Role of Bronchial Brushing in the Evaluation of Peripheral Lung Lesions*

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Sixty-four patients with suspected lung tumor were evaluated by the bronchial brushing technique. Fifty-five manifested peripheral lung lesions. The technique described is simple, safe, and results in a high degree of diagnostic accuracy. It is, therefore, an important aspect of evaluation of peripheral lung lesions.

The purpose of this report is to describe the author's experience with a bronchial brushing technique in the evaluation of peripheral lung tumors.

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Materials and Methods

Bronchial brushing was performed with a modification of the technique described by Fennessey.1 Using topical anesthesia, a Rush No. 18 catheter** is inserted intranasally into the trachea. Under image amplification (TV-fluoroscopy), a

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Figure 1. From bottom: number 18 bronchial catheter, preshaped vascular catheter and wire with nylon brush at the tip. Enlarged view of the brush (inset).
ROLE OF BRONCHIAL BRUSHING

Table 2—Accuracy of Bronchial Brushing Technique

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of Cases</th>
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<tbody>
<tr>
<td>Proved malignant disease</td>
<td>23</td>
</tr>
<tr>
<td>&quot;False negatives&quot;</td>
<td>2</td>
</tr>
<tr>
<td>Diagnosed by bronchial brushing</td>
<td>21</td>
</tr>
</tbody>
</table>

(91% accuracy)

bronchial biopsy, scalene node biopsy and/or mediastinoscopy, thoracotomy, or postmortem examination.

RESULTS

Sixty-four patients were subjected to bronchial brushing 67 times (Table 1). Fifty-five manifested peripheral lung lesions. Malignant cells were recovered in 33 patients (27 with peripheral lesions). Histologic confirmation by tissue examination was obtained in 21 cases. "False positives" were encountered twice, one by thoracotomy and one by postmortem examination. Histologic proof was not obtained in ten patients, but these were considered malignant from the clinical picture and outcome. Surgical exploration was not performed in this group because of age, general condition, or refusal of operation. Only seven of the 33 patients could be diagnosed by bronchoscopy with evaluation of secretions. Cytologic examination of the sputum afforded a clue in four patients.

If one analyzes those patients proved by accepted histologic techniques to have suffered from malignant pulmonary disease (Table 2), 21 of a total of 23 gave positive findings on bronchial brushing (91 percent accuracy).

Malignant cells were not found in 31 patients (Table 1—34 brushings). Of these, two were dem-
FIGURE 4. Cytologic specimen obtained by bronchial brushing. Malignant cells are present.

onstrated to be "false negatives" by thoracotomy. Benign disease was discovered by thoracotomy in 12 patients, six had stable pulmonary infiltrates, four manifested a pattern of resolution, one demonstrated a stable calcified peripheral lesion, one proved to have active pulmonary tuberculosis, one active histoplasmosis, and one died in a nursing home; there was no autopsy. The remaining three cases have not been observed for a sufficient period of time.

The only complication encountered in this series was transient hemoptysis in two patients. One illustrative case is presented.

A 66-year-old-white man presented with a right upper lobe mass (Fig 3). Bronchial brushing resulted in the demonstration of moderately well differentiated tumor cells (Fig 4) which were also found by cytologic examination of the sputum. A bronchiolar cell carcinoma was removed by lobectomy.

**DISCUSSION**

Cytologic study of sputum or bronchial washings has proved to be a valuable diagnostic tool.\(^2\)\(^-\)\(^5\) When a lesion is peripheral, the diagnostic yield diminishes.\(^2\)\(^-\)\(^6\) It is important to have available a safe and simple method for the evaluation of such lesions, particularly since their resection is attended by an improved survival rate.\(^7\)\(^-\)\(^8\) The introduction by Hattori and coworkers\(^9\) of the bronchial brushing technique seems to have provided an answer to this problem.

This technique represents one of the most reliable and safe approaches to the diagnosis of peripheral tumors. The accuracy of the procedure in the present series is comparable to that reported previously.\(^1\)\(^-\)\(^9\)\(^-\)\(^12\) A "false negative" finding can be expected whenever the nylon brush is inaccurately placed or the bronchus draining the lesion is obstructed. We agree that the advantages of this technique over percutaneous needle biopsy are that the patient is not exposed to the hazards of pneumothorax, cerebral air embolism, serious bleeding, tumor extension along the needle track, and empyema.

**ACKNOWLEDGMENT:** We wish to express our appreciation to Mr. Harold A. Evans for his technical assistance.

**REFERENCES**


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