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Abstract

Bronchial carcinoid tumours are rare neuroendocrine tumours, accounting for 1–2% of all lung cancers worldwide. Despite their low incidence, their diagnosis remains a clinical challenge due to their often-misleading presentation.

We report three cases managed in the Respiratory Medicine Department at Sheikh Khalifa International University Hospital, involving two men and one woman, with a mean age of 52 years. Clinical manifestations were varied, ranging from haemoptysis and chronic cough to incidental discovery, illustrating the symptomatic diversity of this condition.

The diagnosis, suspected on imaging and bronchoscopy, was confirmed by histological and immunohistochemical examination. Management involved complete surgical resection in all patients, with a favourable outcome without the need for adjuvant therapy.

These results confirm that carcinoid tumours, although rare, have an excellent prognosis when surgery is performed early, with a 5-year survival rate often exceeding 90%.

Conclusion: it is essential to consider this diagnosis in the presence of any persistent bronchial symptoms in order to ensure optimal management.

Keywords: Bronchial carcinoid tumour – Neuroendocrine tumour – Haemoptysis – Thoracic surgery – Prognosis.

1. Introduction

Bronchial carcinoid tumours constitute a subgroup of pulmonary neuroendocrine tumours, a heterogeneous family of neoplasms of epithelial origin. Although rare, they account for approximately 1–2% of primary bronchopulmonary tumours.

Unlike high-grade neuroendocrine carcinomas (small- or large-cell), carcinoids are characterised by slow progression and limited malignant potential, resulting in a generally favourable prognosis following treatment.

According to the World Health Organisation (WHO) classification, revised in 2021 (5th edition), these tumours arise from Kulchitsky neuroendocrine cells in the bronchial mucosa. They are classified into two categories:

- **Typical carcinoids (grade 1)**: < 2 mitoses/2 mm², without necrosis
- **Atypical carcinoids (grade 2)**: 2 to 10 mitoses/2 mm² and/or presence of necrosis

Epidemiologically, these tumours occur predominantly between the ages of 40 and 60, with no clear gender predominance. Despite advances in imaging, diagnosis is

often delayed due to non-specific symptoms that mimic benign respiratory conditions.

Management relies primarily on surgery, the only validated curative treatment, with a current trend towards conservative resections.

2. Clinical observations

Case 1:

A 49-year-old female patient, with no history of substance abuse, presented with a persistent dry cough that had been present for several months.

A chest CT scan showed a nodular mass in the left lower lobe. Bronchoscopy revealed an erythematous, hypervascularised endobronchial mass that bled on contact.

Histological examination confirmed a typical carcinoid tumour (no necrosis, mitoses < 2 per 2 mm²). The Ki-67 index was < 3%.

A left pneumonectomy with lymph node dissection was performed. The outcome was favourable, with no recurrence after 18 months.

Case 2:

A 58-year-old patient, a chronic smoker, presenting with recurrent haemoptysis.

A CT scan revealed a 4 × 3 cm parabronchial mass on the left side. Bronchoscopy showed a bleeding nodule at the level of the left main bronchus.

Immunohistochemical analysis confirmed an atypical carcinoid tumour (positive for chromogranin A, synaptophysin and CK7).

A left lower lobectomy was performed. The postoperative course was uneventful, with no recurrence.

Case 3:

A 50-year-old patient, a former smoker with no history of respiratory disease, was admitted to hospital following the incidental discovery of a pulmonary opacity.

A CT scan revealed an intraluminal lesion of the left main bronchus. A biopsy confirmed a well-differentiated neuroendocrine tumour of the carcinoid type.

A conservative surgical resection (tumourectomy) was performed. The outcome was favourable at 12 months.

3. Discussion

3.1. Classification and neuroendocrine spectrum

Carcinoid tumours (CTs) occupy the well-differentiated end of the spectrum of pulmonary neuroendocrine neoplasms (NENs). The 2021 World Health Organisation (WHO) classification (5th edition) maintains the fundamental distinction between typical (TC) and atypical (CA) carcinoids, based on mitotic count and the presence of necrosis. It also highlights the growing importance of the Ki-67 proliferation index for refining the diagnosis in borderline cases.

Although diagnosis is traditionally based on morphological criteria, recent data suggest that a high Ki-67 score (>20%) should raise suspicion of high-grade neuroendocrine carcinoma, even in the presence of a well-differentiated architecture.

In our series, the predominance of typical forms (cases 1 and 3) is consistent with the literature, where they account for approximately 80–85% of cases.

3.2. Diagnostic challenges: pitfalls and differentiation

The main diagnostic challenge lies in distinguishing between typical and atypical carcinoids in small tissue samples, as this differentiation determines the treatment strategy and follow-up.

Clinically, the presentation is polymorphic, as illustrated by our observations. Haemoptysis, observed in our second patient, is a common sign due to the tumour's rich vascularisation. On bronchoscopy, these lesions typically appear as a reddish endobronchial nodule, which bleeds easily on contact.

From a histological perspective, analysis may be limited by the size and superficial nature of bronchial biopsies. Immunohistochemistry is therefore essential to confirm the neuroendocrine nature of the tumour, relying in particular on positivity for chromogranin A and synaptophysin. Furthermore, new molecular markers, such as OTP (Orthodenticle Homeobox 2) or CDX2, are currently being evaluated to improve prognostic stratification and confirm primary pulmonary origin.

3.3. Evolution of therapeutic strategies

Complete surgical resection remains the standard of care for localised bronchial carcinoid tumours. It typically involves anatomical resections, such as lobectomy or pneumonectomy, combined with systematic lymph node dissection.

However, current approaches are shifting towards more conservative strategies aimed at preserving lung parenchyma. Bronchoplastic (sleeve) resections are thus an attractive alternative, ensuring satisfactory oncological control whilst limiting functional loss, as illustrated in our third case report.

Endoscopic treatments (Nd-YAG laser, cryotherapy, electrocoagulation) may be offered in carefully selected cases, particularly for strictly endoluminal lesions that are small in size and show no lymph node involvement as assessed by endoscopic ultrasound (EBUS), especially in patients at high surgical risk.

In advanced forms, which are rare but possible, somatostatin analogues (octreotide, lanreotide) and Lutetium-177-based internal radiotherapy are effective treatment options for tumour control.

3.4. Comparative analysis and prognosis

Compared with large international series (notably those from the Mayo Clinic or European cohorts), our series, although limited, confirms the generally favourable prognosis of bronchial carcinoid tumours when managed at an early stage.

The 5-year survival rate is estimated at between 92% and 97% for typical carcinoids, compared with 60% to 75% for atypical forms.

Unlike high-grade neuroendocrine carcinomas, smoking is not a major risk factor for carcinoid tumours, although it is more frequently associated with atypical forms, as observed in our second case.

Finally, the recurrence-free survival observed in our patients, with a follow-up of 12 to 18 months, is fully consistent with the favourable prognosis of well-differentiated forms described in the literature.

4. Conclusion

Bronchial carcinoid tumours, although rare, should be considered in the face of any persistent respiratory symptoms, particularly in cases of haemoptysis.

The prognosis depends primarily on the early diagnosis and the quality of surgical management.

Better characterisation at a national level, particularly through multicentre studies, is needed to refine the epidemiological and molecular data.

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