BRONCHIAL ADENOMA

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THE earliest description of adenoma of the bronchus is attributed to Mueller,[1] who reported a case with autopsy findings in 1882. Subsequent reports have been relatively few in comparison to the number of treatises on other primary neoplasms of the bronchus. Nevertheless, with the general improvement of endoscopic and surgical technics there has been an increasing interest in the clinical and pathologic aspects of these tumors.[2] Since the possibility of cure of bronchial adenoma is so great it is important that this disorder be considered more generally in differential diagnosis and not relegated only to the thoracic surgeon and the otolaryngologist.

Clinical Picture

Adenoma of the bronchus is most commonly found in the primary divisions of the tracheobronchial tree.[3] For this reason the lesion can usually be visualized directly by the bronchoscopist. Likewise, the characteristic location of the tumor accounts for the uniformity of the symptom complex.

The majority of patients with this tumor complain of cough and hemoptysis.[4] The cough may be "dry" or productive of copious amounts of sputum, depending on the degree of parenchymal obstruction and secondary infection. There may be wheezing on the affected side due to partial bronchial occlusion.[5] Cases of so-called "unilateral asthma" should always be looked upon with suspicion and the diagnosis of intrabronchial tumor must be excluded.

Hemoptysis has been described as a cardinal sign. The bleeding may be abrupt in its onset and in its termination. It may vary in degree between blood streaking and exsanguinating hemorrhage. Usually the patients complain of intermittent hemorrhages over a period of years. They are frequently considered to have pulmonary tuberculosis and may have been treated for that disease.

The age and the sex distribution of patients with bronchial adenoma differ considerably from those with bronchogenic carcinoma. The adenoma may occur in youth; however, the majority of cases are seen between the third and the fifth decades of life. Jackson[3] reports that the patients in his series ranged between 14 and 44 years of age. Naclerio and Langer,[1] reporting Overholt's series, state that the average age of the patients was 37.4 years, whereas in bronchogenic carcinoma the average was 53.2 years. Bronchogenic carcinoma appears predominantly in men. The ratio in several large series of lung cancers ranges between 4:1 to 8:1 in favor of men, whereas in the patients with adenoma the tumor is more commonly seen in women.[1,4] Eighty per cent of Jackson's patients were women.

Occasionally the adenoma may be manifest only by symptoms of bronchial occlusion. In such patients the presenting symptoms may be dyspnea, fever, expectoration, and chest discomfort. Many patients have a history of repeated episodes of pneumonitis or atypical pneumonia. Bronchiectasis and obstructive emphysema are frequently recognized in patients who have bronchial occlusion due to adenoma.

Diagnosis

The clinical picture is usually suggestive. Roentgenograms of the thorax may outline the tumor mass. More commonly, however, there is roentgen evidence of bronchial obstruction with atelectasis or obstructive emphysema. The evidence gained from a careful history and physical examination, aided by ordinary x-ray studies, should suggest the possibility of an adenoma in the bronchus.

Bronchoscopic visualization of the tumor and tissue biopsy will afford specific diagnosis. The large majority of these tumors are located within the range of the bronchoscope. Occasionally the tumor may be peripheral and beyond the point of visualization; in such cases the presumptive diagnosis of pulmonary neoplasm is made and the suspicion of adenoma may be confirmed after pulmonary resection. The diagnostic search is not complete until bronchoscopy has been utilized.

The bronchogram may be of value in demonstrating the obstructing lesion when it cannot be visualized through the bronchoscope. In addition, iodized oil may delineate bronchiectatic segments distal to the point of obstruction. Ordinarily, however, the diagnosis of adenoma may be established without the aid of bronchography.

In the study of all suspected bronchogenic tumors, there will be times when only presumptive diagnosis can be made. Exploratory thoracotomy must then be employed. There is no place for prolonged observation in the management of these patients.

Treatment

Although there have been many approaches to the therapy of bronchial adenoma, the most widely accepted method of treatment today is surgical extirpation of the tumor and the involved pulmonary tissue. This may be accomplished by lobectomy or pneumonectomy depending on the location and the extent of the adenoma. The rate of cure is well over 90 per cent by this method and the expected mortality rate should be below 5 per cent. The majority of patients with an untreated adenoma will eventually die of the tumor regardless of whether it is benign or of the lowest grade of malignancy. The cause of death is usually attributable to suppurative disease in the obstructed parenchyma or to hemorrhage; less commonly it will be due to local invasion of the tumor and distant metastases.

Case Report

A woman, aged 49, was first seen at the Cleveland Clinic on October 15, 1948. Her chief complaints were cough and hemoptysis. History revealed that the patient had expectorated blood ever since 1928; episodes of hemoptysis had been infrequent and minor in degree, nevertheless gross evidence of bleeding had been noted on many occasions. In May 1948 the patient first noted cough and a "suffocating sensation" on bending over, with immediate relief of the latter symptom on standing or sitting erect. The cough persisted until October 1948 and was non-productive except for the intermittent bleeding.

Physical examination did not reveal objective evidence of acute or chronic disease. Examination of the chest was essentially normal; the lung fields were clear by percussion and auscultation. The fingers did not show clubbing and there was no evidence of regional lymphadenopathy. During examinations, however, the patient exhibited a persistent non-productive cough; there was no evidence of bleeding.

Roentgen studies of the chest revealed a retraction of the mediastinum to the left side. In addition there was an increased density at the left base consistent with tumor and lower lobe atelectasis. The upper half of the left lung field showed increased translucency consistent with compensatory emphysema. The initial impression was bronchial occlusion with neoplasm as the most likely cause.

On October 19, 1948 bronchoscopic examination revealed a large tumor mass in the left main bronchus that appeared to be emerging from the left lower lobe orifice (fig. 1). Tissue was obtained and the diagnosis of adenoma confirmed microscopically. On the basis of these findings exploratory thoracotomy was advised.

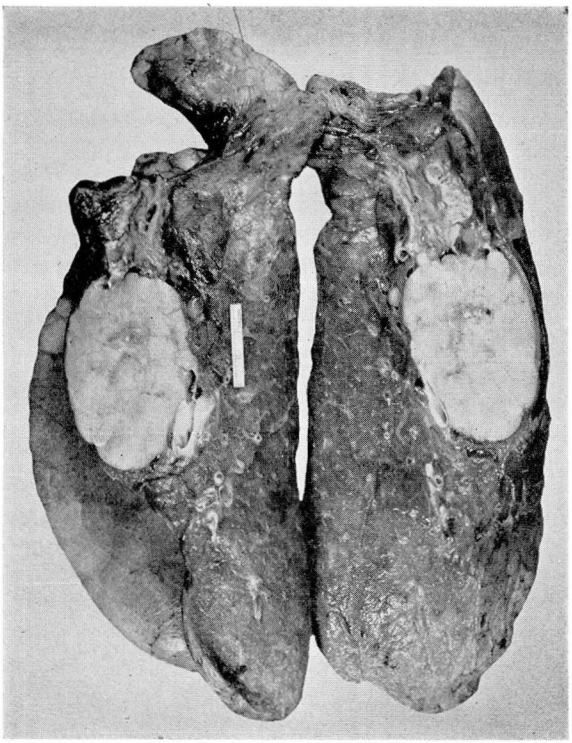

FIG. 1. Horizontal section of left lung demonstrating large encapsulated extrabronchial tumor mass. Neoplasm apparently arises in superior division of left lower lobe.

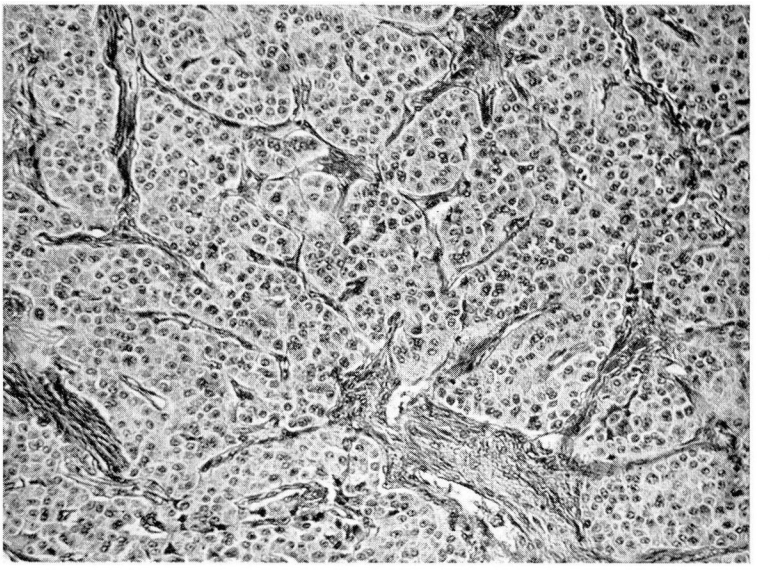

FIG. 2. Photomicrograph showing central portion of tumor (x-150).

On November 18, 1948 a left total pneumonectomy was performed. The extent of the intra and extrabronchial mass precluded a lower lobe lobectomy. The patient stood the operation well. Eight days later she was discharged from the hospital after an uneventful convalescence.

Pathologic Summary*

Pathologic examination of the left lung revealed an ovoid tumor, 6.5 cm. in greatest diameter, in the subhilar region. The main stem bronchus and the first dorsal bronchus were each obstructed by a broadbased polypoid mass in direct continuity with the main tumor in the adjoining lung tissue. The neoplasm infiltrated and replaced the dorsal bronchi, encased a large branch of the pulmonary artery, and, though demarcated from the adjoining lung parenchyma, was not encapsulated. Scattered areas of bone formation were present in the tumor. One lymph node immediately adjoining the hilar aspect of the mass was infiltrated by tumor by direct extension. Eleven other hilar nodes were not involved by neoplasm.

Histologically, the tumor was formed by small epithelial-like cells, individually and in arrangement, bearing a close resemblance to the carcinoid tumors of the intestinal tract (fig. 2). There was microscopic extension into several lymphatics and in one instance the tumor formed a cuff about a nerve. No tumor foci separate from the main mass were present in the lung.

The lower portion of the lung was collapsed and the bronchi were severely dilated and filled with thick mucus. The lung was incompletely divided by a

Reported by Dr. J. B. Hazard, Head of the Department of Pathology.

shallow short fissure in the lower posterior portion. One hilar node contained two yellow, partly calcified foci.

Pathologic diagnoses were: (1) So-called bronchial adenoma, carcinoid variant, of the left lung, subhilar aspect. (2) Metastasis by direct extension to one hilar lymph node; infiltration and obliteration of dorsal bronchi; intralymphatic and perineural extension. (3) Atelectasis and bronchiectasis of lower portion of the lung. (4) Old pleuritis. (5) Old tuberculosis of hilar lymph node.

Comment: Though the local infiltrative properties of this neoplasm are evident, distant foci in lungs or lymph nodes are not found. The histologic configuration is in all ways typical of the pulmonary neoplasm still best known as bronchial adenoma despite its frequently infiltrative character. Perineural extension is an unusual feature. This tumor is strikingly similar morphologically to the carcinoid tumors of the intestinal tract. Despite the fact it appears to be a malignant neoplasm because of invasiveness, so far as can be determined aggressiveness is manifest only by direct extension. Though a few of these tumors have been known to cause distant metastases, there are no present histologic criteria by which such an event may be positively predicted.

References

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