Case Report Section

Selective Pneumothorax:
A Complication of Bronchoscopy

ROBERT L. FRIEDMAN, M.D.**
Columbus, Ohio

The occurrence of pneumothorax with mediastinal and, or, subcutaneous emphysema is an infrequent complication of bronchoscopic examination.1, 2, 4, 6 The site of rupture of the trachea or main bronchi has been obvious in some, but in others, no cause for this complication has been determined.

The visualization of selective pneumothorax without emphysema as a complication of bronchoscopy has not been previously reported.

CASE REPORT

R. F. (R. No. 3341), a 63 year old Negro male, had shortness of breath and pain in the right chest of two years duration. Symptoms had been intermittent. One year previously he had a small hemothysis. X-ray film of the chest at that time was reported as negative. Two months previous to present admission he had spit up several teaspoonfuls of bright red blood. The chest x-ray film, at that time, was reported as showing an infiltration of the right upper lobe. He (Fig. 1) was bronchoscoped and no lesion was found, but he was referred for hospitalization.

X-ray film of the chest (Fig. 2) on admission to this hospital revealed pneumothorax selectively collapsing the right upper lobe. He had no symptom referable to pneumothorax. He was rebronchoscoped and again no abnormality was found.

He was explored and on finding a mass in the right upper lobe, pneumonectomy was performed. The surgical specimen revealed a fairly well demarcated, hard, light grey mass arising from the posterior and anterior branches of the right upper lobe bronchus. The mass extended from the point of origin for a distance of 2 cm. along the course of the anterior and posterior branch bronchi. The lumina of these bronchi were constricted but patent throughout. The remaining bronchi and parenchyma were normal, and no point of perforation was visualized. The pathological report was bronchogenic carcinoma, oat cell type.

Comment

Selective pneumothorax, as defined by Coryllos,3 means the tendency of air introduced into the pleural cavity to locate itself around the diseased parts of the lung. The explanation of this process by Hurst and Miller6 in tuberculosis, where it is the aim of pneumothorax therapy, assumes the...

*From the Department of Radiology, McGuire Veterans Hospital, Richmond 19, Virginia.

**Associate Radiologist, Grant Hospital, Columbus 15, Ohio and Assistant Professor of Radiology, Ohio State University School of Medicine.

Formerly, Assistant Professor of Radiology, Medical College of Virginia and Assistant Chief, Radiology Department, McGuire Veterans Administration Hospital, Richmond, Virginia.

Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the author are the result of his own study and do not necessarily reflect the opinion or policy of the Veterans Administration.
involvement of the bronchus by tuberculosis or its effects, such as edema, extrinsic pressure, etc. Then, the induction of the pneumothorax reduces the normal lengthening and shortening, and dilatation and contraction of the bronchi, and tends to completely occlude the bronchial lumen and atelectasis follows.

Selective pneumothorax, or its resultant selective collapse, is usually not considered in bronchogenic carcinoma. The position of the tumor abutting on the upper lobe bronchi, as seen in the surgical specimen, reducing the lumena but not occluding them is then analogous to the conditions in tuberculous selective pneumothorax and the explanation of the mechanism in the case presented is probably the same.

When pneumothorax with its accompanying emphysema occurs as a complication of bronchoscopy, symptoms are usually severe, and require treatment. In this case the patient was asymptomatic, and the pneumothorax was discovered on roentgen examination after the bronchoscopy. Hence, if one considered selective pneumothorax as a sign of pathology in the lung, it might be thought of as a fortunate bronchoscopic complication in this case leading to earlier thoracotomy.

FIGURE 1: Chest roentgenogram visualizes selective pneumothorax with complete collapse of the right upper lobe.
FIGURE 2: Chest roentgenogram demonstrates an infiltration in the right hilum and right upper lobe.

REFERENCES