The Significance of Localized Bronchiectasis Adjacent to Pulmonary Coin Lesions

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In an effort to determine potential diagnostic usefulness of bronchiectasis adjacent to pulmonary coin lesions, 39 cases were evaluated by chest roentgenogram and bronchography. Ten of 17 benign lesions demonstrated localized adjacent bronchiectasis. Twenty-one of 22 malignant coin lesions failed to demonstrate that finding. Localized bronchiectasis adjacent to a "coin lesion" is a useful indicator of an inflammatory etiology.

Solitary coin lesions on chest roentgenograms present a continuing diagnostic dilemma. As exploratory thoracotomy is not without significant hazard for many patients, reliable differential criteria obtainable by less invasive procedures are needed. The association of localized bronchiectasis and inflammatory lesions is time-honored.1 Less emphasis has been placed on the absence of bronchiectasis adjacent to localized peripheral malignancy. This study reports our experience with coin lesions in the lungs from 1964 to 1970 when bronchograms were obtained. The findings suggest that the presence or absence of localized bronchiectasis may be an important indication of the benignity or malignancy of the lesion.

Materials and Methods

Pulmonary lesions were classified as coin lesions on routine chest roentgenograms by criteria similar to those of Frazer and Paré:2 (1) a solitary shadow of less than 6 cm; (2) a discrete lesion, not necessarily sharply circumscribed; (3) a lesion with no specific limits as to contour or shape; (4) a lesion that may contain demonstrable calcification or cavitation; and/or (5) a lesion surrounded by air-containing lung.

For the purposes of this study bronchiectasis was defined radiographically as adjacent bronchial dilatation, whether saccular or cylindrical, as seen on the bronchogram. The

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pathologic criteria included dilatation and absence of bronchial cartilage in the affected areas. There was a review of the chest roentgenograms of patients with coin lesions seen over a six-year period (1964-1970) at the University of Chicago Hospitals and Clinics.

Seventeen cases of benign coin lesions with bronchographic studies were reviewed. Of those, surgical-pathologic proof was present in eight cases, and the remainder showed no change in radiographic appearance over a two-year interval. Of those cases, ten showed bronchiectasis localized in the area of the coin lesion on bronchogram. Two cases showed localized abnormal bronchi without definite dilatation. Five cases revealed normal bronchograms. There was pathologic confirmation of localized bronchiectasis in six of the eight surgically resected benign coin lesions. Two cases showed inadequate specimens for pathologic interpretation of bronchiectasis. Figures 1 and 2 are representative of the bronchographic findings seen in coin lesions with adjacent, localized bronchiectasis.

Additionally, autopsy protocols and surgical pathology reports were reviewed and the coincidence noted of pulmonary or systemic granulomatous disease with microscopically demonstrated bronchiectasis. For the purposes of the study, evaluation of the presence or absence of bronchiectasis was made on the slides demonstrating the granuloma. Of 13 cases in which sections of pulmonary granuloma were available, 8 demonstrated adjacent bronchiectasis. Etiologies of the granulomas included histoplasmosis, tuberculosis, sarcoidosis, and undetermined. Of interest is the fact that no granuloma with associated bronchiectasis in this group was larger than 3 cm. That finding differs from the experience of Molnar and Ricebel who state that granulomas smaller than 3 cm usually do not affect bronchial branches.

On similar review of pathologically proved malignancies presenting as coin lesions, 22 cases were found with coincident bronchograms. Twenty-one of 22 malignant coin lesions showed no localized bronchiectasis adjacent to the lesion on bronchogram. The single case to the contrary is shown in Figure 3.
FIGURE 1. Roentgenograms illustrating localized bronchiectasis adjacent to coin lesion in pathologically proved tuberculosis. A. (left) Tomogram of chest demonstrates coin lesion in upper lobe. B. (center) Bronchogram demonstrates local bronchiectasis. C. (right) After cough residual propylidone oil suspension (Dionosil oily) contrast material remains in bronchiectatic region.

DISCUSSION

In evaluating coin lesions, standard radiographic distinctions such as shape, size, and location on the routine chest roentgenogram are important to accurate diagnosis. The usefulness of bronchial brushings in distinguishing between benign and malignant lesions has been emphasized. Recent reports have described the usefulness of bronchograms in differentiating unresolved pneumonia from bronchogenic carcinoma.

Although the association of bronchiectasis and inflammation has long been recognized, scant attention has been directed to the presence of localized bronchiectasis adjacent to coin lesions as a specific sign of a benign etiology. To discuss the specific theories of pathogenesis of bronchiectasis is beyond the scope of this study. Those theories are well reviewed elsewhere. The overwhelming as-
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Sociation of generalized bronchiectasis with benign conditions is the important feature.

Worthwhile descriptions are available in the literature\(^a\) of positive bronchographic findings that, if present, are helpful indicators of malignancy. The results of our material suggest that, in the absence of those positive changes, the presence of localized bronchiectasis may be a useful criterion favoring inflammatory etiology of a coin lesion.

Certainly no criterion is absolute in a biologic system. Our single case of a malignant coin lesion associated with bronchiectasis reflects experience of other workers\(^b\) as seen in scattered case reports. The pathogenetic similarities between those unusual tumors that have localized bronchiectasis and the more common inflammatory lesions that present identical features are not considered here. Of importance is the infrequent occurrence of malignant coin lesions with coincident bronchiectasis in the literature and in our material.

While the number of cases in our series is modest, there is a striking difference in the incidence of coin lesions and localized bronchiectasis as seen in the groups of benign and malignant lesions. In patients who are poor surgical risks, operative intervention might be deferred when there is localized bronchiectasis adjacent to a coin lesion. Review of our material suggests that further investigation of the association is warranted.

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Birth of the Science of Sound

Pythagoras (540-500 B.C) was no doubt a living person, born in the sixth century before Christ, at Samos. In antiquity he was regarded as the inventor of philosophy. Pythagoras was a passionate lover of music and it was thus that he came to make the enormously fruitful discovery that pitch of sound depends upon the length of the vibrating cord. Therein it became clear that law and special quantity ruled even in fields which had seemed most independent of quantitative order. The beginning of the great science of mechanics was firmly set up. The discovery was no accident.

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