Carcinoma Complicating Cyst of Lung

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Cystic disease of the lung has been indicted by various writers as a precursor of carcinoma but only rarely has it been possible to prove the indictment reasonably valid. Complications of cystic disease of the lung are infection, enlargement of the cyst with compression of lung tissue, spontaneous pneumothorax, hemoptysis, perhaps bronchopleural fistula, and possibly carcinoma.

Womach and Graham1 studied nine cases, operated on for congenital cystic disease, with particular reference to epithelial overgrowth at the site of the congenital malformations. In three of the cases there was evidence of such overgrowth, mainly masses of poorly differentiated epithelial cells tending to appear as spindle or cuboidal cells with a tendency toward invasion, but without evidence of metastasis. Though the process represented abnormal cellular growth, they did not feel justified in considering it malignant clinically. Graham2 cites an article by Schwyter in which the relationship of congenital malformations of the lung to tumor of the lung is discussed, with eight illustrative cases, five of whom had cysts of the lung. Murphy,3 discussing congenital cystic disease of the lung, states that at times the epithelium is cuboidal and that squamous metaplasia may be present. Under such conditions squamous cell carcinoma has been known to occur. Bass and Singer4 reported a patient with cystic disease of the lung, who had emphysema and secondary abscess formation preceding the development of a diffuse adenocarcinoma in the same lung. Koral5 studied 100 cases with cystic and bullous emphysema of the lungs and found seven cases with cystic emphysema who developed bronchial carcinoma, but he did not mention their relation to the cystic areas. No case of bullous emphysema, however, developed bronchial carcinoma. Moersch and Clagett6 reported two with malignancy among 44 cases of pulmonary cystic disease. One was a 22 year old female in whom a bronchogenic cyst removed from the mediastinum showed an adenocarcinoma, Grade III, arising in its wall. The other was a 36 year old male who had a cyst removed from the left thorax. In the region of the cyst wall opposite the pericardium, was a mass of soft tissue which on biopsy showed squamous cell carcinoma, Grade IV. Rogers7 in studying the question of predisposition to pulmonary neoplasms in patients with cystic disease of the lung, states that the likelihood based on available statistical data seems remote. He found only two malignancies among persons with cystic disease, one a small adenocarcinoma discovered in the surgical specimen of a patient operated on for existing cystic bronchiectasis, the second, a rapidly fatal malignancy in the upper lobe in one with bilateral cystic disease.

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Hospital, 65 cases with cyst or cystic disease of the lungs have been studied, and in 24 of these the cyst was removed surgically. One operated on was found to have a bronchogenic carcinoma associated with the cyst. His case is now reported in detail.

CASE REPORT

E. S., a 53 year old white grocer was first admitted to Veterans Administration Medical Teaching Group Hospital on July 5, 1949, with a six months' history of cough productive of one-half cupful mucoid sputum daily with slight streaking of sputum for two days. He had noticed also slight feverishness and upper anterior chest pain but no wheezing. A weight loss of 14 pounds had occurred in the three weeks prior to admission. Physical examination revealed a well developed, well nourished white male, not appearing ill. The chest showed slight hyperresonance with slightly decreased breath sounds over both lung fields. Inspiratory crepitant rales were present at the left base near the anterior axillary line. The remainder of the physical examination was essentially negative except for the presence of a right inguinal hernia. The sputum was negative on concentration and culture for tubercle bacilli. The chest roentgeno-

FIGURE 1

Figure 1: Chest roentgenogram made on July 14, 1949 showing the infiltrate in the right midlung field containing a small radiolucency.—Figure 2: Chest roentgenogram on May 1, 1950, revealing an increase in size of the radiolucency in the right midlung field.

FIGURE 3

Figure 3: Chest roentgenogram on November 19, 1951, showing a marked increase in size of the infiltration and radiolucency.—Figure 4: Chest roentgenogram on December 6, 1951, showing considerable decrease in size of the infiltrate and radiolucency.
gram revealed an infiltrate in the right midlung field containing an area of radioluency (Figure 1). Bronchoscopy was negative. The complete blood count was normal. The sedimentation rate was 40 mm, per hour. It was considered that the pulmonary infiltrate was an area of fibrosis, the radioluency probably representing an emphysematous bulla. He was discharged on August 1, 1949.

He was readmitted on June 21, 1950, stating that in March 1950 he had had increased cough, fever, left chest pain with occasional pain in the right chest, weight loss, and hemoptysis of 10 days' duration. Following therapy by his local physician there was improvement in his condition though he continued to feel weak and had become more dyspneic on exertion. On this admission the physical examination revealed dullness with decreased breath sounds and crepitant rales at both bases posteriorly. The prostate showed enlargement of the lateral lobes. The sputum was negative, on concentration and culture, for the tubercle bacilli, and for fungi. Bronchoscopy was again negative, and no tumor cells were found in the bronchial aspirations. The chest roentgenogram showed a slight increase in the size of the radioluency (Figure 2). The tuberculin and histoplasmin skin tests were positive. The coccidioidin skin test was negative. There was some decrease in size of the radiolucent area with bedrest only. Chloromycetin and penicillin caused no further improvement. It was considered that he had a cyst of the lung which intermittently became infected. He was advised to have a bronchogram but refused so he was discharged July 26, 1950.

He was readmitted nine months later on May 25, 1951, with an anterior myocardial infarction which occurred on the morning of admission. A chest roentgenogram showed a large infiltrate in the right midlung field containing a radioluency with an air fluid level (Figure 3). He was treated for the myocardial infarction from which he made an uneventful recovery. He received several courses of terramycin for infection in the cyst with a decrease in size of the cyst and of the surrounding inflammation (Figure 4). On December 7, 1951, a wedge resection of the involved area was performed by Dr. Felix Hughes on the assumption that the lesion was an infected lung cyst. On pathological examination a squamous cell bronchogenic carcinoma was
found, at the periphery of the cavity, invading the lung but with apparently no invasion of the lymphatics or blood vessels (Figure 5). Because an inadequate excision for a bronchogenic carcinoma had been performed, the patient also was treated with deep radiation therapy to the right chest, receiving 6,075r over a period of 33 days. He was discharged from the hospital on January 15, 1952.

Three months later he was recalled for re-examination at which time he stated that he had had an increasingly severe cough for two months and easy fatigability. Physical examination revealed no abnormal findings except a wheeze through both lungs which partially cleared with coughing. The chest roentgenogram showed fibrosis around the area of the horizontal fissure which was displaced upward and a diffuse haziness at the right base. Bronchoscopy revealed moderate fixation of the carina and right primary bronchus. There was firmness around the upper lobe bronchus, but the mucosa was intact. No tumor cells were found in the aspirated material. He was treated with penicillin for one week before discharge. Chest roentgenograms in July and November 1952 showed no change from the roentgenogram made in April. In November he was asymptomatic with no evidence of cancer in the lung or elsewhere.

He re-entered the hospital on April 6, 1953, stating that three weeks before this admission he had had bronchopneumonia and had been treated with penicillin by his physician. He continued to have right chest pain with wheezing, non-productive cough, and increased dyspnea on exertion. He was afebrile on admission with no evidence of pneumonia or metastasis. The chest roentgenogram showed no changes from previous films, and a radiologic survey of bones failed to reveal evidence of metastasis. He was discharged with his bronchitis improved after penicillin therapy.

On June 3, 1953, he was readmitted to the hospital with signs of mental confusion, and the chest roentgenogram showed an increased density in the right chest. A bronchoscopy revealed a slightly raised lesion in the right main stem bronchus. It was considered that he probably had a local recurrence of the tumor and possibly a metastatic spread to the brain.

**Discussion**

The above report tells of a case of bronchogenic carcinoma unexpectedly found in the wall of a cyst of the lung. Bronchogenic carcinomata usually arise in areas bearing no relation to evident malformations of the lung. It may arise coincidentally with a cyst by forming a ball-valve mechanism in a bronchus. In our case, however, the carcinoma was found to arise directly from the wall of the cyst, which, with the history, indicates that the tumor was a complication of the cyst. The cyst had been known to be present for two and one-half years, and the findings of a small carcinoma in the wall of the cyst, without evident metastasis at the time, makes it unlikely that the tumor had existed during the entire period the cyst was known to be present. It is possible, however, that the tumor arose from neighboring structures and invaded the cyst wall although this seems unlikely from examination of the specimen. Possibly cases with repeated infections of the cyst have a higher incidence of malignant degeneration. At any rate, the proved possibility of malignant degeneration is another indication for removal of lung cysts whenever possible.

**SUMMARY**

A case is described in which a small bronchogenic carcinoma was found in the wall of a long standing pulmonary cyst. The possibility of malignant degeneration in the wall of a cyst forms another indication for removal of these cysts whenever feasible.

**RESUMEN**

Se describe un caso en el que un pequeño carcinoma bronquigénico de la pared fué encontrado en un quiste pulmonar de larga duración. La posibilidad de degeneración maligna en la pared de un quiste constituía una indicación para la extirpación de estos quistes cuando sea posible.
RESUME

Les auteurs rapportent une observation dans laquelle un petit cancer bronchique se trouvait dans la paroi d'un kyste pulmonaire existant depuis longtemps. La possibilité de la dégénérescence maligne de la paroi d'un kyste constitue une indication de plus pour pratiquer l'extirpation de ces lésions quand elles sont constatées.

REFERENCES


Spontaneous Pneumothorax As a Presenting Feature of Primary Carcinoma of the Lung

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Spontaneous pneumothorax may occur in advancing carcinoma of the lung due to extension of the disease to the pleura and rupture of the membrane. The pleural space soon fills with fluid in which tumor cells are often demonstrable. This type of pneumothorax is quite familiar and, as a rule, there is little difficulty in determining its origin. Recently the writers encountered two instances of spontaneous pneumothorax in apparently healthy individuals, presumably due to rupture of subpleural blebs characterizing, so-called, idiopathic or benign spontaneous pneumothoraces. Not realizing at first that carcinoma may be associated with spontaneous pneumothorax of a similar nature, there was some delay before the correct diagnosis was finally made. In a third patient pneumothorax occurred in the presence of a carcinoma, but the air absorbed spontaneously without the usual sequelae of pleural fluid and metastases. These experiences served to emphasize the importance of keeping in mind the possibility of underlying malignancy of the lung in all patients of the cancer age who sustain what may appear to be simple spontaneous pneumothoraces.

Case 1. M. G., a 45 year old white male was admitted to Montefiore Hospital on March 14, 1951 complaining of chest pain, fever and nonproductive cough. Ten days

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