Bronchial carcinoma

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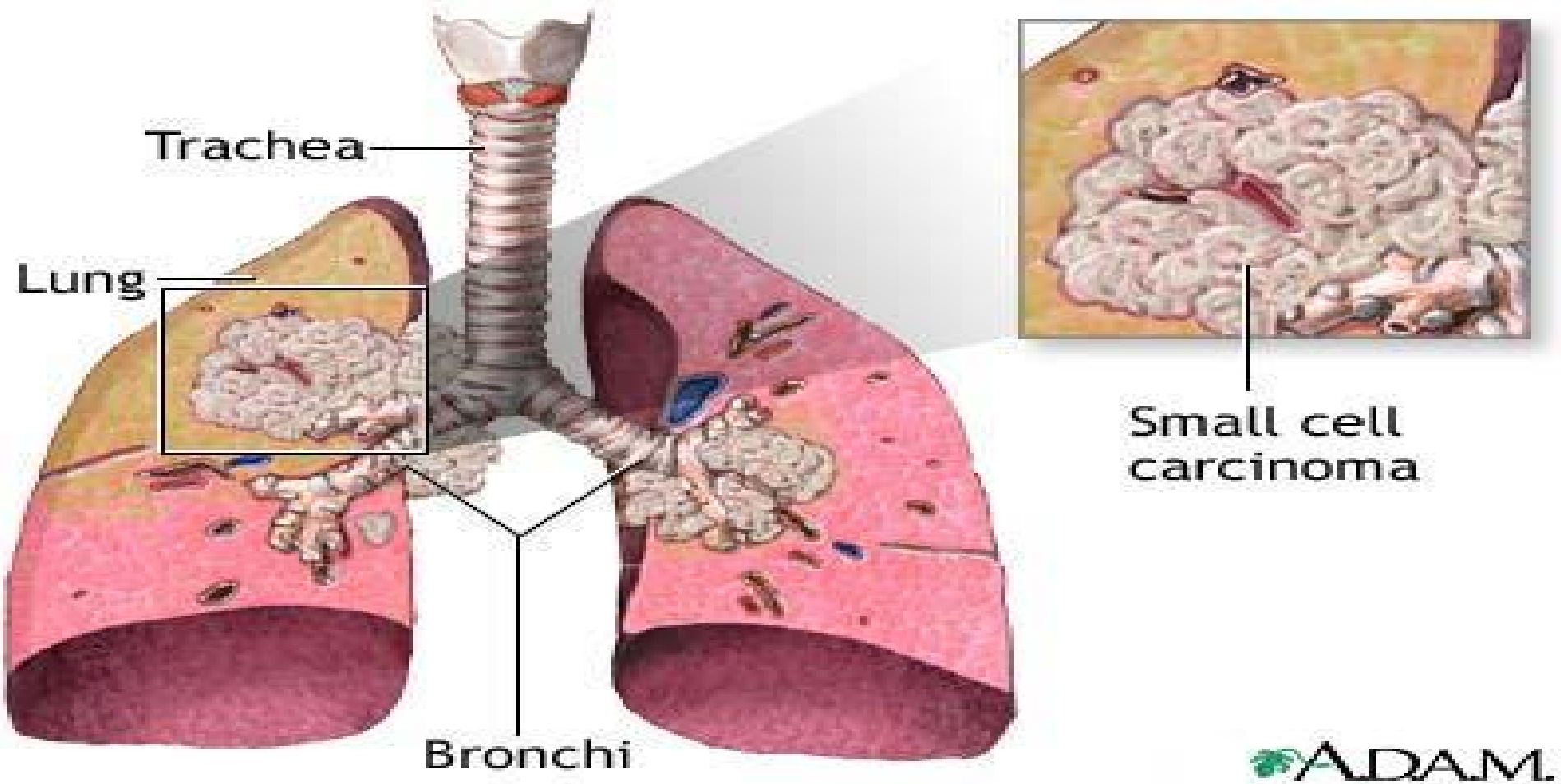
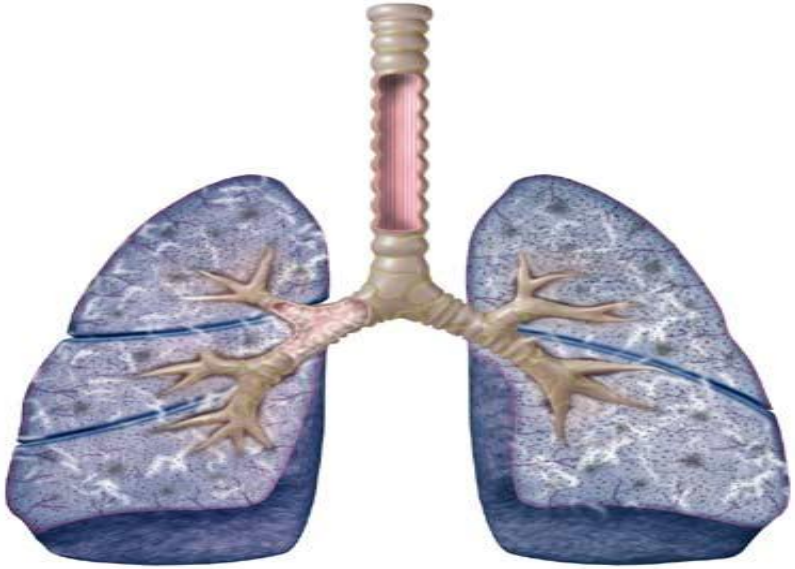


- ()The incidence of bronchial carcinoma increased dramatically during the 20th century.
- () It accounts for more than 50 % of all male deaths from malignant disease.

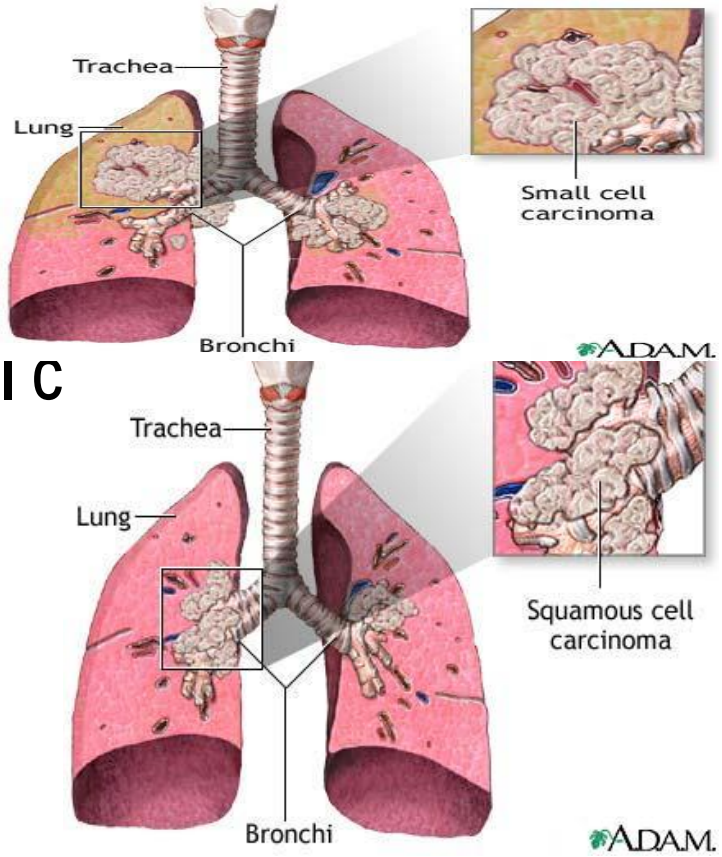
Risk factors

- 1-Smoking: the primary risk factor for the development of lung cancer is cigarette smoking (90%).
- 2-Radiation therapy.
- 3-Environmental toxins: These include exposure to second-hand smoke, asbestos, radon, metals (arsenic, chromium, and nickel), ionizing radiation, and polycyclic aromatic hydrocarbons.



- 4-pulmonary fibrosis.
- 5-HIV infection.
- 6-genetic factors.
- 7-Dietary factors: Epidemiologic evidence has suggested that various dietary factors (antioxidants) may reduce the risk of lung cancer while an increase in lung cancer among smokers with dietary supplementation of beta carotene.

Pathology



The common cell types of bronchial c

*squamous: 35%. •

*adenocarcinoma: 30%. •

*small-cell: 20%. •

*large-cell: 15%. •

Note: •

1- Small cell carcinoma may cause widespread • metastatic deposits early in disease.

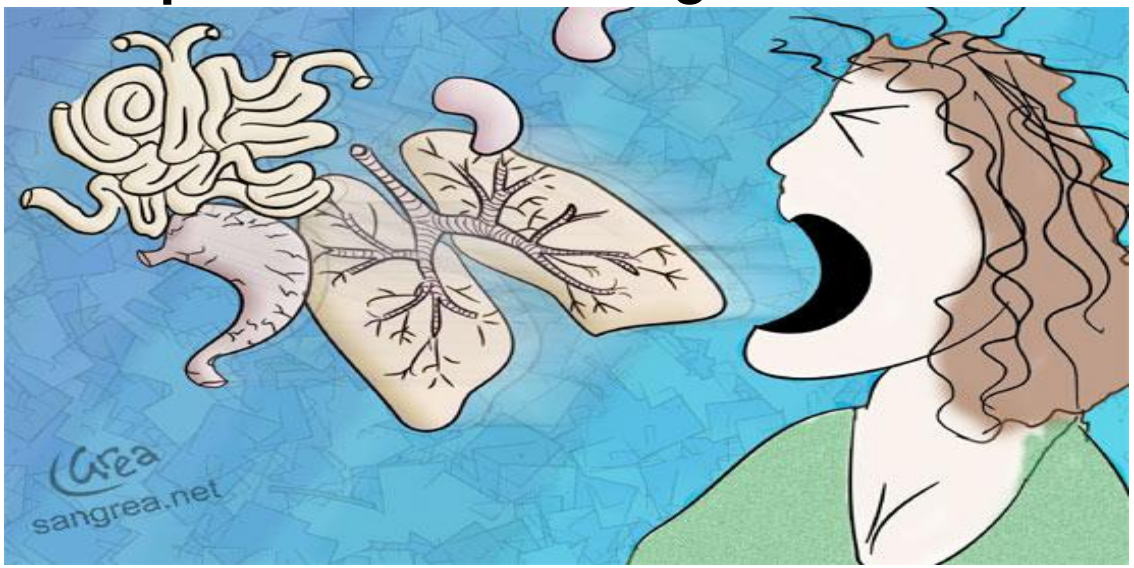
2- Squamous cell tumor is usually presented • peripherally producing a lesion may undergo central necrosis & cavitations which similar to lung abscess.

3- Recently bronchial ca divided into small cell ca • (SCLC) & non-small cell ca (NSCLC).

Clinical features

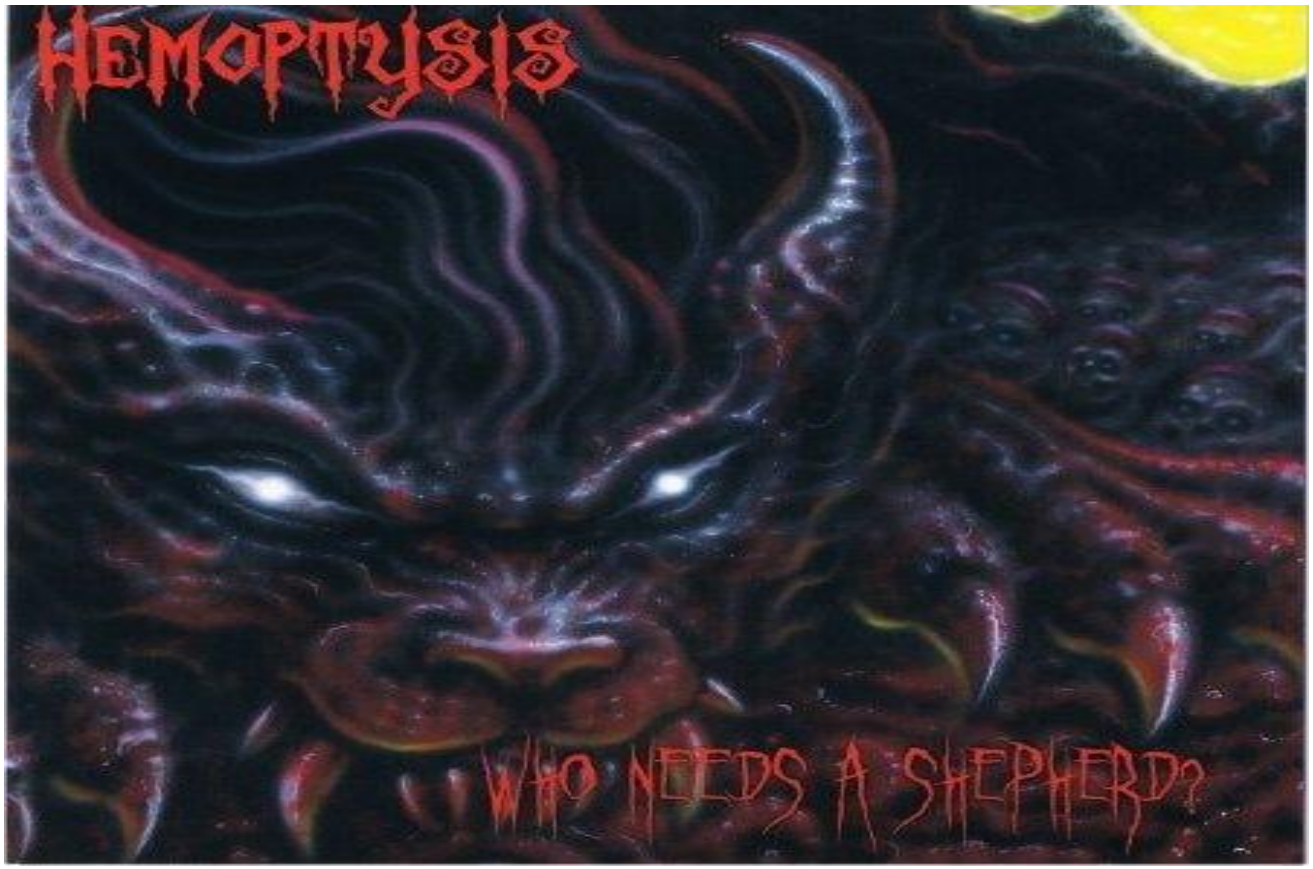
1- Intrathoracic effects of the cancer:.

- *Cough: is the most common early symptom. And occurs most frequently in patients with squamous cell and small cell carcinomas. The new onset of cough in a smoker or former smoker should raise suspicion that lung cancer is present.



* Hemoptysis: is a common symptom, especially in tumors arising in large bronchi.

- Occasionally, central tumors invade large vessels, causing massive hemoptysis which may be fatal.



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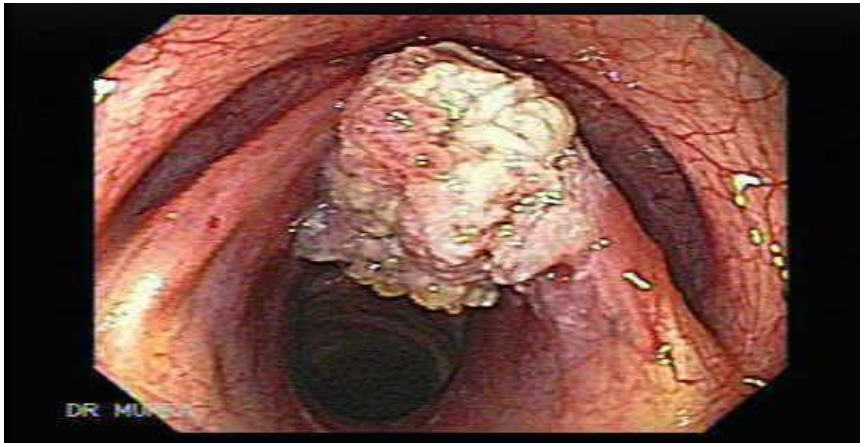
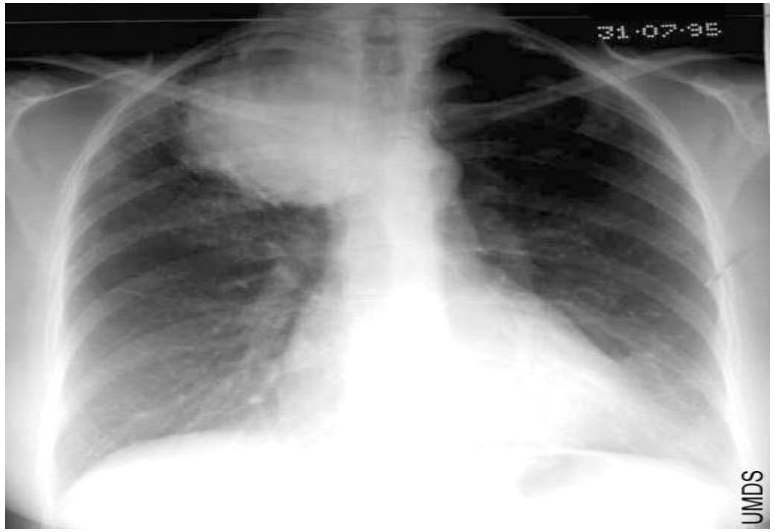
- *Chest pain: It can be quite variable in character and is more common in younger compared to older patients.
- Dull, aching, persistent pain may occur from mediastinal, pleural, or chest wall extension.
- * Dyspnea: Shortness of breath is a common symptom in patients with lung cancer at the time of diagnosis
- Dyspnea may be due to extrinsic or intraluminal airway obstruction, obstructive pneumonitis or atelectasis, pneumothorax, pleural effusion, or pericardial effusion with tamponade.



*stridor may occur where spread of the tumor to the subcarinal & paratracheal glands causes compression of the main bronchi or lower end of trachea.

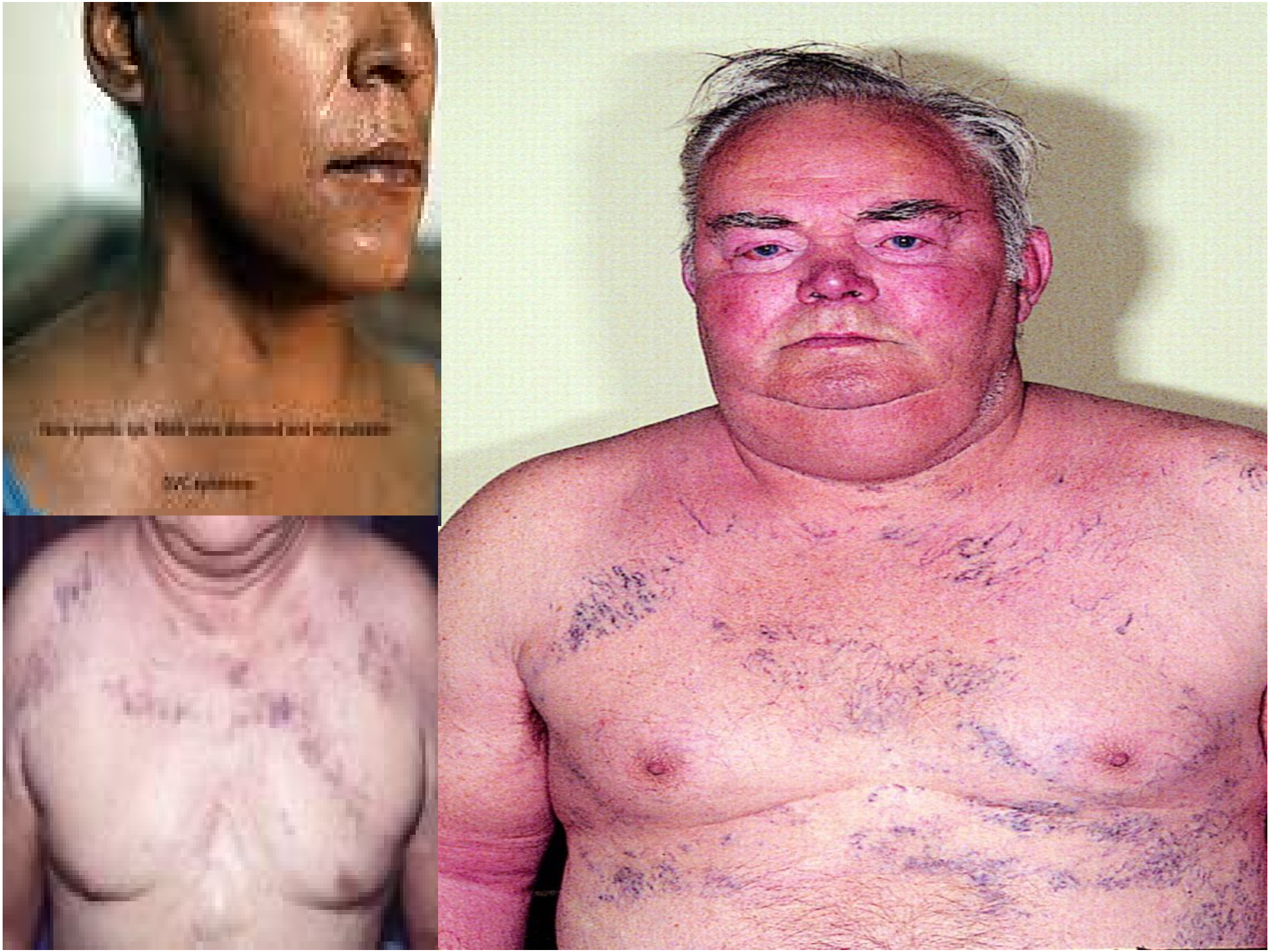
- *Hoarseness: In patients with lung cancer, this is due to malignancy involving the recurrent laryngeal nerve (called bovine cough).
- *pleural effusion usually hemorrhagic.



*superior sulcus tumor:

- bronchial ca may arise in the apex of lung, may cause Horner's syndrome (ipsilateral partial ptosis, enophthamos, a small pupil & hypohidrosis of the face) due to involvement of the sympathetic chain at or above the stellate ganglion, &/or Pancoast's syndrome (pain in the shoulder & inner aspect of the arm) caused by involvement of the lower part of the brachial plexus.
- Mostly associated with NSCLC.

- *dysphagia: may be due to mediastinal metastasis.
- *Obstruction of the superior vena cava (SVC) causes symptoms that commonly include a sensation of fullness in the head and dyspnea, Cough, pain, and dysphagia are less frequent.
- Physical findings include dilated neck veins, a prominent venous pattern on the chest, facial edema, and a plethoric appearance. The chest radiograph typically shows widening of the mediastinum or a right hilar mass. CT can often identify the cause, level of obstruction, and extent of collateral venous drainage.
- The SVC syndrome is more common in patients with SCLC than NSCLC.
- *phrenic nerve paralysis causes unilateral diaphragmatic palsy & dullness to percussion & absent breath sounds at a lung base.

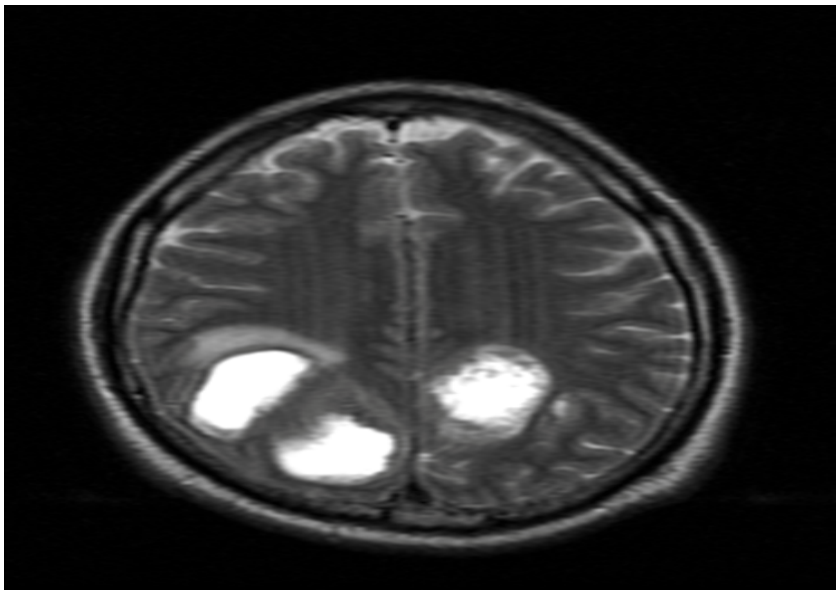


2-Extrathoracic metastases:

- Lung cancer can spread to any part of the body tissue. Metastatic spread may result in the presenting symptoms or may occur later in the course of disease.
- The most frequent sites of distant metastasis are the liver, adrenal glands, bones, and brain.
- Liver — Symptomatic hepatic metastases are uncommon early in the course of disease.
- Asymptomatic liver metastases may be detected at presentation by liver enzyme abnormalities, CT, or PET.
- The incidence of liver metastases is much higher later in the course of the disease.

- Bone — Metastasis from lung cancer to bone is frequently symptomatic. Pain in the back, chest, or extremity, and elevated levels of serum alkaline phosphates are usually present in patients who have bone metastasis.
- An osteolytic radiographic appearance is more frequent than an osteoblastic one, and the most common sites of involvement are the vertebral bodies.
- Bone metastases are even more frequent in SCLC.

- Adrenal — the adrenal glands are a frequent site of metastasis but such metastases are rarely symptomatic.
- Brain — Neurological manifestations of lung cancer include metastases and paraneoplastic syndromes.
- Symptoms include headache, vomiting, visual field loss, hemiparesis, cranial nerve deficit, and seizures.
- In patients with NSCLC, the frequency of brain metastasis is greatest with adenocarcinoma and least with squamous cell carcinoma.



3- Non-metastatic extrapulmonary features: •

A- endocrine: •

*inappropriate antidihretic hormone (ADH) secretion causing hyponatremia.

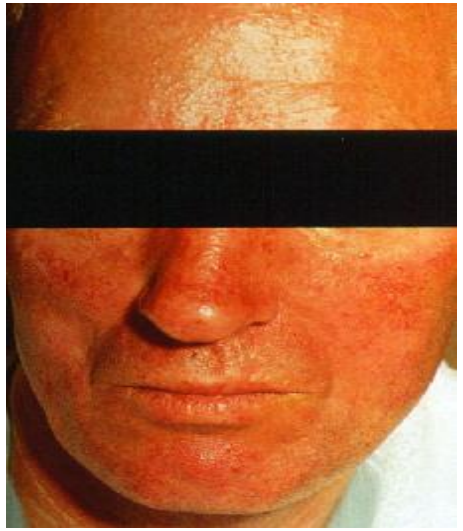
*ectopic adrenocorticotrophic hormone (ACTH) secretion.

*secretion of parathyroid hormone •

(PTH)-related peptide lead to hypercalcemia.

*carcinoid syndrome. •

*gynaecomastia.



B- neurological: •

*polyneuropathy *myelopathy •

*cerebellar degeneration *myasthenia (Eaton- • Lambert syndrome)

C- Other: •

*digital clubbing *hypertrophic pulmonary • osteoarthropathy.

*nephritic syndrome *polymyositis • &dermatomyositis.

*anemia, leucocytosis, thrombocytosis, eosinophilia. •

* Hypercoagulable disorders: •

Trousseau's syndrome (migratory superficial) - • thrombophlebitis

Deep venous thrombosis and thromboembolism - •

Disseminated intravascular coagulopathy - •

Thrombotic microangiopathy - •

Nonthrombotic microangiopathy - •

Physical signs

() examination is usually normal unless there is • significant bronchial obstruction or tumor spread to the pleura or mediastinum.

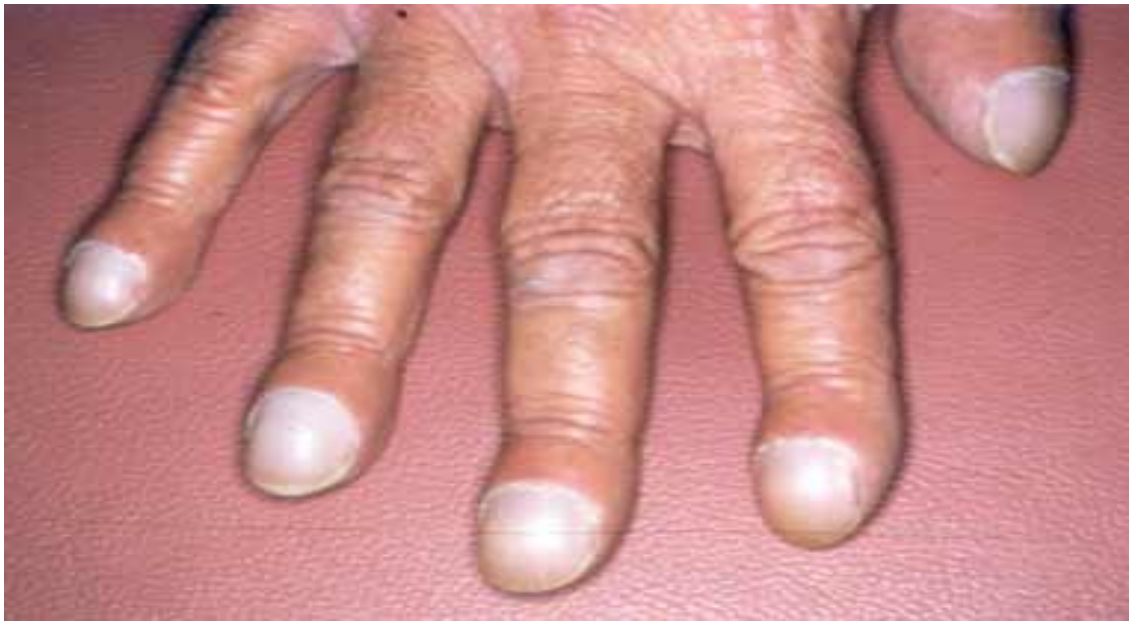
() signs of collapse if tumor obstruct bronchus. •

() signs of pleural effusion. •

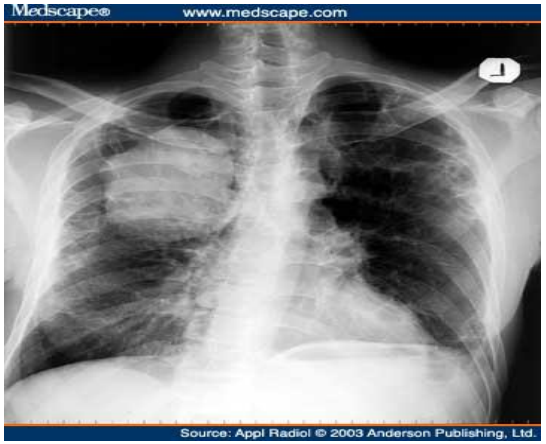
() signs of pneumonia but slow response to treatment • or unresolved.

() signs of SVC obstruction (bilateral fixed • engorgement of the jugular veins & edema affecting the face, neck & arms.

- ()signs of HPOA(hypertrophic pulmonary osteoarthropathy): digital clubbing is often seen & may be a component part of this syndrome which is characterized by periostitis of the long bones, mostly distal tibia, fibula, radius & ulna.
- This give rise to pain & tenderness in the affected joints & often pitting edema over the anterior aspect of the shin. X-ray show subperiosteal new bone formation.



Investigations



1- Chest X-ray: may show the followings:

() unilateral hilar enlargement

() peripheral pulmonary opacity, usually irregular with cavitations within it.

() lung, lobe or segmental collapse.

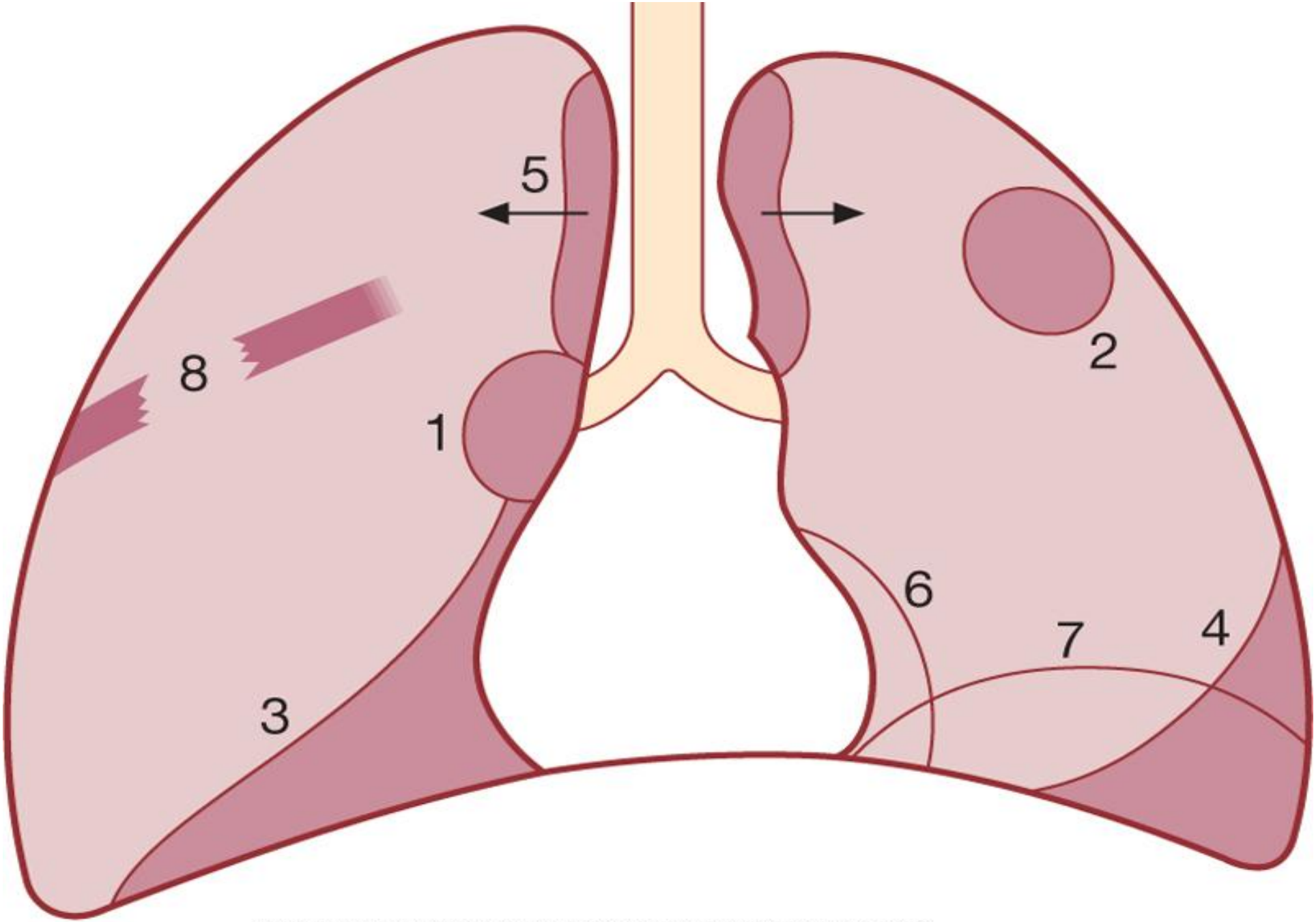
() pleural effusion.

() broadening of mediastinum due to paratracheal lymphadenopathy.

() enlarged cardiac shadow due to pericardial effusion.

() elevation of a hemi diaphragm due to phrenic nerve palsy.

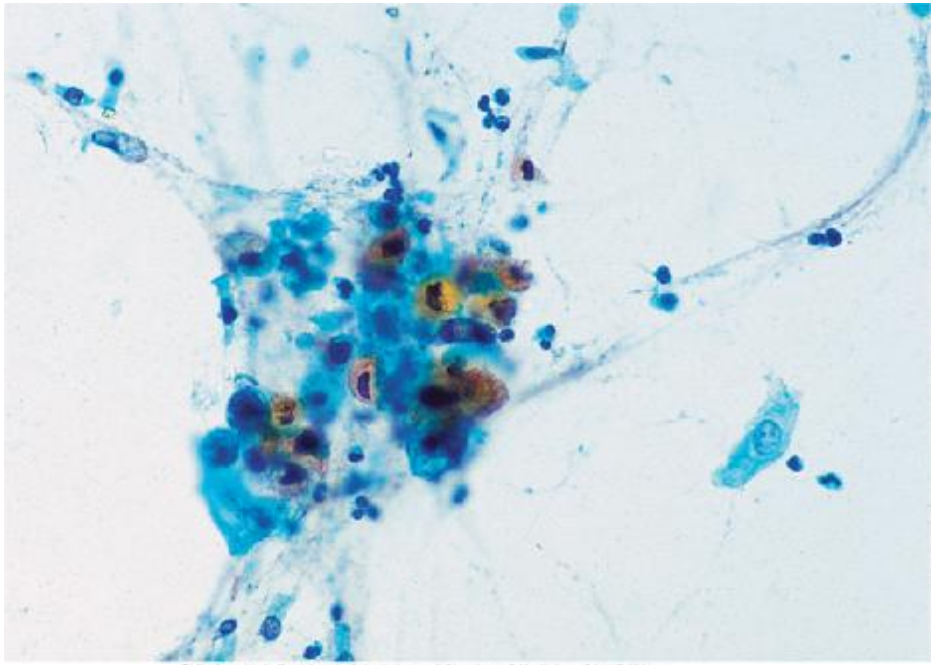
() rib destruction or osteolytic lesions of the ribs.



2- Sputum cytology. •

3- Bronchoscopy: •

4- Pleural biopsy: •



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5- Percutaneous needle biopsy under CT scan guidance. •

6- Investigations for metastasis. •

Management

- Cure can be only achieved by surgical resection. In the majority of cases (85%) surgery is not possible or appropriate.
- 1- Surgical treatment: indicated in stage I &II, But surgical resection is contraindicated in:
- a- distant metastasis.
- b- invasion of central mediastinal structures including heart, great vessels, trachea & esophagus.
- c- Malignant pleural effusion.
- d- Contra lateral mediastinal nodes.
- e- FEV1 < 0.8 liters.
- f- Severe or unstable cardiac or other medical condition.

2- Radiotherapy:

a- SVC obstruction.

b- Recurrent haemoptysis.

c- Painful chest wall invasion.

d- Skeletal metastatic deposits.

e- Obstruction of the trachea.

f- small-cell ca in combination with chemotherapy.

Note: continuous hyper fractionated accelerated radiotherapy (CHART) in which a similar total dose is given in smaller but more frequent fractions, offers better survival prospects than conventional schedules.

3- Chemotherapy: used for small-cell ca.

Iv cyclophosphamide, doxorubicin & vincristine or IV cisplatin & etoposide.

Given every 3 weeks for 3-6 cycles.