Points to Consider When Choosing A Biopsy Method in Cases of Pleurisy of Unknown Origin*


Blind pleural needle biopsy and diagnostic thoracoscopy are procedures sometimes used in the work-up of a patient with pleural effusion of unknown origin. We reviewed 203 diagnostic thoracoscopies in patients with malignant pleural effusion to show the different location of pleural metastasis, mediastinal pleura, diaphragmatic pleura and cardiophrenic sinus.

When reviewing the world medical literature, one observes that the accuracy rate of needle biopsy of the pleura in the work-up of a pleural effusion does not seem to increase in spite of the different and improved types of needles which have appeared. The positive indices vary slightly from one to another, moving to around 60 percent, in spite of the fact that the series are increasingly more numerous and consequently the positive percentages are more significant.1 In turn, the results reported by different authors from diagnostic thoracoscopy are always close to 100 percent accuracy.2-10

Our sole objective in writing this article is to explain why there is such a reliability difference between the two examination methods.17

Material and Methods

In the work-up of a patient presenting with a pleural effusion of unknown origin and after ruling out an infectious process on the basis of clinical history, our attitude, enhanced by our own experience, has evolved to the extent of performing a diagnostic thoracoscopy as a first step in the search for the etiology. We believe that the main point of diagnostic interest is to rule out or confirm the existence of a pleural carcinoma, and if we have a quick, almost absolutely certain diagnostic method, we shall be in a position to carry out adequate therapy in only three or four days after the patient's admission. This will have a positive effect on hospital economic performance. Thus, we have been carrying out and evaluating diagnostic thoracoscopies for over ten years.

We have chosen 203 patients with pleural effusion in whom the existence of a pleural carcinoma in the form of gross nodulations was confirmed. Other cases with a different type of carcinoma12 were rejected for this study since these are less frequent and could complicate the overall study that we were proposing to carry out, even though we were convinced that they respond to the same positional conditions as the nodulations. In all our thoracoscopic protocols we state the situation of the metastases, the gross appearance and consistency, and their size. For graphic purposes, we divide the pleural cavity into: costal pleura, visceral pleura, some out of the reach of blind needle biopsy. Based on these data, we find diagnostic thoracoscopy a superior procedure because of its higher reliability, faster diagnostic results, slight or no complications, and the possibility of carrying out pleurodesis in the same examination.

Results

On examining Figure 1, the right hemithorax is seen to be affected in slightly more cases than the left, which

*From the Thoracic Surgery Service, Príncipes de España Hospital, Hospital de Llobregat, Barcelona, Spain.

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Reprint requests: Dr. Canto, Servicio de Cirugía Thoracica, C.S. Príncipes de España, L'Hospital del Llobregat, Barcelona, Spain.
could be explained by the anatomic relationship with the liver and the possibilities of tertiary metastases from this organ. There is a great difference between the two lower portions, divided by the broken line, and the upper portions, as seen at first sight. As much as 84 percent of the metastases are found in the lower portions of the hemithoraces. Alongside the corresponding pleura in Figure 2, we

**Figure 1.** Location of pleural metastases in 203 patients.

**Figure 2.** Pathway of metastatic spread and percentage of pleural involvement in the studied cases.
have expressed in percentages the index of metastases obtained by dividing the number of dots at each location by the total number of cases examined. Outstanding here is the fact that the costal pleura has been invaded in only 53 percent of the patients.

This figure questions the usefulness of the needle biopsy because even if all the biopsies taken by the blind method had reached pathologic tissue, we would not have obtained a higher positive index. As seen in the graph, locations other than the costal pleura may not be reached by the blind method.

It may be said that the direction of the carcinomatous invasion, represented by arrows in Figure 2, is upward in the costal, visceral and diaphragmatic pleura, from inside to outside in the diaphragm, and outwards when metastatic disease starts out from the cardiophrenic sinus. In both latter cases the costophrenic sinus is reached and then the disease progresses through the costal pleura. There is, likewise, direct contact metastases and by continuity through the pleural adhesions. As seen in Figure 3, the minimal metastatic disease follows a similar pattern of growth. The gross appearance of the metastases does not correlate with the different histologic types found (Table 1).

**Table 1—Histologic Types**

<table>
<thead>
<tr>
<th>Type</th>
<th>Percent (Cases)</th>
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<tbody>
<tr>
<td>Adenocarcinoma</td>
<td>38% (78/203)</td>
</tr>
<tr>
<td>Undifferentiated</td>
<td>23% (47/203)</td>
</tr>
<tr>
<td>Epidermoid</td>
<td>10% (20/203)</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>10% (20/203)</td>
</tr>
<tr>
<td>Lymphoma</td>
<td>5% (10/203)</td>
</tr>
<tr>
<td>Unclassified Carcinoma</td>
<td>14% (28/203)</td>
</tr>
</tbody>
</table>

**Conclusion**

The conclusions from the present work, drawn from systematic protocolized gathering of data for over ten years in the practice of diagnostic thoracoscopy, are as follows:

The low reliability of results from the pleural needle biopsy in pleural effusions of malignant origin does not relate to type of needle used or finding new models; rather it depends upon the fact that there are metastatic locations which may not be reached with this method, since when employing "blind" biopsy, we examine only the costal pleura.

The pleural invasion has an obvious upward direction of growth and is preferentially located in the bases of the hemithoraces; there is no relationship between the morphology of the metastasis and the histologic type.

In the case where a needle biopsy is the only available procedure, it is recommended the sample be taken from the lowest locations in the costal pleura in order to reach a higher diagnostic success. Thus, for the time being, it seems to us that diagnostic thoracoscopy is the method of choice in the workup of patients with pleural effusion of suspected malignant origin. The method is not only more reliable, but it also allows shortening the diagnostic-treatment time which has its effect on hospital stay. The procedure is almost free of risk, with non-existent or negligible complications and also allows us to carry out pleurodesis within the same examination, as reflected also in the review of the literature.

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**References**

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