

Lung Cancer

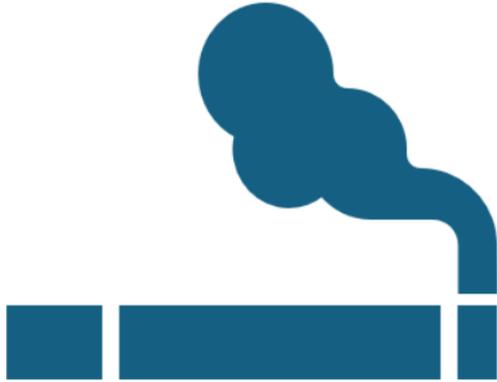
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- **Faculty Of Medicine**
- **Department of General Surgery**

Epidemiology

For Both

Female : Breast

Male : Prostate



- Leading cause of cancer-related **deaths** worldwide
- 2.2 million new cases annually
- Higher incidence in males, but increasing in females
- Five-year survival rate: ~18% (varies by stage)

- Strongly associated with smoking (85% of cases; biggest RF)

***Risk decrease after quitting smoking but not back to base line

2nd Hand Smoking

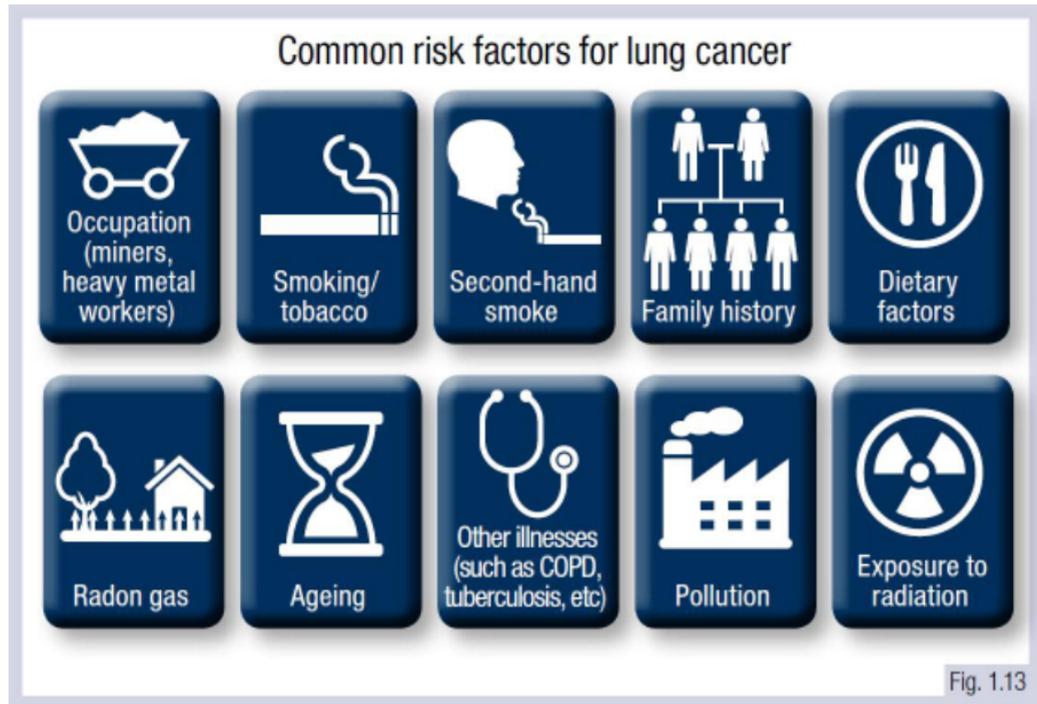


Fig. 1.13

COPD, Chronic obstructive pulmonary disease

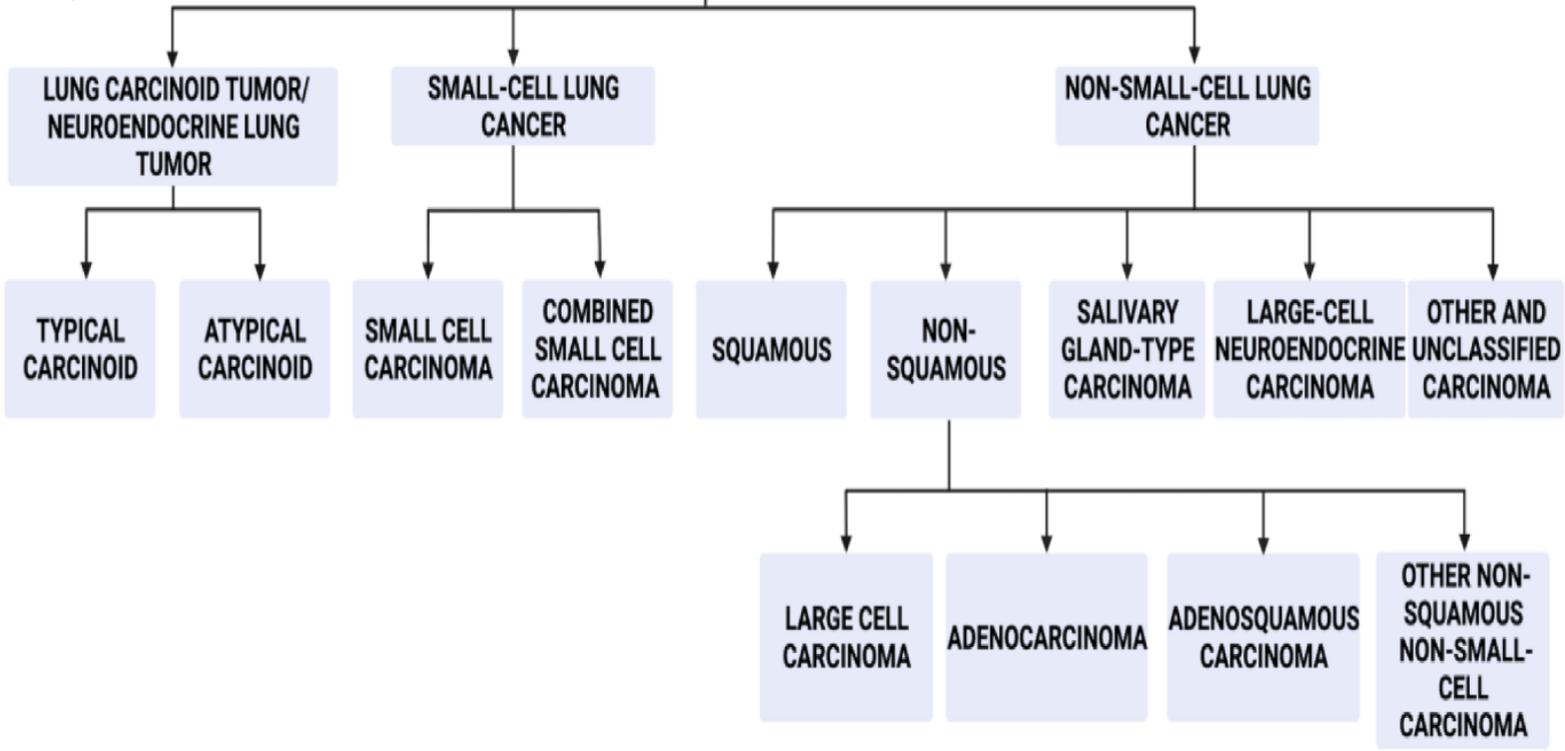
Pathophysiology

- Genetic mutations (EGFR, KRAS, ALK, TP53)
- Uncontrolled cell proliferation due to oncogene activation
- Angiogenesis and evasion of apoptosis
- Metastatic spread through lymphatic and hematogenous routes



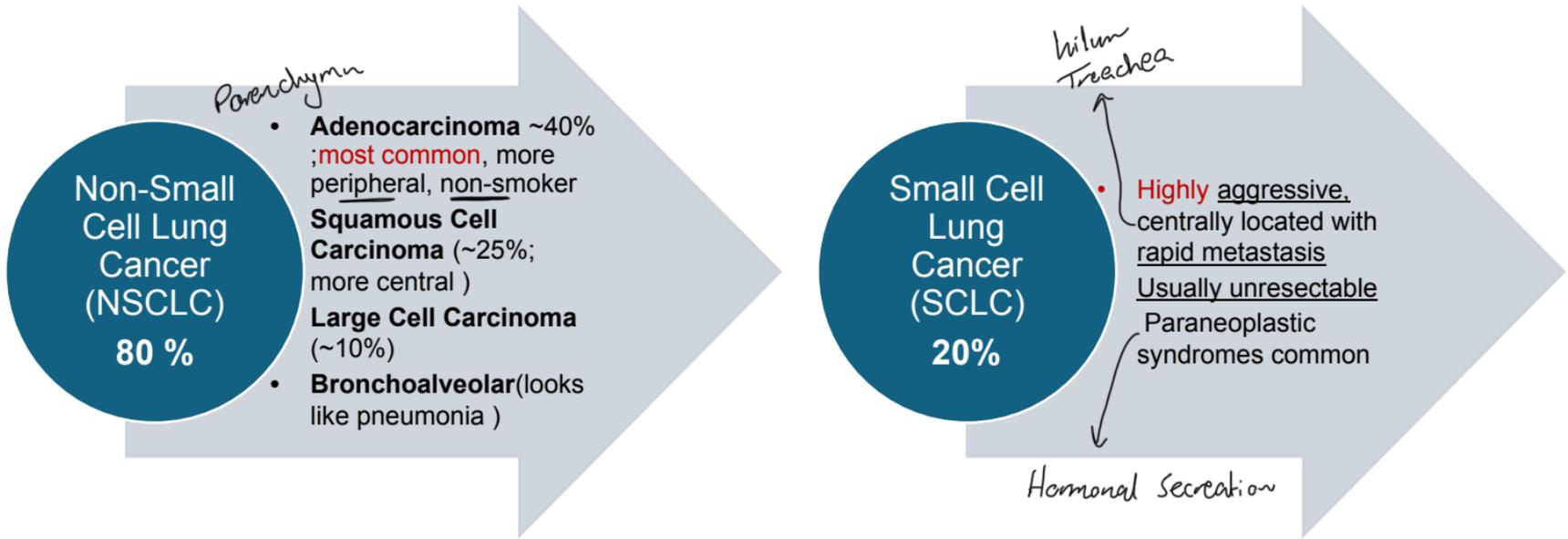
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ع

LUNG CANCER



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Histopathological Classification



Paraneoplastic Syndrome



Small cell CA □ ACTH (Most common) and ADH
← Cushing Syndrome



Squamous cell CA □ PTH- related peptide
hypercalcemia

Mesothelioma



Most malignant lung cancer



Aggressive ,local invasion , nodal invasion and distant metastases common at diagnosis .



Asbestos exposure increase risk 90 %



Poor prognosis



Approach

Triple assessment

Clinical Presentation

Persistent cough (most common symptom)	Hemoptysis
Dyspnea and wheezing	Chest pain
Systemic symptoms: weight loss, fatigue, night sweats	Paraneoplastic syndromes (SIADH, hypercalcemia, Lambert-Eaton)



A cough that persists, worsens or produces blood



Wheezing



Chest pain



Fatigue



Shortness of breath



Unexplained weight loss

On examination

Physical examinations

- Usually in early stage, most of the patients with lung cancer have no positive physical findings.
- General findings include abnormal percussion, breath sounds changes, moist rales (when pneumonia happens) *Obstr. of SVC*
- Digital clubbing, superior vena cava syndrome, horner's syndrome(unilaterally constricted pupil, enophthalmos,narrowed palpebral fissure and loss of sweating on the same side of the face).



- **Superior Vena Cava Syndrome**

MCC □ lung Ca , other;
obstruction (fibrosis)

Acute symptoms □ head
& neck fullness and
swelling , dyspnea
dizziness, brain swelling

Radiotherapy Treatment □ emergent
XRT if cancer source ,
raise head , O₂,
Furosemide & steroids

If chronic and due to
obstruction □ **stent or
bypass**

Apex

Horner's Syndrome

a neurological condition that affects the sympathetic nerve pathway

Ptosis

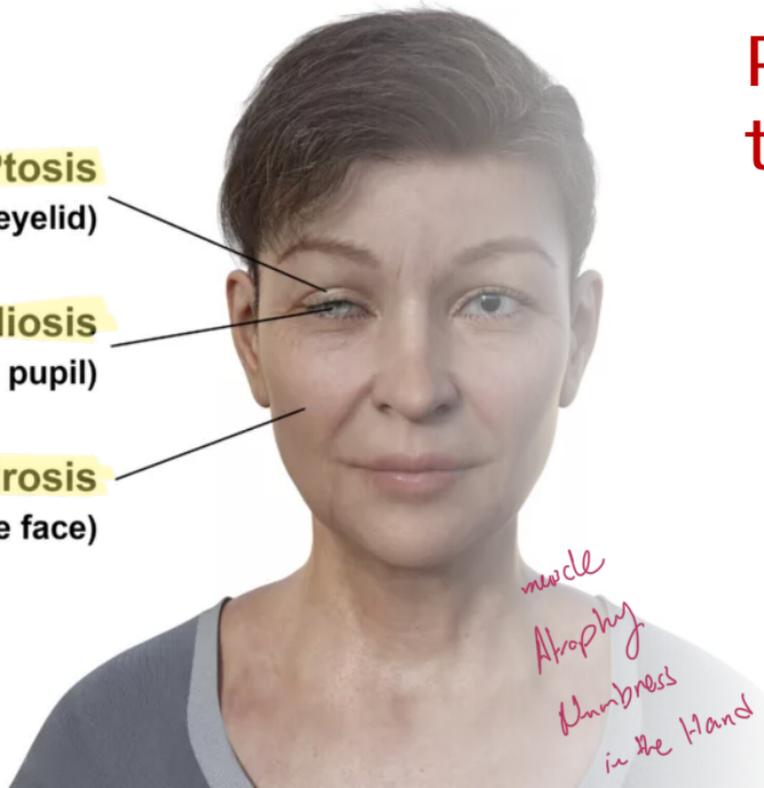
(drooping eyelid)

Miosis

(constricting pupil)

Anhidrosis

(lack of sweating on the face)



*muscle
Atrophy
Numbness
in the Hand*

Pancoast tumors

- Tumor invade chest wall apex
- Usually non- small cell lung cancer
- Can get Horner's syndrome due to invasion of T1 sympathetic chain
- Can get ulnar nerve symptoms brachial plexus invasion



COPD

Lung Cancer

Diagnostic Approach

. low Hb

. Molecular Test → mutation



Imaging

Chest X-ray: Initial test

CT scan: Gold standard for tumor localization and staging

PET-CT: Evaluates metastasis



Tissue Diagnosis

Bronchoscopy with biopsy

CT-guided needle biopsy

Pleural fluid cytology

Chest Tube to improve Respiration

* Cancer / Non Cancer

. There is Malignant Pleural effusion Developed

So Need Chest Tube
Big Tail

To Drain These Fluid
To Improve Respiration

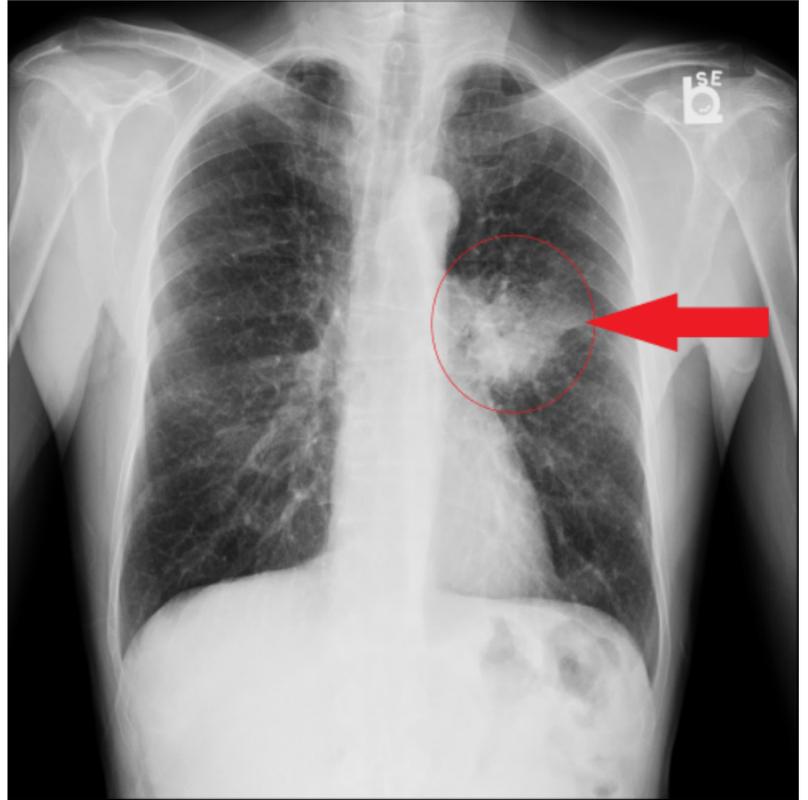
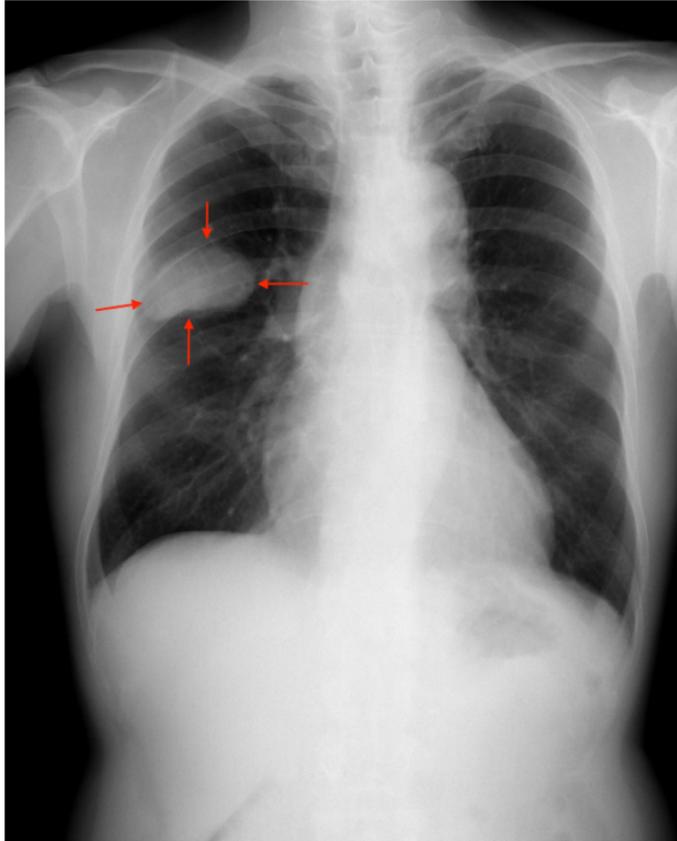
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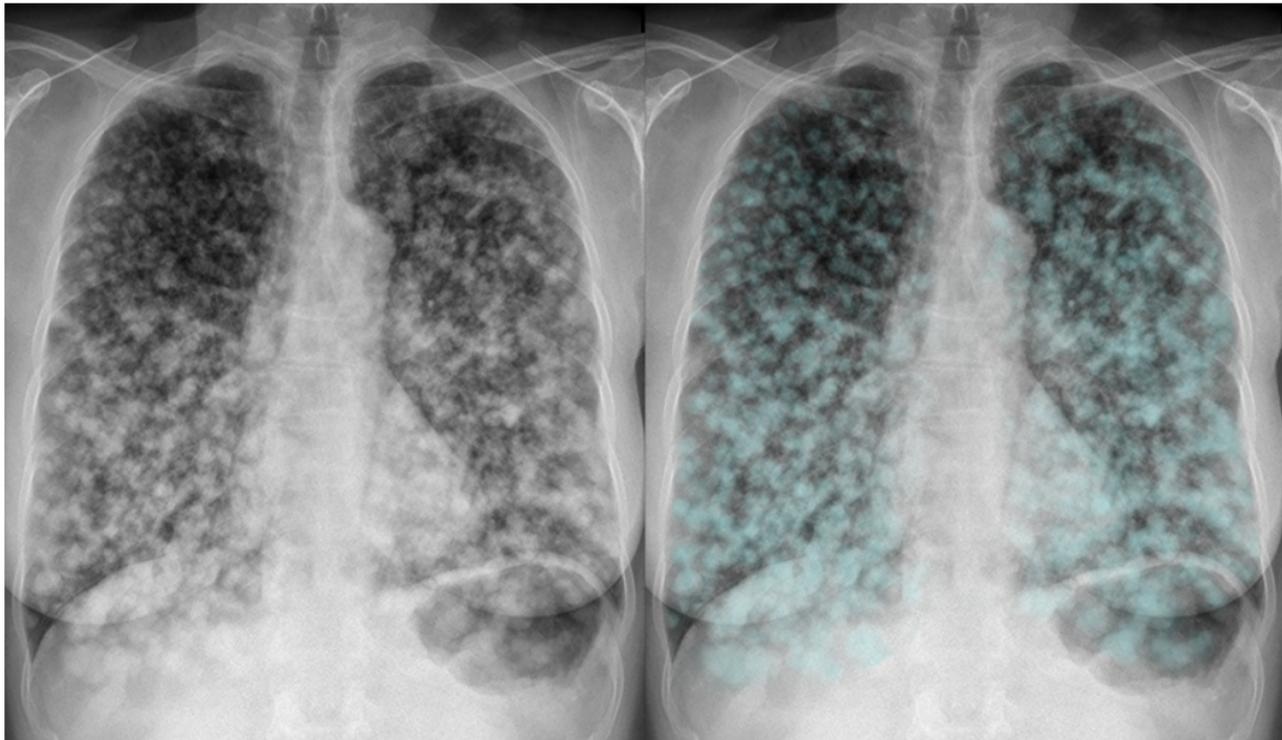
Molecular Testing

EGFR, ALK, PD-L1, ROS1
mutations

*EGFR
ALK*

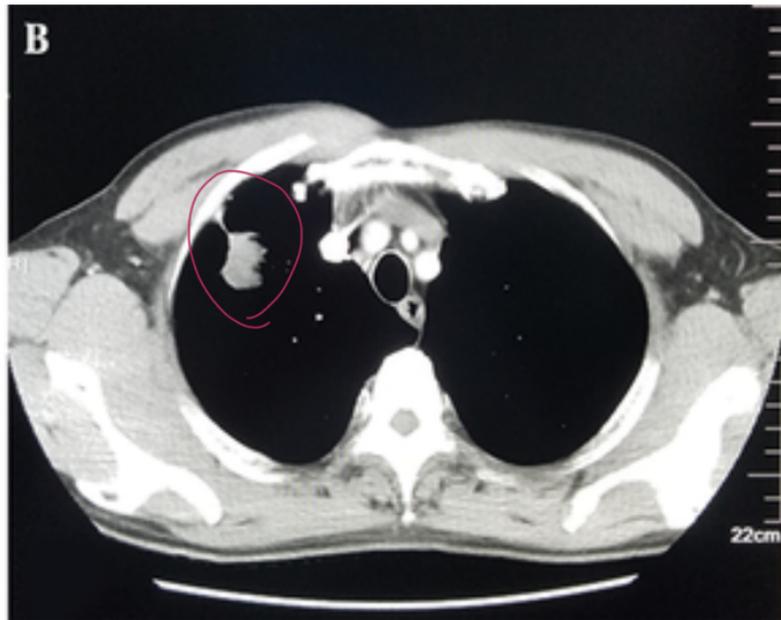
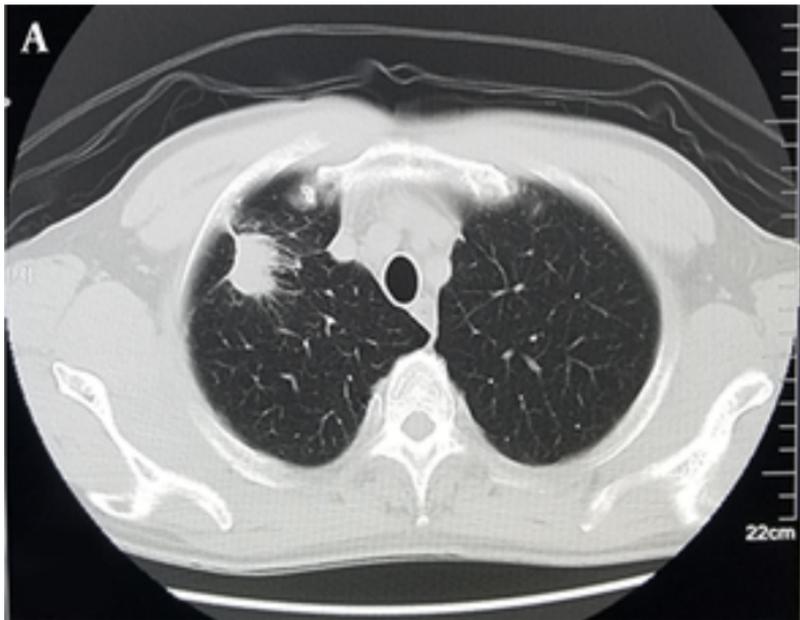


Mets

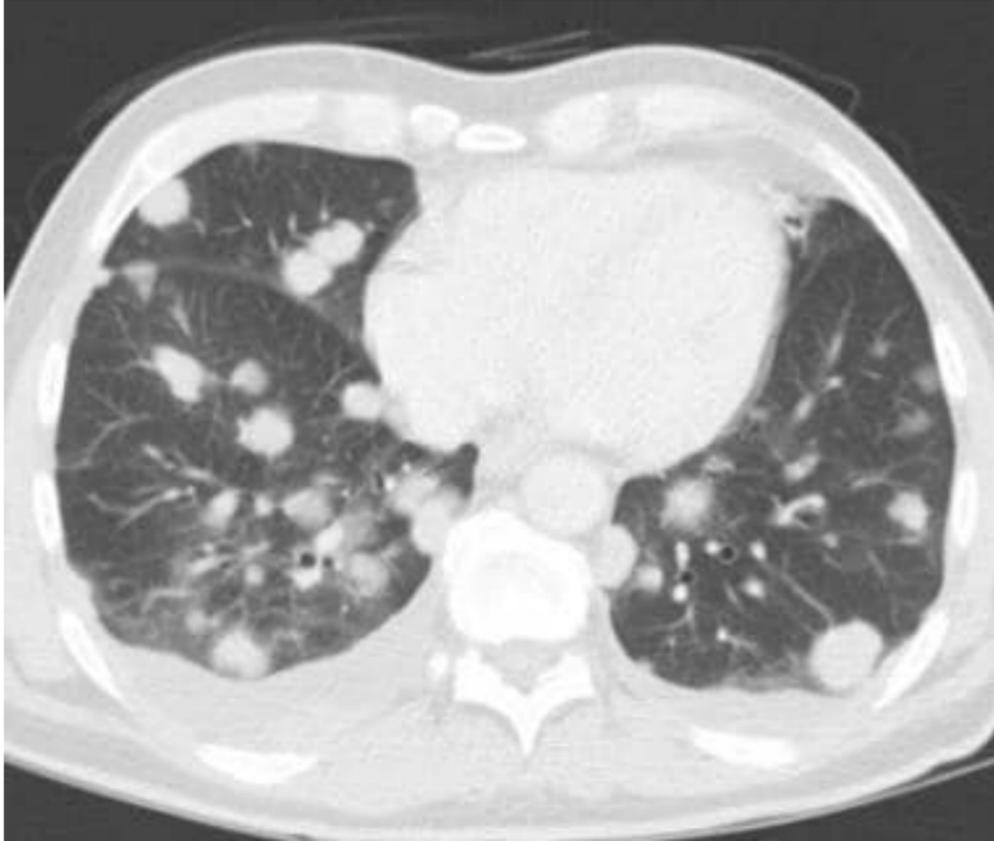


CT

lt \Rightarrow lung view

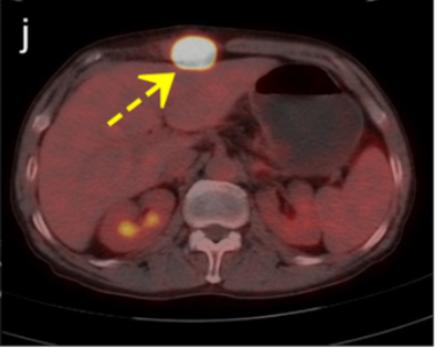
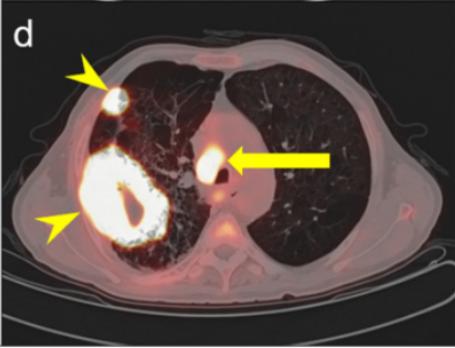
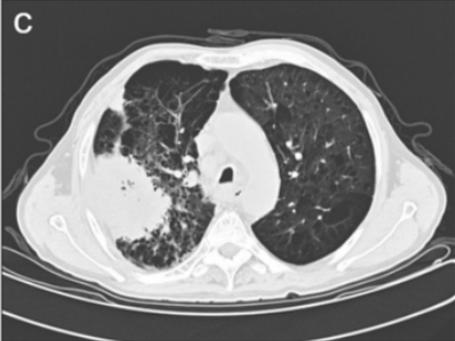
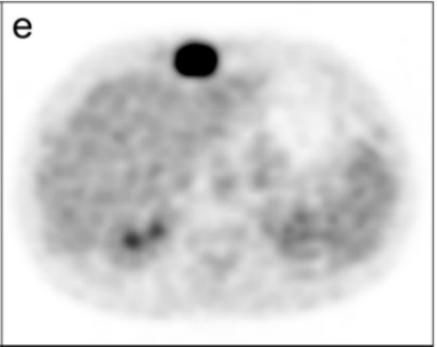
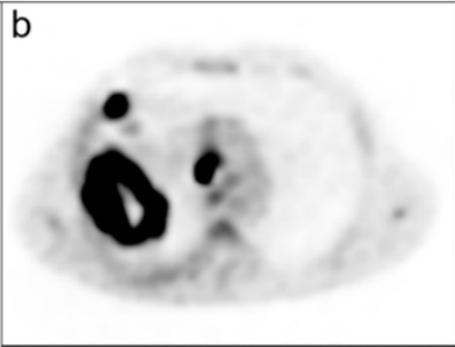
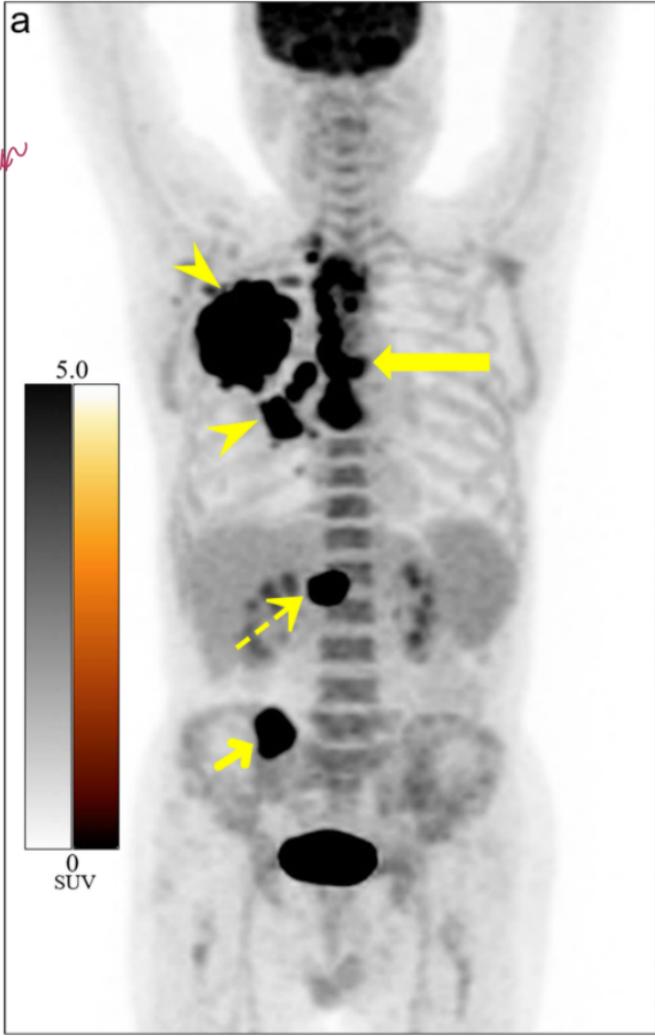


multiple mets



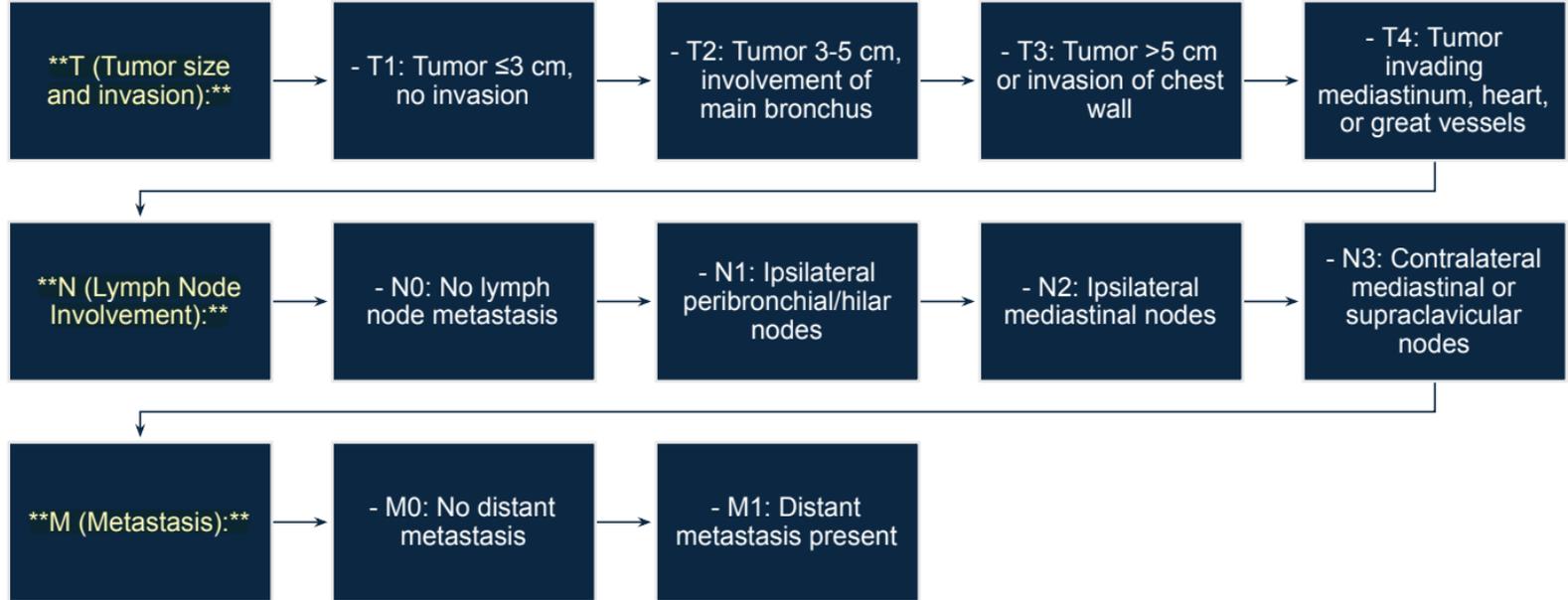
CT
lung view
Multiple Mets

PET scan
Mets

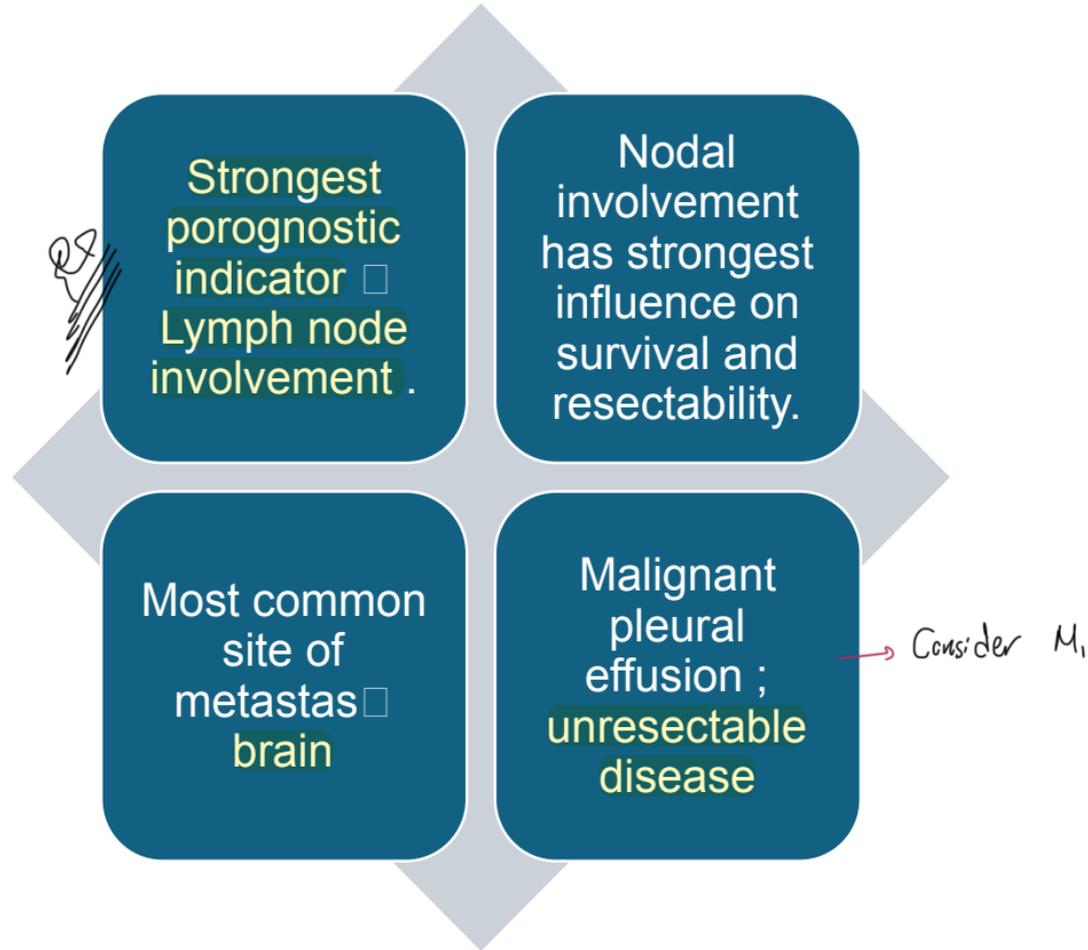


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TNM Staging System



Notes ..



Treatment Modalities



Non-Small Cell Lung Cancer (NSCLC):

Stage I-II: Surgery (lobectomy/pneumonectomy) ± adjuvant therapy

Stage III: Chemoradiotherapy ± targeted therapy

Stage IV: Palliative chemotherapy, immunotherapy



Small Cell Lung Cancer (SCLC):

Limited Stage: Chemoradiation + prophylactic cranial irradiation

Extensive Stage: Palliative chemotherapy (platinum-based regimens)

Targeted Therapy & Immunotherapy

مستى مع
مستى حفظ
الشفرة حار عنا
Targeted Therapy
affect the Gene that
mutated

****Targeted Therapy:****

- EGFR inhibitors (Erlotinib, Gefitinib)

- ALK inhibitors (Crizotinib, Alectinib)

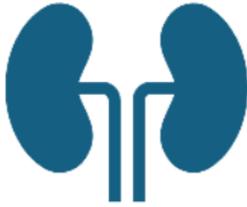
- ROS1 inhibitors (Entrectinib)

****Immunotherapy:****

- PD-1/PD-L1 inhibitors (Nivolumab, Pembrolizumab)

- CTLA-4 inhibitors (Ipilimumab)

Metastases to lung



If isolated and not associated with any other systemic disease ;
may be **resected** (**wedge resection**) for colon , renal , sarcoma
, melanoma , ovarian and endometrial cancers

Metastatic Point



Can excise **multiple tumors** ; just need to leave enough lung to
survive.

Prevention Strategies

→ "Cause"



Smoking cessation (most effective prevention method)



Avoid exposure to environmental carcinogens (radon, asbestos)



Regular screening for high-risk populations (low-dose CT)



Healthy lifestyle and diet

Conclusion



Lung cancer is a leading cause of cancer mortality



Early detection significantly improves prognosis



Multimodal treatment approach based on histology and stage



Advances in molecular testing and immunotherapy offer hope for better outcomes

*Radiation
Lung Oncologist
Thoracic*

Thank you

