Cylindromatous Adenoma of the Bronchus
In a Four-Year-Old Child*
Report of a Case
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Bronchial adenoma is one of the less common tumors occurring in the respiratory system and has rarely been reported in children. The lesion being described is believed to have occurred in the youngest child yet reported, and its histologic picture presents some unusual features.

Case Report

L. D. E., a four-year-old white boy, was admitted to the hospital on June 6, 1960, with a history of spitting blood of approximately two days' duration. Approximately one hour prior to the onset of hemoptysis, he had fallen to the floor from a rocking chair, but the fall had produced no external evidence of injury. A chest roentgenogram made by the family physician was reported to have shown “patchy consolidation in the left base, posteriorly.” As there was no improvement in his condition, he was referred to the hospital two days later. When examined at the hospital, the parents reported only that the child had little appetite since the onset of bleeding and that there had been no fever or dyspnea.

The past history was noncontributory. Growth and development had apparently progressed in a normal manner.

The admission physical examination revealed a well-developed and well-nourished boy in no distress. His rectal temperature was 99.2°F, weight 34.5 lb., pulse 100/min. and respirations 25/min. Positive physical findings were limited to the chest and consisted of a diminution of breath sounds posteriorly over the base of the left lung and a few fine rales in this area.

Admission laboratory work: The urinalysis was within normal limits, the hemoglobin was 9.2 gm. per cent, the hematocrit was 29 volumes per cent and the white blood cell count was 7,400/mm.\(^3\) with 1 per cent bands, 52 per cent segmented, 2 per cent eosinophils, 44 per cent lymphocytes and 1 per cent monocytes. The thrombocyte count was 348,000 per mm.\(^3\) the coagulation time was 21.5 minutes and the bleeding time was eight minutes. The mean corpuscular hemoglobin was 20 micromicrograms, the volume index was 0.74 and the mean corpuscular volume was 64 cubic microns. A chest x-ray film made on the day of admission revealed that the heart was of normal size and contour. The right lung was clear, but on the left, there appeared to be an area of consolidation in the region of the left lower lobe and in the lateral view (Fig. 1) there was a suggestion of a mass inferior to, but not separable from, the left hilum.

The day following admission, the child coughed up approximately one-fourth cup of bright red blood. At bronchoscopy, there were small clots of old blood scattered throughout the left bronchial tree. There was partial occlusion of the lingular bronchus, apparently due to extrinsic pressure. Mucosal changes were confined to those of edema and mild inflammatory reaction in both the lingula and lower lobe bronchi.

He continued afebrile, but coughed up significant amounts of blood daily. A decrease in the hematocrit from 31 to 29 prompted the transfusion of 150 ml. of whole blood. The white blood cell count was 7,400/mm.\(^3\) on the day of transfusion.

*From the Surgical Service, LeBonheur Children’s Hospital.

Figure 1: In this lateral view the lesion is seen anterior to the hilum and is visible through the cardiac silhouette.
blood cell count increased to 14,500 with an elevation of segmented forms. The patient was treated with chloramphenicol (Chloromycetin) 250 mg. every eight hours. After recovery of

alpha streptococci and Neisseria from the bronchial cultures, procaine penicillin, 300,000 units every 12 hours was added. Hemoptysis continued as a daily symptom, and a new set of chest x-ray films made on the fifth hospital day revealed a slight clearing of the infiltrate in the left lower lobe and more clearly defined the mass beneath the left hilum.

He was operated upon June 15, 1960, and the left lower lobe containing the tumor was removed. At surgery, the lesion was found to be a well circumscribed mass measuring 3.5 x 4.5 cm. in the left lower lobe. It was related to the left lower lobe bronchus, but did not encroach upon its lumen. There was distortion and erosion of the antemedial basal segmental bronchus, which was the presumed site of the pulmonary bleeding.

He had an uneventful postoperative course and was discharged on the eighth postoperative day. Thirty months after surgery, there has been no recurrence of symptoms or radiographic evidence of recurrence of the tumor.

**Pathology**

The tumor was well-encapsulated, its cut surface bulged and presented a lobular, tan colored granular appearance in the fresh state (Fig. 2). The entire tumor was made up of vacuolated cells which had poorly outlined cytoplasmic borders. The vacuoles were so large and so extensive that they interfered with the clear delineation of these cells. The fibers of cytoplasm that

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**FIGURE 2:** The tumor is strikingly demonstrated in the resected left lower lobe.

**FIGURES 3 AND 4:** Sections illustrative of the ancinar pattern seen.
remained seemed to stretch from cell to cell in a linear fashion. In some regions these cells were arranged in an acinar pattern with the acini lined by flattened epithelial cells. These acini were filled with a mucinous appearing material which, on mucicarmine stains, appeared to be positive. In the midst of this tumor several structures lined by pseudostratified columnar ciliated epithelium were seen. It was difficult to ascertain whether these were part of the tumor or represented entrapped normal bronchioles of the lung. There were a modest number of acinar spaces seen throughout the tumor. In one area of the tumor, these acinar structures became quite prominent, with the individual cells taking on a cuboid appearance and containing large vacuoles of mucinous appearing material. In this region, the architecture strongly resembled submucous glands of the bronchial system. The nuclei of the cells making up the tumor showed considerable variation in size, shape and staining qualities and occasionally giant nuclei were observed. A few cells showed multiple nuclei. Mitotic figures were not apparent in the tissue.

Microscopically, this tumor presents an appearance compatible with a bronchial adenoma of the cylindromatous type (Figs. 3 and 4), representing a mucinous adenoma of the bronchus and showing closer resemblance to the subepithelial bronchial glands than do most bronchial adenomas.

**Discussion**

Bronchial adenomas are among the less common neoplasms of the bronchial tree, representing about 5 per cent of all pulmonary neoplasms. Among these, carcinoid tumors account for 85 per cent of the adenomas while cylindromas account for 15 per cent. In reviewing the available literature, the youngest case found was that of an 11-year-old child with a carcinoid type adenoma. No case of a cylindroma of the type being reported occurring in a child, has been found in the literature reviewed.

While bronchial adenomas, as a group, are usually considered benign tumors in that they do not frequently metastasize, but grow primarily by local extension; sufficient numbers of cases have been reported wherein there have been distant metastases to make a number of authors1-4 extremely cautious in predicting the behavior of these lesions. Because they are more common, the carcinoid adenomas are most often mentioned as occasionally metastasizing. Cylindromatous tumors are reported to metastasize twice as frequently as carcinoid types and to result in death seven times more often than carcinoids.5 Cylindromatous lesions are reported to show some shrinkage when treated with radiation tumor doses in excess of 1,500 roentgens while bronchial adenomas in general are considered relatively radioresistant. Total surgical removal seems to offer the best hope of cure.

Thirty months after complete surgical removal, there is no evidence of recurrence of the lesion being reported.

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**References**


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