

- A 65 year old man is admitted because of headache and blurry vision for the past few days. In the emergency room the physicians also notice that he has neck vein distension and darker coloration over his face and neck. He is confused. The chest X ray reveals a right upper lobe lung mass, and the blood tests indicate significant hypercalcemia.

- What is the diagnosis?

LUNG CARCINOMA

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Bronchial carcinoma

- Most common fatal lung malignancy. Accounts for 95% of lung cancer.
- Leading cause of cancer death.
- Peak incidence occur between ages 55-65 years .
- There is a 3:1 male : female ratio.
- **Aetiology :**
 - **smoking** is the most common aetiological factor.
 - others: passive smokers , exposure to asbestos, chromium , iron oxide and products of cool combustion

Types:

There are 4 major types :

1- Epidermoid [squamous] -35%

2- Adeno carcinoma -30%

3- Large cell carcinoma -15%

4- small cell lung cancer -20%

Epidermoid/squamous carcinoma - 35% :

- Occurs most frequently in men and old people.
- Usually starts on one breathing tubes.
- Tend to be localized in the chest longer than other types of lung cancer.
- Does not tend to metastasize early.
- It is strongly associated with smoking.

Adenocarcinoma-30%:

- Most common cancer among women.
- Usually started near the outer edges of the lung.
- Invasion of pleura and mediastinal lymph node is common.
- May spread to other parts of the body.
- Can be seen in non smokers.

Large cell carcinoma – 15% :

- Less well – differentiated.
- May occur at any part of the lung.
- Tumors are large by the time they are diagnosed.
- Has greater possibility of spreading to brain and mediastinum.

Small cell lung cancer:

- Also called “oat cell carcinoma” because SCLC cells have oat grain appearance.
- It arises from endocrine cells [kulchitisky cells] where many hormones are secreted.
- Spread to lymph nodes and other organs more quickly than NSCLC .

Small cell lung cancer

- Usually starts in one larger breathing tube.
- Tend to grow rapidly .
- Commonly has spread by the time it's diagnosed and is considered a **systemic disease**.
- It is the **only** one of the bronchial carcinomas that respond to chemotherapy.

Presentations:

- Lung cancer may present in number of different ways.
- Most commonly symptoms reflect local involvement of the bronchus.
- May also arise from spread to the chest wall or mediastinum or from distant blood-borne spread.

Local effects of tumor within the bronchus

:

1- Cough (in 80% of cases) :

- Most common early symptoms.
 - sputum is purulent if there is secondary infection.
- A change in the character of the (regular cough) associated with other new respiratory symptoms increase the possibility of bronchial carcinoma.

2- Haemoptysis (in 70% of cases) :

- Repeated episodes of scanty cough hemoptysis or blood –streaking of sputum in smokers are highly suggestive of Bronchial carcinoma and should always be investigated .

3- Dyspnea (60% of cases):

Reflects occlusion of a large bronchus resulting in collapse of a lobe of the lung or development of pleural effusion.

4- Pleural pain :

Reflects malignant invasion of the pleura or reflect infection distal to a tumor (which is recurrent and fail to resolve).

Direct spread:

- Involvement of **pleura** and **ribs** .
- **Pancoast tumor:**
 - involvement of lower part of the brachial plexus (C8 , T1,T2) causing **severe pain of the shoulder and down inner surface of the arm.**
- **Horner syndrome:** due to involvement of the sympathetic ganglion.

- **Recurrent laryngeal nerve palsy :**
causing unilateral vocal cord paresis with **hoarsness of voice and a bovine cough.**
- Invasion of phrenic nerve , causing **paralysis of the diaphragm.**

- . Involvement of esophagus , causing **dysphagia**.
- . **Cardiovascular:**atrial fibrillation, tamponade ,pericarditis ,pericardial effusion .

- **Superior vena cava obstruction** causing early morning headache, facial congestion and edema involving the upper limb, distention of jugular vein and veins of the chest.

Non-metastatic extra pulmonary manifestations:

12% of tumors ,in particular small cell tumors present with SIADH, ACTH secretion(SCLC), hypercalcemia(sq.cell carcinoma) ,bone metastasis, gynaecomastia(LCLC) .

e.g: sensory polyneuropathy
,myelopathy, cerebellar
degeneration.

Digital clubbing , hypertrophic pulmonary osteoarthropathy (sq.cell cancer) , nephrotic syndrome, DIC, hypercoagulopathy (adenocarcinoma), ,thrombophelbitis migricans.

Blood borne metastasis:

- .Bony metastasis giving severe bony pain and pathological fractures.
- .liver metastasis (Jundice)
- .Brain metastasis (change in personality, epilepsy,focal neurological symptoms).

Physical signs:

Examination is usually normal unless there is significant bronchial obstruction or tumor has spread to pleura or mediastinum.

- 1- physical signs of collapse (in large obstructing tumor) which may rise to pneumonia.
- 2- monophonic or unilateral wheeze (fixed bronchial obstruction).
- 3- stridor (obstruction at or above the level of main carina).

4- hoarseness of voice associated with bovine cough (recurrent laryngeal nerve palsy).

5- dullness percussion and absent breath sounds at the lung base (unilateral diaphragmatic palsy due to involvement of phrenic nerve)

- 6- physical signs of pleurisy or pleural effusion (involvement of pleura).
- 7- bilateral engorgement of the jugular vein and later edema affecting face, neck, arms.
- 8- tenderness and pain of long bone and joints .

INVESTIGATIONS

- **Sputum cytology:** high yield for endobronchial tumors such as squamous cell and small cell carcinoma.

. chest x-ray:

common radiological presentation of bronchial carcinoma.

1- unilateral hilar-enlargement.

2- peripheral pulmonary opacity.

3- lung, lobe or segmental collapse.

4- pleural effusion .

5- broadening of the mediastinum,
enlarged cardiac shadow, elevation
of hemidiaphragm.

6- rib destruction.

- . **Pleural fluid cytology** in pleural effusion .
- . **Bronchoscopy** : gives high yield in excess of 90% (allows biopsy and bronchial brush samples) ; if fail precautions fine needle aspiration under CT.

.CT thorax and upper abdomen.

.Head CT scan.

.Radio nuclide bone scanning.

.liver US.

.bone marrow biobsy.

Treatment:


- 1- **Surgery** : in patient with localized disease and non-small cell cancer.
- 2- **Solitary pulmonary nodule , resection if :**
 - 1- age \geq 35.
 - 2- large (>2 cm) lesion.
 - 3-lack of calcification.
 - 4-chest symptoms.
 - 5- growth of lesion compared to old CXR.

3- for unresectable non-small cell cancer,
metastatic disease, or refusal of surgery:
radio therapy +chemo therapy
may reduce death risk by 13% at 2
years.

- 4- small cell lung cancer : combination **chemotherapy** is standard mode of therapy with long-term survival.
- 5- **laser obliteration** of tumor through bronchoscopy in presence of bronchial obstruction.

- 6- Radio therapy for brain metastasis, spinal cord compression, symptomatic mass, bone lesion.
- 7- Encourage cessation of smoking.

Rare Types of Lung Tumor

 19.74 Rare types of lung tumour				
Tumour	Status	Histology	Typical presentation	Prognosis
Adenosquamous carcinoma	Malignant	Tumours with areas of unequivocal squamous and adeno-differentiation	Peripheral or central lung mass	Stage-dependent
Neuro-endocrine (carcinoid) tumour (p. 784)	Low-grade malignant	Neuroendocrine differentiation	Bronchial obstruction, cough	95% 5-yr survival with resection
Bronchial gland adenoma	Benign	Salivary gland differentiation	Tracheobronchial irritation/obstruction	Local resection curative
Bronchial gland carcinoma	Low-grade malignant	Salivary gland differentiation	Tracheobronchial irritation/obstruction	Local recurrence occurs
Hamartoma	Benign	Mesenchymal cells, cartilage	Peripheral lung nodule	Local resection curative
Bronchoalveolar carcinoma	Malignant	Tumour cells line alveolar spaces	Alveolar shadowing, productive cough	Variable, worse if multifocal

Secondary Tumors of the Lung

- Blood-borne metastatic deposits in the lungs may be derived from many primary tumours, in particular those of the breast, kidney, uterus, ovary, testes and thyroid.
- The secondary deposits are usually multiple and bilateral.

- Often there are no respiratory symptoms and the diagnosis is made on radiological examination.
- Breathlessness may occur if a considerable amount of lung tissue has been replaced by metastatic tumour.

- Endobronchial deposits are uncommon but can cause haemoptysis and lobar collapse.

- Lymphatic infiltration may develop in patients with carcinoma of the breast, stomach, bowel, pancreas or bronchus.
- ‘Lymphangitic carcinomatosis’ causes severe and rapidly progressive breathlessness associated with marked hypoxaemia

- The chest X-ray shows diffuse pulmonary shadowing radiating from the hilar regions, often associated with septal lines, and CT demonstrates characteristic polygonal thickened interlobular septa.
- Palliation of breathlessness with opiates may help.

Questions

- What are the 4 major type of Bronchogenic CA?

- What are the clinical features of Bronchogenic CA?

- What are the clinical features with which Bronchogenic CA can present?

- What are the treatment options in Bronchogenic CA?

THANKYOU!