

**الأمراض النسيجية**

**Histopathology**

Lecture: 4

**Lung Tumors**

**Lecture (4)**

**Lung Tumors**

Benign lung tumors are rare. Most 'bronchial adenomas' are in fact carcinoid tumors arising from lung neuroendocrine cells; these may be locally invasive and occasionally metastasis. Their histological appearance is similar to carcinoid tumors in the gastrointestinal tract.

The great majority of primary malignant tumors of the lung are **carcinomas** which arise in the bronchi and are thus often called bronchogenic carcinomas; carcinogens in cigarette smoke are the major etiological agents. Other less important factors include exposure to radiation, asbestos (especially when combined with smoking) as well as other minerals such as nickel and chromium. Air pollution and genetic predisposition are other possible factors. Occasionally tumors arise in a pre-existing lung scar.

Lung cancers can arise in any part of the lung, but 90%-95% of cancers of the lung are thought to arise from the epithelial cells, the cells lining the larger and smaller airways (bronchi and bronchioles); for this reason, lung cancers are sometimes called bronchogenic cancers or bronchogenic carcinomas. (Carcinoma is another term for cancer.) Cancers also can arise from the pleura (called mesotheliomas) or rarely from supporting tissues within the lungs, for example, the blood vessels

**Bronchopulmonary carcinomas are of four main types:**

**1. Differentiated squamous cell carcinoma (Fig. 4.1)**

Squamous cell carcinoma, the commonest primary malignancy of the lung, usually arises in the main bronchi or their larger branches close to the lung hilum and often in an area of epithelium which has previously undergone squamous metaplasia, for example as a result of cigarette smoking. Such tumors invade the local parenchyma and tend to obstruct the involved airway as well as spreading via local lymphatics to regional lymph nodes.

## Histopathology Lung Tumors

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### The Signs and Symptoms of Squamous Cell Carcinoma of Lung.

The features of Squamous Cell Carcinoma of Lung may include:

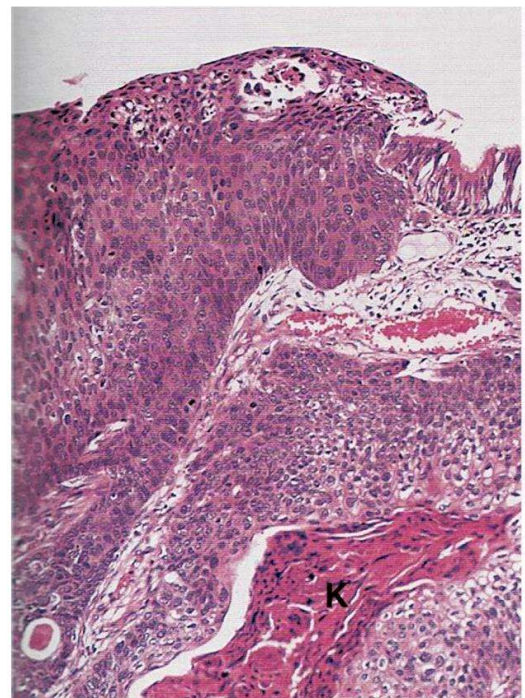
- A majority of the tumors originate from the central airways (proximal lung region); in about 60% of the cases. However, tumors may be present anywhere in the lung
- The tumor appears as a polypoid mass with peripheral (star-like) projections. It can grow to large sizes
- The mass can invade the lung tissues and adjacent structures and result in bronchial lumen occlusion (obstruction of airways)
- Some tumors arise in the periphery and may exhibit endobronchial growth pattern, invading bronchial wall and lung tissue

**The common signs and symptoms may include the following:**

- Shortness of breath that gets worse with time; difficulty in breathing
- Cough that may be persistent; blood in cough/sputum (hemoptysis)
- Chest pain, heaviness in the chest
- Changes to voice, hoarseness, or loss of voice

**Fig. 4-1. Squamous cell carcinoma of bronchus: well differentiated.**

**Squamous cell carcinoma have the typical features of squamous cell carcinoma but tend to vary widely in degree of differentiation. At one end of the spectrum is the well-differentiated keratinizing type as in this micrograph where the likeness to stratified squamous epithelium is evident and there is formation of keratin K in some areas. Towards the other end of the spectrum are poorly differentiated tumors in which squamous characteristics such as intercellular bridges are only visible at high magnification.**



## Histopathology

### Lung Tumors

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#### 2. Differentiated adenocarcinoma (Figs 4.2)

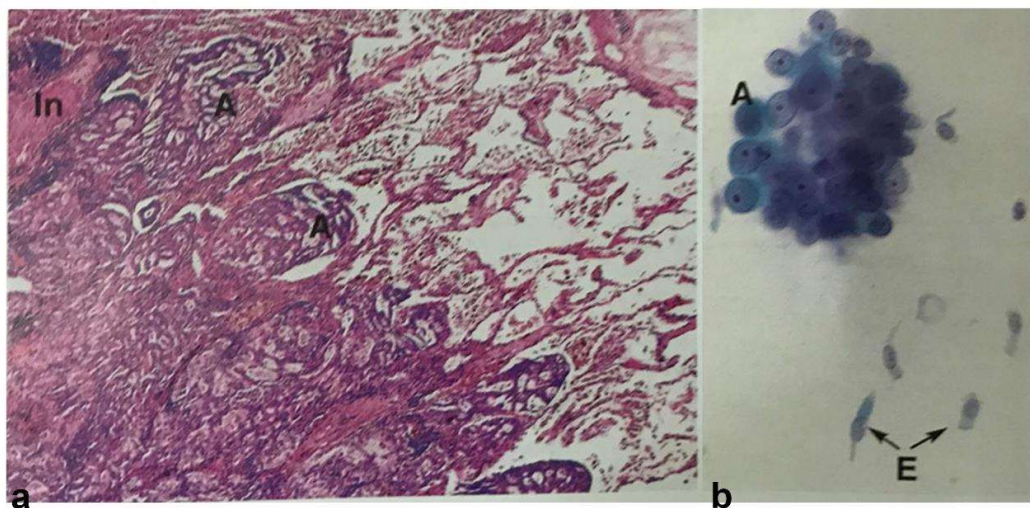
Adenocarcinomas tend to arise more peripherally in small bronchi and bronchioles; they have a particular predilection for old areas of scar tissue, for example healed tuberculosis. Adenocarcinoma of the lung is not as closely linked with cigarette smoking as other primary lung tumors.

#### Symptoms of Lung adenocarcinoma

Patients with adenocarcinoma of the lung may notice:

- Coughing.
- Weight loss.
- Shortness of breath.
- Chest pain: if the tumor involves the chest wall, pain may be localized to this area
- Haemoptysis (coughing up blood): sputum may be streaked with blood
- Non-specific symptoms: fever, weakness, lethargy.

Rarely, patients may present with difficulty swallowing or wheezing.



**Figs 4.2. Adenocarcinoma of the lung (a) LP (b) Cytology; Giemsa (HP)**  
In micrograph (b), note the cluster of large adenocarcinoma cells A with prominent nucleoli; these contrast with occasional normal bronchial epithelial cells E.

**3. Undifferentiated squamous/adenocarcinoma (large cell undifferentiated) (Fig. 4.3)**

Large Cell Carcinoma of Lung is a type of lung cancer described as an undifferentiated non-small cell carcinoma (NSCC) without having the histological features of any of the following types:

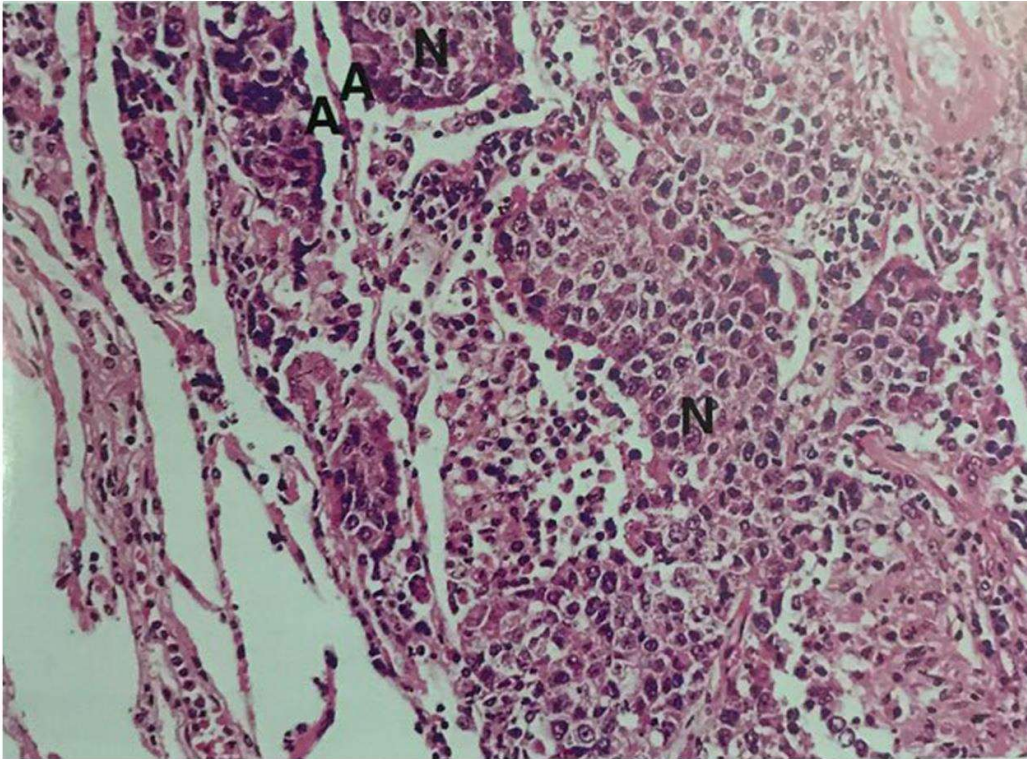
- Adenocarcinoma
- Small cell carcinoma
- Squamous cell carcinoma

Large Cell Carcinoma of Lung constitutes about or less than 2.5% of all lung cancer cases. Individuals under the age of 40 years are rarely diagnosed with lung cancer. The average age of individuals with Pulmonary Large Cell Carcinoma is around 60 years. A high male preference is noted for this type of cancer, even though both males and females are affected

**The common signs and symptoms may include the following:**

- Shortness of breath that gets worse with time; difficulty in breathing
- Cough that may be persistent; blood in cough/sputum (hemoptysis)
- Chest pain, heaviness in the chest
- Changes to voice, hoarseness, or loss of voice





**Fig. 4.3 Large cell undifferentiated carcinoma (MP)**

This micrograph shows the advancing edge of a large cell undifferentiated carcinoma of the lung. These tumors consist of large anaplastic epithelial cells growing in nests N and sheets. No evidence of keratinization, intercellular bridges or intracytoplasmic mucin is seen. Invasion of adjacent alveolar spaces A can be clearly seen in this micrograph.

**4. Malignant neuroendocrine carcinoma (small cell carcinoma or oat cell carcinoma) (Fig. 4.4)**

The proximal bronchi may also give rise to another important carcinoma known as small cell or oat cell carcinoma. These tumors rapidly and extensively invade the bronchial wall and surrounding parenchyma and may compress and invade nearby pulmonary veins. Early lymphatic and blood-borne spread is a feature of these tumors. Lung neuroendocrine tumors (lung NETs) usually develop in the airways (bronchi).

**Signs or symptoms of lung NETs may include:**

- a cough that doesn't go away
- coughing up blood
- difficulty breathing
- fatigue
- pneumonia
- carcinoid syndrome – includes flushing of the skin, diarrhea and wheezing

**Fig. 4.4 Small cell carcinoma (HP)**

As seen high magnification in this micrograph, the name derives from the supposed resemblance of the small, tightly packed, darkly stained, ovoid tumor cells to oat grains.

