Lung cancer is responsible for the highest mortality rates due to cancer worldwide. It is the most common tumor in men, accounting for 13.3% of all neoplasms, and the third most common in women, after breast and colon cancer. Lung cancer is among the respiratory diseases with the worst outcome and its social, economic, and health-related impact is considerable.

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SPECIAL ARTICLE

Proposed Terms for Endobronchial Lesions in Patients Suspected of Having a Bronchial Neoplasm

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Endoscopists describe lung cancer lesions using varying terminology. This study aimed to assess the probability of neoplastic disease in terms of endoscopic findings expressed in an original classification system. The endoscopic lesions were classified as infiltrations (superficial lesions without a clear border with normal mucosa) or masses (exophytic lesions easily distinguished from the bronchial wall). Each lesion was categorized according to 3 grades reflecting probability of malignancy. A grade I infiltration was a lesion presenting 1 of the following characteristics: loss of luster, increased thickness, or redness, with a smooth surface. A grade II infiltration presented 2 of the aforementioned characteristics, with a rough surface. A grade III infiltration presented 3 of those characteristics. A grade I mass was an exophytic lesion with a smooth surface, uniformly colored. A grade II mass presented a smooth surface of a distinct color, and a grade III mass had a rough surface and irregular coloring.

We assessed 377 patients with suspicion of neoplasm. Twenty-three percent of the infiltrations were grade I carcinomas, 74% were grade II, and 95% were grade III. Twenty-three percent of masses were grade I, 77% were grade II, and 97% were grade III. The probability of malignancy increased significantly with grade (P < .001) for both types of lesion. In summary, there is a positive correlation between the terms used and the probability of carcinoma. Most grade III lesions were carcinomas, but apparently innocuous grade I lesions could be carcinomas in a significant number of cases.

Key words: Lung cancer. Endoscopic images. Infiltration. Tumor.

Propuesta de terminología de las lesiones endobronquiales en pacientes con sospecha de neoplasia bronquial

La descripción de lesiones endoscópicas en el cáncer de pulmón varía según el endoscopista. Este trabajo pretende evaluar la probabilidad de neoplasia en relación con los hallazgos endoscópicos según una clasificación original. Las lesiones endoscópicas se clasifican en: infiltración (lesión en superficie sin límite preciso con la mucosa normal) y masa (lesión exofítica, fácil de diferenciar de la pared). Cada lesión tiene 3 grados con relación a la probabilidad de malignidad.

En la infiltración grado I, la lesión presenta una de las siguientes características: pérdida de brillo, aumento de grosor o enrojecimiento, de superficie regular; en la infiltración grado II coinciden 2 de los cambios anteriores, con superficie irregular; en la infiltración grado III están presentes 3 de las características anteriores; la masa grado I es una lesión exofítica de superficie lisa y coloración uniforme; la masa grado II presenta una superficie regular de coloración distinta, y en la masa III la superficie y coloración son irregulares.

Se evaluó a 377 pacientes con sospecha de neoplasia. Fueron carcinomas un 23% de las infiltraciones grado I, un 74% de las infiltraciones grado II y un 95% de las infiltraciones grado III. En ambos tipos de lesiones la probabilidad de malignidad aumenta de acuerdo con el grado (p < 0,001).

En conclusión, existe una correlación positiva entre la terminología descrita y la probabilidad de carcinoma. En la mayoría de los casos las lesiones grado III son carcinomas, pero a su vez las lesiones grado I, aparentemente inofensivas, pueden ser carcinomas en un número significativo de los casos.

Because prognosis is poor, the only factor able to affect outcome is early diagnosis. Endoscopic exploration and biopsy are therefore essential whenever a lesion might be neoplastic.\(^6\)

One problem a bronchoscopist faces is that of describing endobronchial lesions. The difficulty is aggravated by the great variety of presentations a bronchial tumor can have. It may appear merely as an area of mucosa that is dull, lacking luster or, at the other extreme, as a large irregular exophytic mass inside the bronchial lumen.\(^7\) Descriptions of what can be viewed under the cold light of the endoscope are subjective, reflecting the variability any scientific observation is subject to. The same lesions may be described with different words, the light may create artifacts and often does, and finally the internationally stipulated conditions under which exploration should take place are not always followed.

To be able to assess a lesion viewed endoscopically, the normal conditions of the bronchi viewed through the fiberoptic bronchoscope must be known.\(^8\) The mucosa should be uniformly pink and glistening; the surface should be smooth, with the exception of the corrugated relief formed by cartilage in the trachea and main bronchi and by the longitudinal fibers, which should be parallel and continuous. Submucosal vessels can be distinguished in the form of fine, widely spaced reddish lines. The ridges that separate branching bronchi should be thin and the crests should be paler than the surrounding mucosa.

With these considerations as a starting point, we proposed to describe endoscopic findings, mainly in the context of lung cancer diagnosis. The purpose is to systematize terminology to reduce variability and facilitate communication.

Two large categories of endoscopic lesions can be identified: infiltrations and masses. Infiltrations are lesions on the surface of the bronchial wall. They may have greater or lesser extension (they are quantified with simple measurements) and the borders separating them from normal mucosa are difficult to distinguish. Masses are exophytic lesions protruding into the bronchial lumen. Their borders are precise and easy to differentiate from the wall. Infiltrations and masses can each be classified in 3 grades that reflect the likelihood of malignancy\(^6\):\(^8\):

- **Infiltration, grade I**: minimal changes scarcely suggestive of malignancy; a mucosal surface might lack luster, the tissue might have thickened, or there might be localized redness. The surface is always smooth (Figures 1A and 1B).

- **Infiltration, grade II**: presence of 2 of the following changes in the same zone of tracheal or bronchial mucosa: thickening, redness, rough surface, or abnormal longitudinal relief patterns (Figures 1C and 1D).

- **Infiltration, grade III**: presence of 3 or more of the previously listed findings (Figures 1E and 1F).

- **Mass, grade I**: exophytic lesion in the bronchial lumen; the surface is smooth and uniformly pink, similar to normal mucosa (Figures 2A and 2B).

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<table>
<thead>
<tr>
<th>Infiltrations</th>
<th>Characteristics</th>
<th>Images</th>
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<tbody>
<tr>
<td>Grade I</td>
<td>One of the Following Changes on a Uniform Surface:</td>
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<tr>
<td></td>
<td>Loss of Shine</td>
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<td>Localized Redness</td>
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<td>Grade II</td>
<td>Two of the Following Changes:</td>
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<td></td>
<td>Redness</td>
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<td></td>
<td>Irregular Surface</td>
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<td>Abnormal Longitudinal Reliefs</td>
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<td>Grade III</td>
<td>All 3 Changes:</td>
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<td></td>
<td>Thickening</td>
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<td>Irregular Surface</td>
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</tbody>
</table>
Masses | Characteristics | Images
--- | --- | ---
**Grade I** | Exophytic lesion with a smooth surface and uniformly pink color. | ![Image](image1.png)
**Grade II** | Exophytic lesion with a regular surface (smooth or granular) and coloring different from normal mucosa. | ![Image](image2.png)
**Grade III** | Formation of a granulomatosus or papillary surface and irregular surface and coloring different from normal mucosa. | ![Image](image3.png)

The objective application of such terminology would allow more careful use of language than is usually found in bronchoscopy reports in different hospitals. Better diagnosis and follow-up of bronchial tumors would then be feasible. The proposed terminology has the advantage of simplicity and ease of interpretation. The available data show that the described classifications bear a good relation to probability of malignancy. However, these results indicate that patients with risk factors for tumors should undergo biopsy even when bronchial wall alterations are minimal.

Figure 2. Description of the different grades of mass: A) exophytic lesion with a smooth surface and uniformly pink color, indicating cartilaginous protrusion; B) exophytic lesion with a smooth surface and uniformly pink color: polyp; C) exophytic lesion, pale color, uniformly granular with a strawberry-like appearance; D) exophytic lesion with a smooth, regular surface, with a more reddish coloring than that of normal mucosa: biopsy indicating a bronchial carcinoid tumor; E) obstruction of the mainstem bronchi by an irregular, papillary, red-colored formation: biopsy positive for carcinoma; and F) exophytic lesion with a whitish surface, characteristic of necrotized malignant tumor.

The objective application of such terminology would allow more careful use of language than is usually found in bronchoscopy reports in different hospitals. Better diagnosis and follow-up of bronchial tumors would then be feasible. The proposed terminology has the advantage of simplicity and ease of interpretation. The available data show that the described classifications bear a good relation to probability of malignancy. However, these results indicate that patients with risk factors for tumors should undergo biopsy even when bronchial wall alterations are minimal.
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