Long-term survival following bronchotomy for polypoid bronchial carcinoid tumours

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Abstract

Objective: Typical bronchial carcinoids are very low grade neuroendocrine neoplasm of the tracheobronchial tree and have very good results in surgical treatment. Surgical treatment varies from bronchotomy-excision to major resective procedures. We presented our results of bronchotomy, simple excision and long-term follow-up. Methods: In Atatürk Centre for Chest Disease and Chest Surgery, 16 patients with bronchial carcinoid tumour underwent bronchotomy-excision over a 23-year-period. In all of the cases tumours were in polypoid type. Except these 16 cases 51 patients with bronchial carcinoids underwent operations in the same period. Presenting symptoms were haemoptysis, cough, recurrent pulmonary infection, dyspnea and chest pain. Rigid bronchoscopies were performed on all of the patients preoperatively for diagnosis of the tumour and to determine the surgical procedure and we performed control bronchoscopies on all of the patients in their follow-up period. Results: Patients were checked for periods ranging from 2 to 23 years both radiologically and bronchoscopically. We did not find any recurrences and death related to surgery and morbidity rate were minimal. Conclusion: We think that bronchotomy and simple excision are effective and safe procedures for the treatment of bronchial carcinoid tumours with low morbidity in selected cases like polypoid type lesions and have as good a long-term survival rate as the other surgical treatment methods have. © 1998 Elsevier Science B.V. All rights reserved

Keywords: Polypoid; Carcinoid; Bronchotomy; Excision

1. Introduction

Bronchial adenomas are low-grade malignant neoplasm arising from the subepithelial tissues, ducts and glands of the tracheobronchial tree. Carcinoid tumours comprise 85–90% of all bronchial adenomas [1–4].

Bronchial carcinoids are classified as typical and atypical according to their histopathologic characteristics and clinical behaviours and also they are classified as central and peripheral.

Central carcinoid tumours are detected by bronchoscopic examinations and most of them are sessile, pink-purple in colour and have a highly vascularized character. Few tumours are of the polypoid type with a definite stalk. In contrast to sessile tumours they do not invade the bronchial wall and have a better prognosis [1].

Sixteen patients with polypoid type carcinoid tumours have been operated on, in our centre, Atatürk Centre for Chest Disease and Thoracic Surgery and bronchotomy and simple excision have been performed to all of them.

We want to present this population and the long-term follow-up of these patients and to point out the efficacy of bronchotomy and simple excision.

2. Materials and methods

From January 1974 to December 1997, 16 consecutive patients with polypoid type carcinoid tumour of the bronchial tree were treated by bronchotomy and simple excision in our institution. During the same period of time the total number of our operations due to carcinoid tumour was 67.
There were ten male (62.5%) and six female (37.5%) patients, ages ranged from 30 to 68 years and the mean age was 38.8 years. The presenting symptoms were major or minor haemoptysis in seven (43.75%) patients, persistent cough in five (31.25%) patients, recurrent or persistent infection in five (31.25%) patients, dyspnea in four (25%) patients and chest pain in two (12.5%) patients.

Carcinoid syndrome was not observed in any of the cases. We performed rigid bronchoscopies on of the patients pre-operatively and all of the tumours were hypervascularized and pink-purple in colour. Then we thought they were carcinoids. Biopsy specimens were taken in ten of them. In the other cases because of the risk of bleeding biopsy wasn’t taken.

Twelve of the tumours were on the right side and four were on the left side (Table 1).

All patients were operated via double-lumen endobronchial tube (Robertshaw) ventilation. Standard posterolateral thoracotomy was performed in all of the cases. After exploration, a decision about choosing resective surgery or bronchotomy and simple excision was made. If there were no irreversible parenchymal changes or lymphatic and peribronchial involvement, bronchotomy excision was performed. Firstly, the attached bronchus was dissected partially and the exact localization of the lesion was determined. The non-dependent lung was then deflated and a transverse bronchotomy was performed just above the level of the tumour. About half the portion of the bronchial wall was transected. Tumour mass was removed if the stalk of the tumour was on the bronchotomy side, it was resected with a small part of the bronchial wall and the resection margin was controlled by frozen section investigation as tumour negativity. If the stalk was on the opposite side it was resected with a small part of the mucosa and minimal cauteration was performed in that part of the bronchial wall. Bronchotomies were closed with interrupted sutures and buttressed with a viable flap. Non-absorbable sutures were used before 1986 and absorbable sutures after then.

In the post-operative early period, bronchoscopic and radiological controls were performed (third, sixth and twelfth months). Also bronchoscopic examination was applied to the patients who had complaints after 12 months.

3. Results

In the time of hospitalization no surgical deaths were observed. Patients were followed for periods ranging from 2 to 23 years. In the early post-operative period bronchoscopic aspirations were done due to retention of secretions in three patients. In one case bronchopleural fistula occurred and the patient healed 2 months later with adequate thoracic drainage. In the late period, granulation tissues in the anastomosis lines of the retaining bronchus were observed in two patients with whom non-absorbable sutures were used in bronchotomy closure. One of them complained of chronic cough, the other complained of haemoptysis. In these patients granulation tissue and suture materials were excised via bronchoscopy.

In the post-operative periods, we did not observe any local recurrences and associated mortality. In the follow-up period, two patients died, one because of myocardial infarction, 7 years post-operatively and the other because of a road accident 65 months after the operation.

4. Discussion

Bronchial carcinoid tumours are low grade neuroendocrine neoplasm of the bronchopulmonary system which originate from the neuroendocrine cells [1,4–6].

Although Laennec described bronchial adenoma as polypoid excrescence in 1831, it was first introduced by Müller as an adenoma in 1882 and the description was made by Kramer in 1930 [1,2]. They comprise 1–2% of all lung tumours and are usually in the central bronchi of the lung [7]. Ten percent are in peripheral locations. Most of these tumours are sessile. Only a few number of these tumours are polypoid [1,4]. In contrast to the literature, 16 of our 67 cases were polypoid and the incidence was higher in our centre (24%).

In contrast to sessile tumours polypoid type bronchial carcinoid tumours have a definite stalk with no penetration to the bronchial wall or adjacent tissues and prognosis of them are better than sessile types whether they are typical or atypical carcinoids [1,3,4].

The average age for it to be seen is the fourth decade but it can be seen in every decades. There is no sex dominance. In our study most of the patients were male. There are no known aethiological factors such as family history, environmental exposure or smoking.

Symptoms are related to bronchial irritation and obstruction. The most common symptoms are persistent irritative or productive cough, recurrent infection and haemoptysis [1,5,7,8].

Even in polypoid type carcinoids, irreversible destructive parenchymal changes may develop and resective surgery becomes mandatory [4,5].

In carcinoid tumours, bronchoscopy is a major diagnostic method. For patients who have recurrent infections, haemoptysis and suspicion of asthma, carcinoid tumours have to be suspected whatever their age. They are highly vascularized tumours and their lobulated pink-purple

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### Table 1

Localization of the Tumours

<table>
<thead>
<tr>
<th>Localization</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main bronchus</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Intermediate bronchus</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Lower lobe bronchus</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>4</td>
</tr>
</tbody>
</table>
appearance are usually typical. Taking biopsy can cause major bleeding but the idea of a biopsy is usually accepted [5,7,8]. We took biopsies in ten of our cases but in the other six cases we couldn’t. Post-operative pathologies of the all these cases were reported as carcinoid tumours.

In our opinion rigid bronchoscopy is safe and reliable method than fiberoptic bronchoscopy, since it is easy to obtain a larger and deeper biopsy and to control haemorrhage.

Computed tomographic scan is a very useful technique for the evaluation of lymphatic spread and parenchymal change [7]. But chronic recurrent infection may be the cause of lymph node enlargement and it may be deceptive. Although regional lymph node metastases have been reported as 5–10% [9], we did not see any lymphatic spread of polypoid type carcinoids. In carcinoid tumours surgery is the treatment of choice. Parenchyma sparing surgery has to be the goal for their treatment. Polypoid type carcinoid tumours are most favourable to this kind of treatment. Hurt and Bates [8] indicated that bronchotomy excision is a safe and effective method for selective cases of carcinoid tumours. For typical carcinoid tumours, conservative lung surgery is offered because of its excellent prognosis [10]. We performed bronchotomy excision to 16 such cases with minimal morbidity and without mortality. There was no lymphatic spread and all of these patients had excellent survival rates.

Bronchial carcinoids have a long-term survival rate with approximately 95% and in polypoid type this range reaches 100% [1,2,5,10]. Similarly in our study, the survival rates for a 5 year period was 100%.

In conclusion, the treatment of carcinoid tumours with bronchotomy excision in selected cases is a simple and effective method and has a low morbidity and has as good a long-term survival rate as the other methods.

References