

Lung Tumors

Objectives:

- ✓ Know the epidemiology of lung cancer
- ✓ Is aware of classification of bronchogenic carcinoma which include: squamous carcinoma, adenocarcinoma, small cell and large cell (anaplastic) carcinomas.
- ✓ Understand the predisposing factors of bronchogenic carcinoma.
- ✓ Understands the clinical features and gross pathology of bronchogenic carcinoma.
- ✓ Know the precursors of squamous carcinoma (squamous dysplasia) and adenocarcinoma (adenocarcinoma in situ and atypical adenomatous hyperplasia).
- ✓ Have a basic knowledge about neuroendocrine tumours with special emphasis on small cell carcinoma and bronchial carcinoid.
- ✓ Is aware that the lung is a frequent site for metastatic neoplasms.

Editing File

Black: original content.

Red: Important.

Green: AlRikabi's Notes.

Grey: Explanation.

Blue: Only found in boys slides.

Pink: Only found in girls slides.



Lung tumors

[Helpful Video!](#)

Lung tumors

Overview

- Most lung tumors are **malignant**
- Primary lung cancer is a **common** disease but **metastatic** tumors are the most common lung carcinoma seen in clinical practice
- 95% of primary lung tumors are **carcinomas**, 5% **carcinoids**, mesenchymal malignancies (fibrosarcomas, leiomyomas) and lymphomas

Epidemiology

- Primary lung cancer is the most common fatal cancer in both **men** and **women** worldwide
 - Accounts for **>30%** of cancer deaths in men
 - Accounts for **>25%** of cancer deaths in women
- Incidence of lung cancer is declining in men but increasing in women
- Peak incidence is at **55-65** years of age.

Symptoms

- **General:**
 - 1- Unexplained weight loss
 - 2- Unexplained anemia
 - 3- Unexplained fever (usually lymphoma)
 - 4- Unexplained fatigue
- **Lung-specific:**
 - 1- Unexplained cough.
 - 2- Hemoptysis.
 - 3- Chest pain
 - 4- Cyanosis
 - 5- Cachexia (TNF- α and IL-1)

Benign Lung Tumor (hamartoma) :

-Rare, Ex: Hamartoma

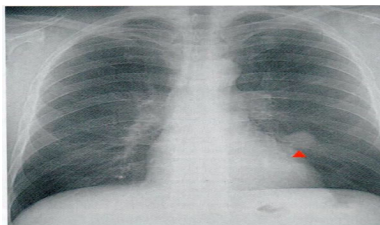
-**Gross:** Well-circumscribed, rounded solid lesion (coin) with yellowish pale cut surface

-**Histo:** Cartilage, blood vessels, glands, inflammatory cells, mesenchymal tissue, fat.

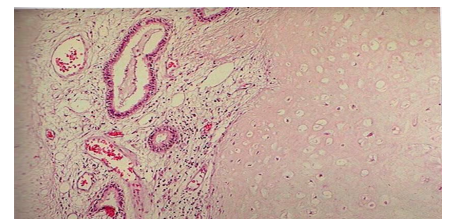
Hamartoma: most **common benign** tumor, spherical, small (1 to 4 cm), discrete "hamartoma" that often shows up as a so-called "**coin lesion**" or "**leave me alone lesion**" on chest imaging. It consists mainly of mature cartilage admixed with fat, fibrous tissue, and blood vessels in various proportions. Hamartoma simply is normal tissue but in a disorganized fashion.



Hamartoma, gross



Hamartoma, radiograph (rounded coin-like mass)

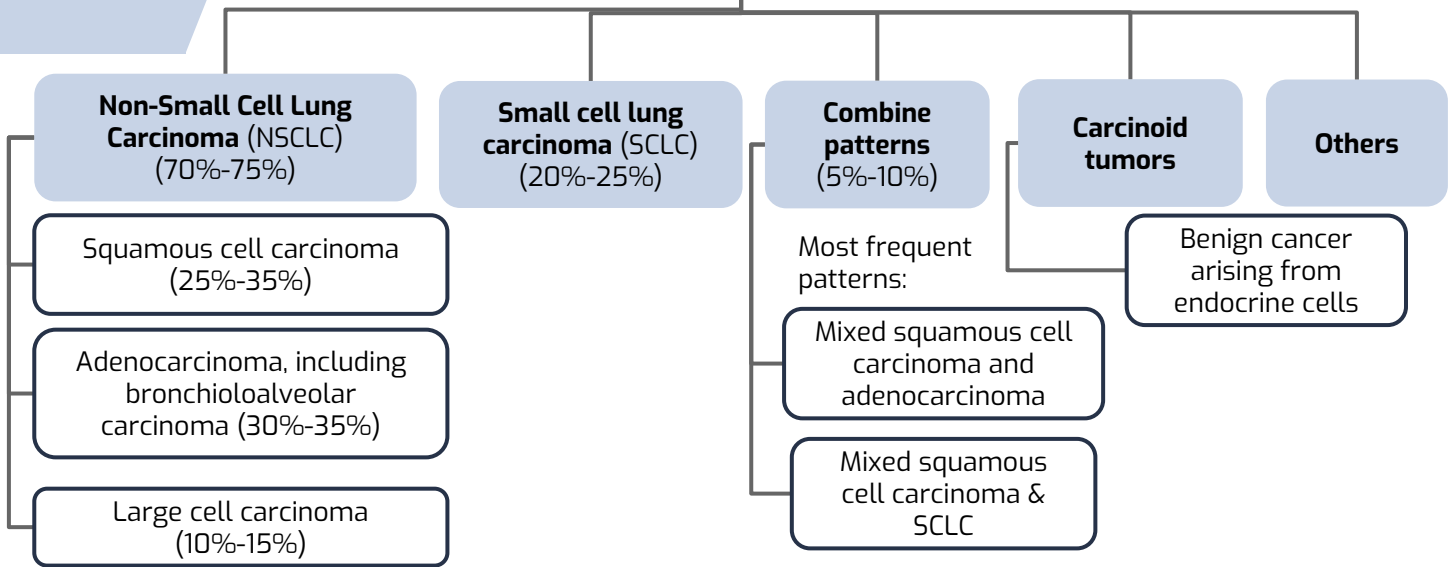


Hamartoma, microscopic

- **Carcinoma** → malignant tumor of epithelial origin
- **Teratoma** → benign/malignant tumor where tissues arise from the 3 embryogenic layers
- **Hamartoma** → abnormal mass of tissue consisting of various indigenous tissue.
- **Sarcoma** → malignant tumor of mesenchymal origin
- Malignant + metastatic (secondary) tumors are more common in the lung
- Metastasized (secondary) tumors have multiple nodules.

Lung Tumors

The majority of lung cancers are NSCC and SCC, and the most common lung cancer out of bronchogenic carcinomas is adenocarcinoma



Bronchogenic carcinoma: a common cause of cancer death in both men and women. For **therapeutic purposes**, bronchogenic carcinoma are classified into:

	NSCLC	SCLC
Therapy	<p>Surgical: offers the best chance for curing.</p> <p>Radiation: controls local disease. It's used to palliate symptoms.</p> <p>Chemotherapy: not effective</p> <p>Monoclonal therapy nowadays.</p>	<p>Chemotherapy is very effective because SCC are highly responsive to chemotherapy</p> <p>Surgery is not effective because it's usually detected late, after metastasis.</p>
	Central tumors (related to smoking)	Peripheral tumors (related to scar)
	<ul style="list-style-type: none"> • Squamous cell carcinoma • Small cell carcinoma 	<ul style="list-style-type: none"> • Adenocarcinoma: <ul style="list-style-type: none"> ○ Bronchial derived ○ Bronchioalveolar CA • Large cell carcinoma



Central carcinoma of the bronchus. appear as friable white masses of tissue (L), extended into the lumen of bronchi and invaded into the adjacent lung.

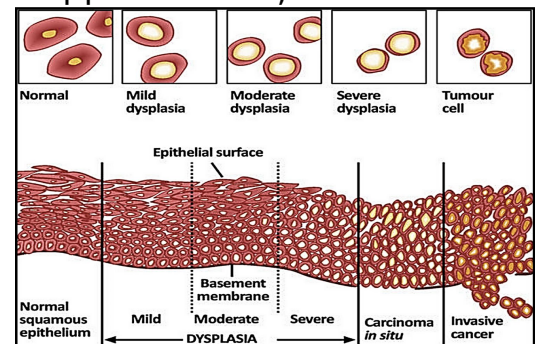


Peripheral carcinoma of the lung. appear as ill-defined masses (C), often occurring **in relation to scars**, and frequently extend to the pleural surface.

Predisposing factors of bronchogenic carcinoma

Tobacco smoking

- 85% of lung cancers occur in cigarette smokers. Most types are linked to **cigarette smoking**, but the strongest association is with **squamous cell carcinoma and small cell carcinoma**
- The **nonsmoker** who develops cancer of the lung usually has an **adenocarcinoma**.
- It's directly proportional to the number of cigarettes smoked daily and the number of years of smoking.
- Cessation of cigarette smoking for at least 15 years brings the risk down.
- Passive smoking increases the risk to approximately **twice** than non-smokers.
- Cigarette smokers show various gradual histologic changes, including squamous **metaplasia** of the respiratory epithelium which may progress to **dysplasia, carcinoma in situ** and ultimately **invasive carcinoma**



Radiation

All types of radiation may be carcinogenic and increase the risk of developing lung cancer. **Tradium** and **uranium** workers are at risk

Asbestos

Increases incidence, especially in combination with cigarette smoking.

Industrial exposure

Exposure to nickel and chromates, coal, mustard gas, arsenic, iron etc.

Air pollution

May play some role in increased incidence. Indoor air pollution especially by **radon**.

Scarring

Sometimes old infarcts, wounds, scar, granulomatous infections are associated with **adenocarcinoma**.

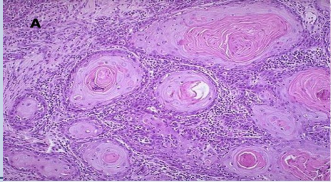
bronchogenic carcinoma

1- Non-small cell carcinoma (NSCC)

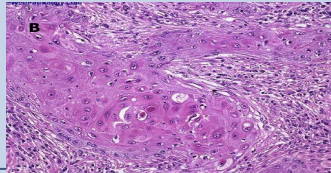
Squamous Cell Carcinoma:

- Presents with a hilar mass
- Obstructive lesion of the bronchus leading to unresolving/recurrent pneumonia
- Could present with anthracotic lymph nodes→ excessive smoking and city residing
- Different grades of differentiation
- The tumor produces keratin to emulate the function of squamous cells
- Paraneoplastic syndrome (symptoms caused by the tumor but unrelated to it)→Hypercalcemia + Cachexia (tumor secretes proteins similar to PTH)
- Can present with metastasis (Carcinoma→Lymph node, Sarcoma→Blood vessels)
- Clubbing (due to COPD→smoker)

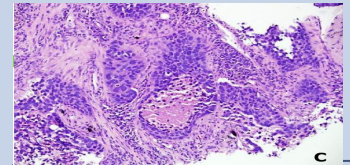
A. Squamous cell carcinoma



Well-differentiated



Moderately differentiated



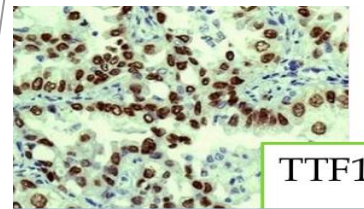
Poorly differentiated

Degrees of squamous differentiation in squamous cell carcinoma

B. Adenocarcinoma

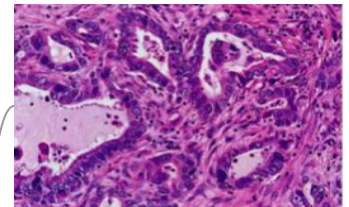
Adenocarcinoma

<p>Epidemiology</p>	<ul style="list-style-type: none"> • Most frequent histologic subtype of bronchogenic carcinoma; more common in women, & patients under the age of 40. • They do not have a clear link to smoking history • They are classically peripheral tumors arising from the peripheral airways and alveoli • Peripheral adenocarcinomas are sometimes associated with pulmonary scars (from a previous pulmonary inflammation/infection) and therefore is also referred to as scar carcinoma.
<p>Etiology</p>	<ul style="list-style-type: none"> • 20% of adenocarcinoma of the lung are associated with mutation of epidermal growth factor receptor (EGFR) and respond to its anti therapy (TK inhibitors used against it) Others: anti-ALK , anti-CD20 (B cell marker→rituximab)
<p>Morphology</p>	<ul style="list-style-type: none"> • The hallmark of adenocarcinomas is the tendency to form glands that may or may not produce mucin. • More mucous→well differentiated (grade I), less mucous→poorly differentiated (grade III)
<p>Clinical features</p>	<ul style="list-style-type: none"> • Associated with hypertrophic pulmonary osteoarthropathy "Clubbing of the fingers" • Rarely cavitate



TTF1

Thyroid Transcription Factor 1 "TTF-1"
(Special stain for adenocarcinoma)

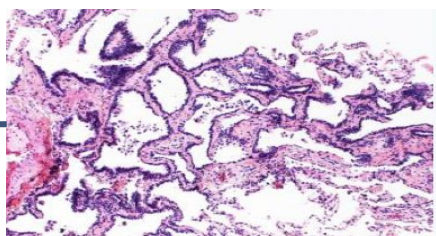


B. Adenocarcinoma cont'

Adenocarcinoma Precursor Lesions

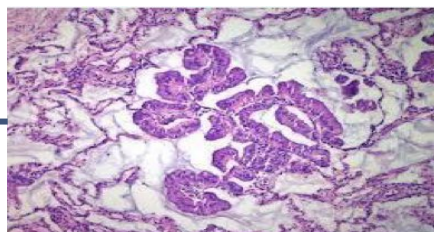
1. Atypical adenomatous hyperplasia; AAH

- Small lesion (≤ 5 mm)
- Characterized by dysplastic pneumocytes lining alveolar walls that are mildly fibrotic.



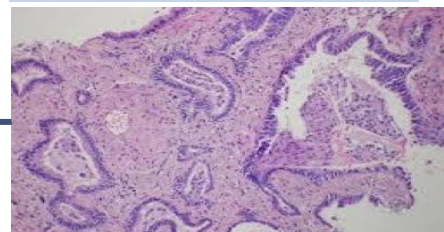
2. Adenocarcinoma in situ; AIS (used to be called Bronchioloalveolar carcinoma)

- Lesion 3 cm or less
- Composed **entirely of dysplastic cells** growing along preexisting alveolar septa **without rupturing it** (Atypical glandular cells line the alveoli (along the basement membrane \rightarrow hyperplasia))
- Lepidic growth pattern But once invasive (>3 cm) it forms desmoplasia (fibrosis)
- No feature of necrosis or invasion



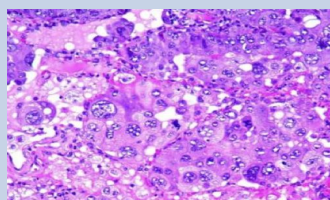
3. Minimally invasive adenocarcinoma of lung (MIA)

- Lesion ≤ 3 cm
- Describes small solitary adenocarcinomas with either pure lepidic growth or predominant lepidic growth with ≤ 5 mm of stromal invasion



C. Large cell carcinoma

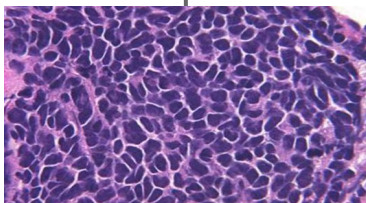
- Frequency: 10 %
- strongly associated with **smoking**
- **Undifferentiated** malignant epithelial tumors.
- They made up of **large and anaplastic cells**
- They may exhibit **neuroendocrine or glandular differentiation markers** when studied by immunohistochemistry or electron microscopy.
- **Poor prognosis**



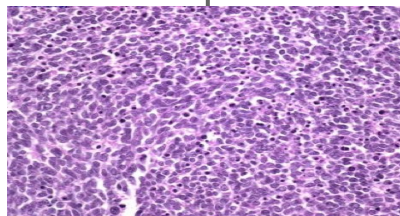
2- Small cell carcinomas

<p>Epidemiology</p>	<ul style="list-style-type: none"> • Also known as: oat cell carcinoma • Type of poorly differentiated neuroendocrine tumors arising from neuroendocrine cells • common in men • Strongly associated with cigarette smoking 95% of patients are smokers. • Centrally located perihilar mass with early metastases (Early involvement of the hilar and mediastinal nodes) • Ability to secrete a host of polypeptide hormones like ACTH (does the same effect as ACTH), antidiuretic hormone (ADH), calcitonin, gastrin-releasing peptide and chromogranin. • ACTH: Adrenocorticotrophic hormone (usually from the pituitary) → stimulates adrenal cortex to release cortisone. (Moonface/Hirsutism/Obesity → caused by cortisone released from the adrenal cortex). • Inappropriate secretion of ADH → hyponatremia.
<p>Treatment</p>	<ul style="list-style-type: none"> • Chemotherapy responsive • Least likely form to be cured by surgery; usually already metastatic at diagnosis
<p>Prognosis</p>	<ul style="list-style-type: none"> • Highly malignant and aggressive tumor, poor prognosis, rarely resectable.

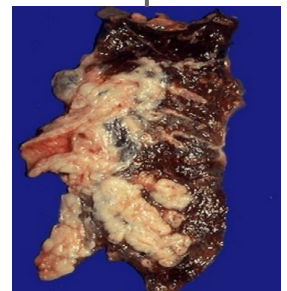
Morphology



Electron microscopy: dense-core **neurosecretory granules**



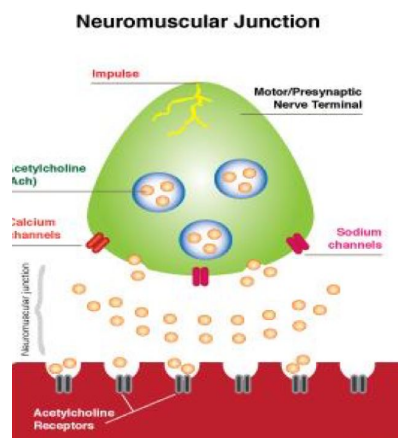
Microscopically composed of small, dark, round to oval, **lymphocyte-like cells** with little cytoplasm



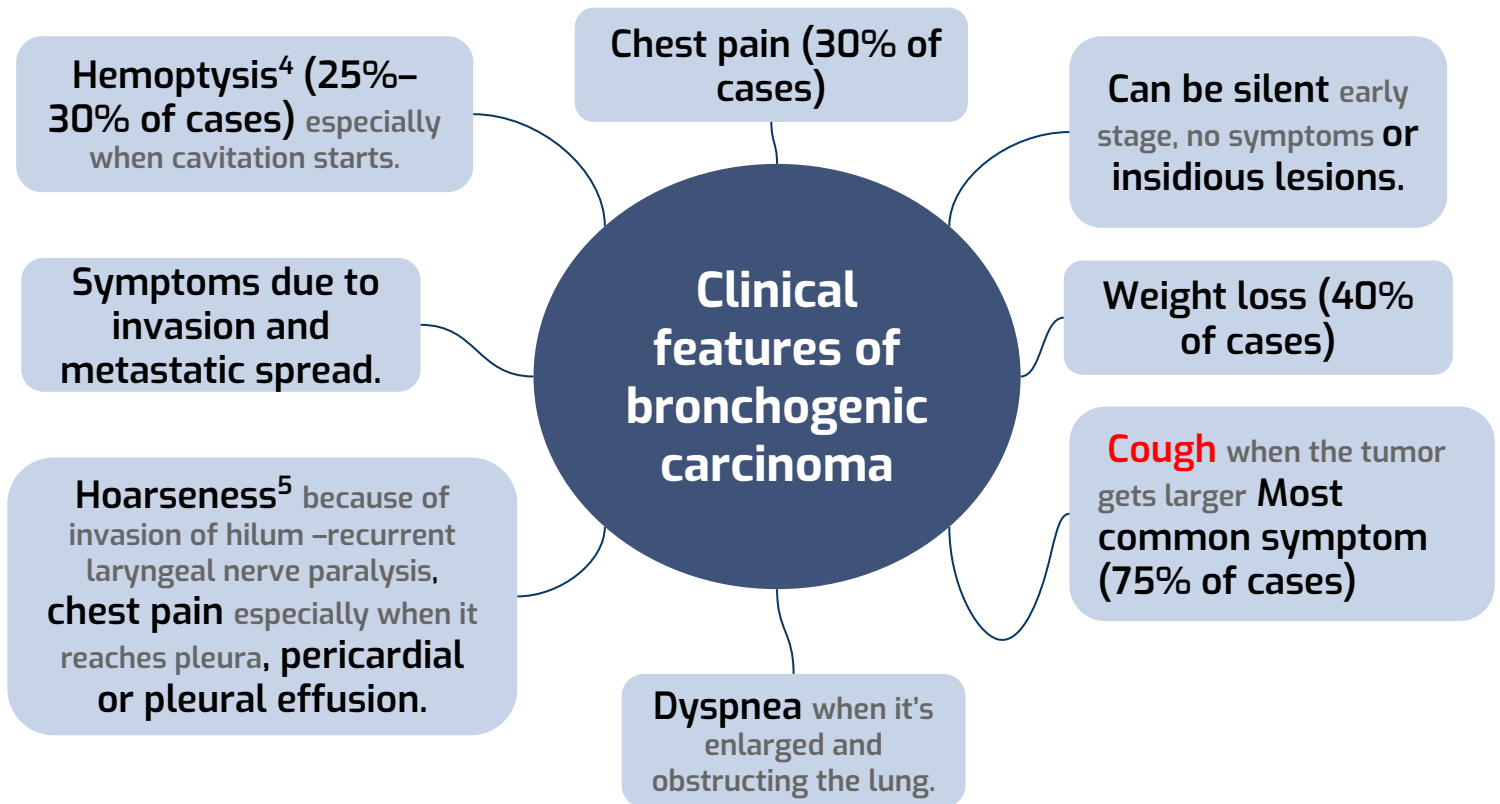
Eaton-Lambert syndrome

Autoimmune disease

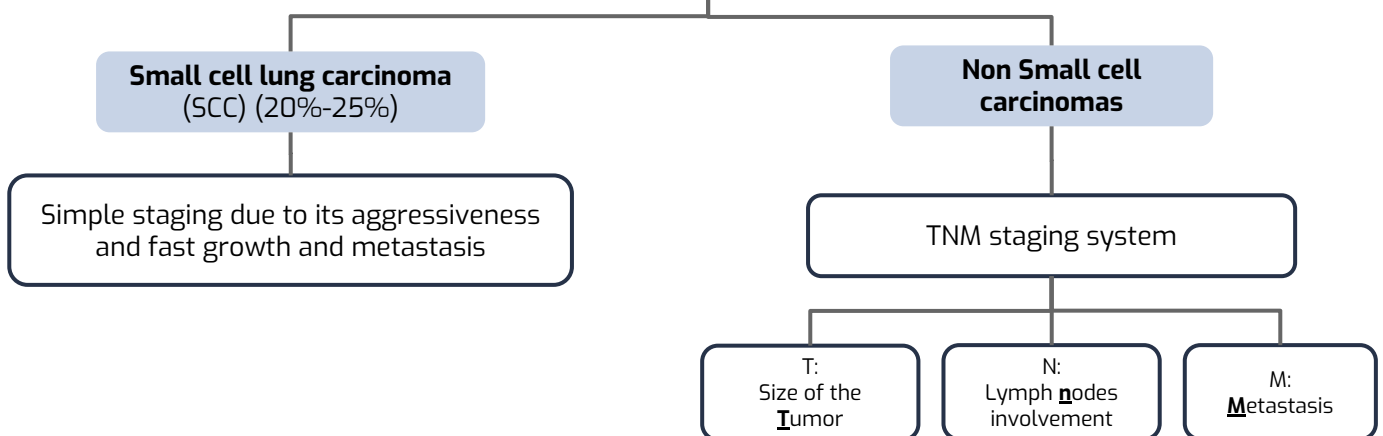
The **immune system attacks the connection between nerve and muscle** (the neuromuscular junction) and interferes with the ability of nerve cells to send signals to muscle cells leading to **muscle weakness**



Clinical features of bronchogenic carcinoma



Staging of Bronchogenic Carcinoma



4: Haemoptysis: the coughing up of blood.

5: Hoarseness Of the voice : abnormal voice changes.

Clinical features of bronchogenic carcinoma (CONT.)

May also be manifest by the following:

Superior vena cava syndrome: invasion leads to **obstruction of venous drainage** which leads to dilation of veins in the upper part of the chest and neck resulting in swelling and cyanosis of the face, neck, and arms.

Pancoast tumor (superior sulcus tumor): **Apical** (upper lobe) Bronchogenic carcinoma (could be either squamous or adenocarcinoma) neoplasms may invade the **brachial sympathetic plexus** to cause severe pain, numbness and weakness in the distribution of the **ulnar nerve**. Pancoast tumor is often accompanied by **destruction of the first and second ribs and thoracic vertebrae**. It often coexists with **Horner syndrome** (**ptosis + asymmetrical miosis + anhidrosis**)

Horner syndrome: invasion of the **cervical thoracic sympathetic nerves** and it leads to ipsilateral **enophthalmos** (displacement of the eyeball within the orbit –eyes goes inside-). **miosis, ptosis, and facial anhidrosis**. (Anhidrosis is the inability to sweat normally –leads to dryness in facial areas-).

The combination of these clinical findings is known as **Pancoast syndrome**.

Complications of bronchogenic carcinoma

Bronchiectasis

Obstructive pneumonia

Paraneoplastic syndrome

Pleural effusion, bloody

• Hoarseness from recurrent laryngeal nerve paralysis

Paraneoplastic syndrome

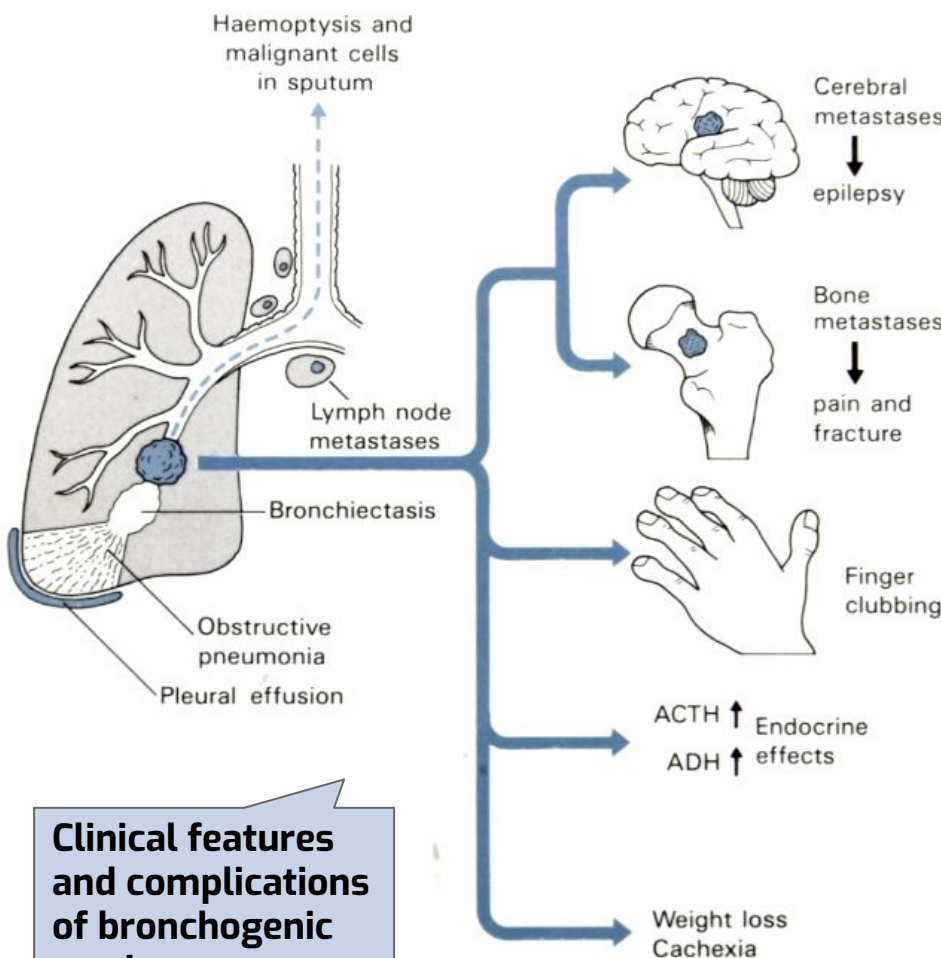
Paraneoplastic syndrome

- ❖ Are extrapulmonary, remote effects of the tumor.
- ❖ 3% to 10% of lung cancers develop paraneoplastic syndromes.

Squamous cell carcinomas may secrete **parathyroid hormone-like** peptide leading to hypercalcemia.

Adenocarcinomas can lead to **hematologic manifestations** (repeated coagulations, thrombosis in different parts of the body) and **digital clubbing** due to reactive periosteal changes

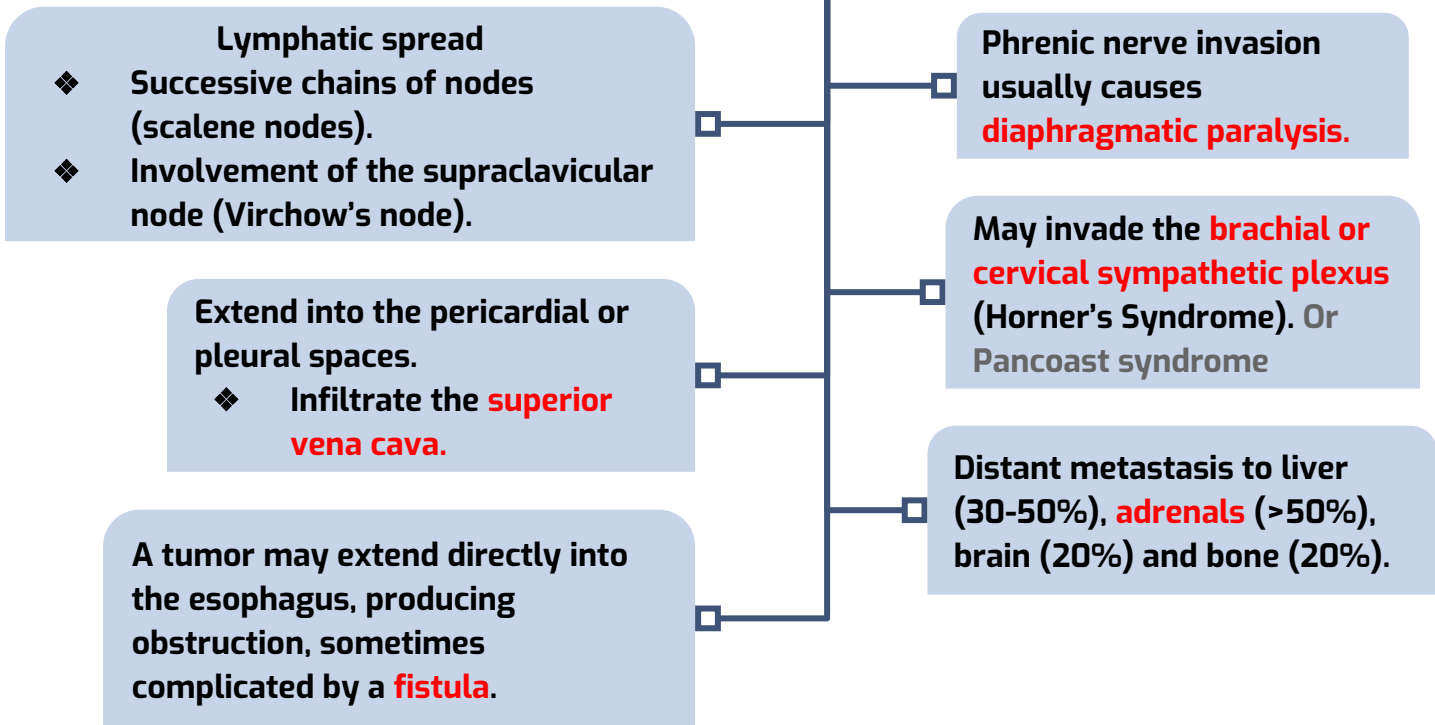
Small cell carcinomas **ACTH¹** (leading to Cushing's syndrome) **ADH²** (water retention and hyponatremia)



1: Adrenocorticotrophic hormone (increases the production & release of cortisol from adrenal glands causing Cushing syndrome).
2: Antidiuretic hormone.

Clinical features and complications of bronchogenic carcinoma

Spread of bronchogenic carcinoma



Important Question:

If we check the X-Ray and found a mass in the lung. And the abdominal scan shows bilateral adrenal gland enlargement. Then it is bronchogenic carcinoma with metastasis to adrenals.

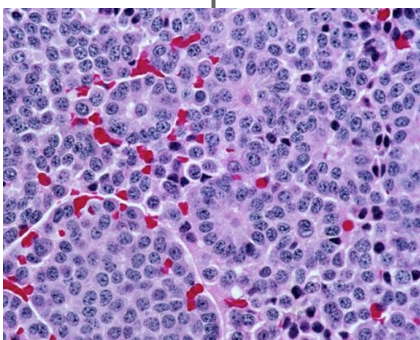
Prognosis
(poor in general, especially if there's metastasis)

- Histological types and the stage of lung cancer determine the outcome.
- Survival is better for early stage disease, **except for small cell carcinoma** (very early metastases)
- Non-small cell cancers fare better than small cell carcinoma
- Overall combined 5-year survival rate is ~15%

Carcinoid tumors

- Carcinoid tumors of the lung are **Very** well differentiated neuroendocrine neoplasms.
- These neoplasms account for 2% of all primary lung cancers.
- **(localized and can be excised)**
- It shows no sex predilection, and are not related to cigarette smoking or other environmental factors.
- Usually seen in **adults**
- Can be central or peripheral in location.
- Tumor cells produce serotonin and bradykinin leading to carcinoid syndrome
- Can occur in patients with **Multiple Endocrine Neoplasia (MEN-I)**
- Low grade malignancy, is a slow growing tumor Often resectable and curable
- Spreads by direct extension into adjacent tissue
- Can lead to carcinoid syndrome (due to vasoactive amines→palpitations, diarrhea, abdominal pain, heart changes)

Morphology of typical carcinoid tumors



Composed of uniform cuboidal cells that have regular round nuclei with few mitoses and little or no anaplasia.



Electron microscopy: dense-core neurosecretory granules.



Both **small cell carcinoma** (high grade) and **carcinoids**, (low grade) are **neuroendocrine tumors** as both arise from the neuroendocrine cells (from bronchial epithelium) normally present in the lung.

Mesothelioma

- **Malignant tumor** of mesothelial cells lining the **pleura**
- Highly malignant neoplasm
- Most patients (70%) have a history of **exposure to asbestos**
- Smoking is **not related to mesothelioma**
- The age of patients with mesothelioma is 60 years.
- Pleural mesotheliomas tend to spread locally within the chest cavity, invading and compressing major structures.
- **Metastases** can occur to the lung parenchyma and mediastinal lymph nodes, liver, bones, peritoneum etc.
- Treatment is largely **ineffective** and **prognosis is poor**
- Few patients survive longer than 18 months after diagnosis

Carcinoma metastases to the lung

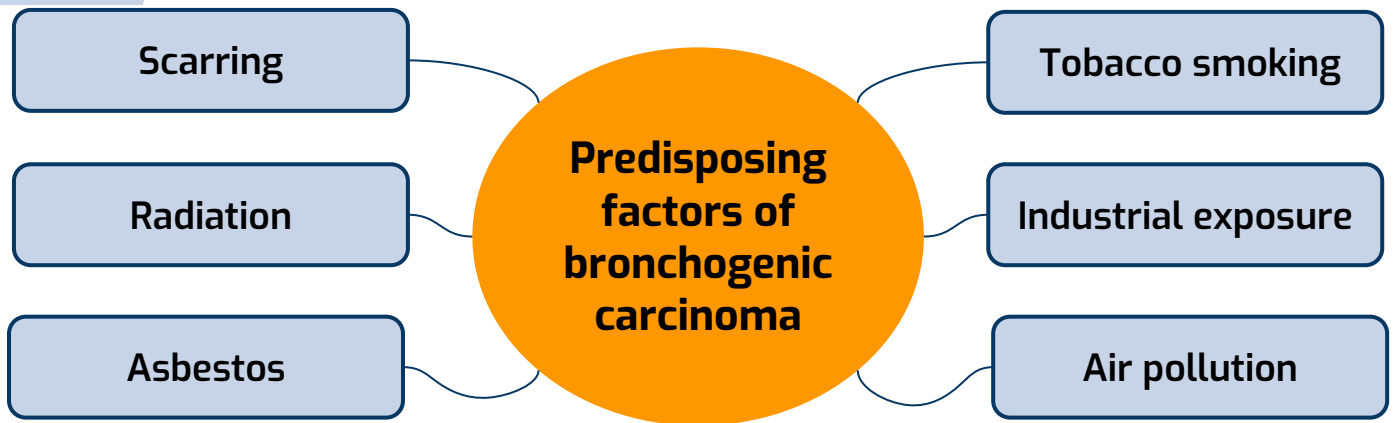
Pulmonary metastases are **more common** than Primary Lung Tumors

Metastatic tumors in the lung are typically multiple and circumscribed. When large nodules are seen in the lungs radiologically, they are called cannon-ball metastases

The common primary sites are:
the breast, stomach, pancreas, kidney and colon.

Type of infusion	Pathogenesis	Causes
Transudate Less than 30g protein/L	Increased hydrostatic P	Cardiac failure
	Decreased oncotic P	Vena caval obstruction Hypoalbuminemia
Exudate More than 30g protein /L	Infections	Bacterial (e.g. TB)
	Neoplasm	Metastatic carcinoma
	Pulmonary infarction	Thromboembolism disease
	Autoimmune disease	Rheumatoid disease Systemic lupus erythematosus
	Abdominal disease	Pancreatitis Subphrenic abscesses

Summary



Tumor	Characteristics
Small cell carcinoma	<ul style="list-style-type: none"> • Arise from small, <u>immature</u> neuroendocrine cells • Associated with smoking • Develops near main bronchus • Grow fast & rapidly metastasize • Paraneoplastic syndrome (ACTH, ADH)
Non-Small cell carcinoma	<ul style="list-style-type: none"> • Most lung cancers
Adenocarcinoma	<ul style="list-style-type: none"> • Form glandular structures • Generate mucins • Peripherally located • Not linked to smoking
Squamous cell carcinoma	<ul style="list-style-type: none"> • Square-shaped cells (cuboid) • Produce keratin • Centrally located • Associated with smoking • Paraneoplastic syndrome (parathyroid hormone)
Large cell carcinoma	<ul style="list-style-type: none"> • Lack glandular & squamous differentiation • Located throughout the lung
Carcinoid tumors	<ul style="list-style-type: none"> • Arise from <u>mature</u> neuroendocrine cells • Located throughout the lung • Can release serotonin, bradykinin
Mesothelioma	<ul style="list-style-type: none"> • Arise from mesothelial cells lining the pleura • Associated with asbestos exposure • Pulmonary metastases • Poor prognosis

Dr. AlRikabi's notes

Classifications of body tumors

Carcinoma → malignant tumor of epithelial origin

Teratoma → benign/malignant tumor where tissues arise from the 3 embryonic layers

Hamartoma → abnormal mass of tissue consisting of various indigenous tissue
Sarcoma → malignant tumor of mesenchymal (embryonic tissue) origin

Malignant Lung Tumors

- Malignant + metastatic (secondary) tumors are more common in the lung

- Metastasized (secondary) tumors have multiple nodules

Types: Non-small cell carcinoma (Squamous cell carcinoma, Adenocarcinoma, Large cell Carcinoma) and Small Cell Carcinoma

Benign Lung Tumors

- Rare

- Hamartoma

- Gross: Well-circumscribed, rounded solid lesion (coin) with yellowish pale cut surface

- Histo: Cartilage, blood vessels, glands, inflammatory cells, mesenchymal tissue, fat

Symptoms

General:

- Unexplained weight loss

- Unexplained anemia

- Unexplained fever (usually lymphoma)

- Unexplained fatigue

Lung-specific

- Unexplained cough

- Hemoptysis

- Chest pain

- Cyanosis (could be due to Superior Vena Cava syndrome)

- Cachexia (TNF- α and IL-1)

Bronchogenic Carcinoma

1- Squamous Cell Carcinoma:

- Presents with a hilar mass

- Obstructive lesion of the bronchus leading to unresolving/recurrent pneumonia

- Could present with anthracotic lymph nodes → excessive smoking and city residing

- Different grades of differentiation

- The tumor produces keratin to emulate the function of squamous cells

- Paraneoplastic syndrome (symptoms caused by the tumor but unrelated to it) → Hypercalcemia + Cachexia
(The tumor secretes proteins similar in structure and function to PTH)

- Can present with metastasis (Carcinoma → Lymph node, Sarcoma → Blood vessels)

- Clubbing (due to COPD → smoker)

2- Adenocarcinoma:

- Presents with a peripheral mass related to a scar

(Large cell carcinoma is also peripheral)

- Unrelated to smokers (+ more common in women)

- Arises from glands → secreting mucus

- More mucous → well differentiated (grade I),
less mucous → poorly differentiated (grade III)

Dr. AlRikabi's notes

2- Adenocarcinoma: (Cont.)

Bronchioloalveolar carcinoma (variant of adenocarcinoma):

- Atypical glandular cells line the alveoli (along the basement membrane)→hyperplasia
 - Now called Adenocarcinoma In-situ (Atypical malignant cells confined within basement membrane)
 - Severe dysplasia involving all epithelial layers without rupturing the membrane
 - Called Frank carcinoma once it ruptures the basement membrane
 - Lepidic pattern of growth. But once invasive (>3cm) it forms desmoplasia (fibrosis)
 - 25% of patients have a mutation in EGFR gene (TK inhibitors used against it→targeted)
- Others: anti-ALK , anti-CD20 (B cell marker→rituximab)

3- Pancoast tumor:

- Apical (upper lobe)
- Bronchogenic carcinoma (could be either squamous or adeno)
- Presents with Horner syndrome (ptosis + asymmetrical miosis + anhidrosis) Infiltrating the brachial plexus sympathetic ganglia/nodes (which control pupils)

4- Small Cell Carcinoma (Poorly differentiated neuroendocrine/Oat cell)

- Arises from the neuroendocrine cells in the walls of bronchi
 - Inappropriate hormone secretions (paraneoplastic syndrome secondary to ACTH secretion)
ACTH: Adrenocorticotrophic hormone (usually from the pituitary)→ stimulates adrenal cortex to release cortisone
ADH: Anti-Diuretic hormone
 - The tumor secretes a protein similar to the structure of ACTH→does the same effect
 - Moonface/Hirsutism/Obesity → caused by cortisone released from the adrenal cortex
- The 3 symptoms above are related to Cushing's syndrome, which is caused by excessive cortisol
- ADH secretions prevents micturition → hyponatremia
 - In smokers
 - Not treated with surgery (already metastasized)→chemotherapy used

5- Mesothelioma:

- Affects the pleura → caused by Asbestos

6- Carcinoid Tumor:

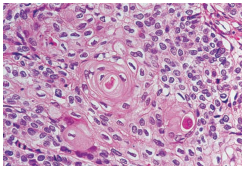
- Very well differentiated neuroendocrine tumor (localized and can be excised)→ Salt & Pepper
- Can lead to carcinoid syndrome (vasoactive amines→palpitations, diarrhea, abdominal pain, heart changes)

Quiz

A) A 56-year-old man with a history of cigarette smoking presents with difficulty swallowing and a muffled voice. Laryngoscopy reveals a 2-cm laryngeal mass. If this mass is a malignant neoplasm, which of the following is the most likely histologic diagnosis?

- 1) Adenocarcinoma
- 2) Leiomyosarcoma
- 3) Small cell carcinoma.
- 4) Squamous cell carcinoma
- 5) Transitional cell carcinoma

C) A 68-year-old man complains of shortness of breath, hoarseness, productive cough, and bloody sputum of 2 weeks in duration. He admits to smoking two packs a day for 45 years and drinks occasionally. Recently, he has experienced a significant loss of appetite and weight loss. Physical examination shows pallor, cachexia, clubbing of the fingers, and barrel-shaped chest. A chest X-ray reveals a mass at the right lung apex. Histologic examination of a transbronchial biopsy is shown in the image. What is the appropriate histologic diagnosis?



- 1) Adenocarcinoma
- 2) Mesothelioma
- 3) Metastatic adenocarcinoma
- 4) Small cell carcinoma
- 5) Squamous cell carcinoma

E) A 53-year-old woman with a history of cigarette smoking presents with a 3-month history of chest pain, cough, and mild fever. A chest X-ray reveals a peripheral mass in the left upper lobe. The surgical specimen is shown in the image. What is the most likely diagnosis?

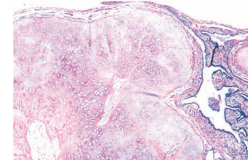


- 1) Adenocarcinoma
- 2) Large cell carcinoma
- 3) Mesothelioma
- 4) Small cell carcinoma
- 5) Squamous cell carcinoma

G) A 48-year-old woman with a long-standing history of ulcerative colitis presents with anemia and shortness of breath. Laboratory studies show increased serum levels of carcinoembryonic antigen. A chest X-ray reveals multiple, round masses in both lungs. Histologic examination of an open-lung biopsy discloses nodules that are composed of gland-like structures. What is the most likely diagnosis?

- 1) Adenocarcinoma
- 2) Bronchioloalveolar carcinoma
- 3) Eosinophilic granuloma
- 4) Metastatic carcinoma
- 5) Large cell undifferentiated carcinoma

B) A 56-year-old man undergoes a routine chest radiograph as part of a comprehensive physical examination. The X-ray film of the chest shows a solitary, centrally located coin lesion, with a "popcorn" pattern of calcification. A lung biopsy is performed and reveals nodules of benign mature cartilage and respiratory epithelium (shown in the image). What is the most likely diagnosis?



- 1) Carcinoid tumor
- 2) Extralobar sequestration
- 3) Leiomyoma
- 4) Pulmonary fibroma
- 5) Pulmonary hamartoma

D) A 64-year-old man who has worked in a manufacturing plant all his life complains of an 8-month history of chest discomfort, malaise, fever, night sweats, and weight loss. A chest X-ray reveals a pleural effusion and pleural mass encasing the lung. The patient subsequently dies of cardiorespiratory failure. Histologic examination of the pleural mass at autopsy shows a biphasic pattern of epithelial and sarcomatous elements. What is the most likely diagnosis?

- 1) Carcinoid tumor
- 2) Large cell carcinoma
- 3) Malignant melanoma
- 4) Malignant mesothelioma
- 5) Metastatic carcinoma

F) A 52-year-old woman presents with a 1-year history of upper truncal obesity and moderate depression. Physical examination shows hirsutism and moon faces. Endocrinologic studies reveal hypokalemia, high plasma corticotropin levels, and increased concentrations of serum and urine cortisol. CT scan of the thorax demonstrates a hilar mass. Electron microscopy discloses neuroendocrine granules within the cytoplasm of some tumor cells. What is the appropriate diagnosis?

- 1) Adenocarcinoma
- 2) Small cell carcinoma
- 3) Carcinoid tumor
- 4) Metastatic carcinoma
- 5) Pulmonary abscess

Answer Explanation
File

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Thank you

