

Lung Cancer (Bronchogenic Carcinoma)

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Definition

- Malignant neoplasm of lung tissue arising from bronchial epithelium
- Most common cause of cancer-related deaths worldwide

Epidemiology & Risk Factors

- Peak incidence: 55–65 years
- Male > Female (but gap narrowing)
- Risk factors: Smoking (most important, 85–90% of cases)
- Occupational: asbestos, radon, arsenic
- Environmental: pollution, passive smoking
- Genetic predisposition

Classification (WHO)

- Non–Small Cell Lung Cancer (NSCLC) ~85%
- • Adenocarcinoma: peripheral, most common overall, nonsmokers
- • Squamous cell carcinoma: central, linked to smoking
- • Large cell carcinoma
- Small Cell Lung Cancer (SCLC) ~15%
- • Highly aggressive, early metastasis
- • Strong smoking association

Pathology & Spread

- Local invasion → chest wall, mediastinum
- Lymphatic spread → hilar, mediastinal nodes
- Hematogenous spread → brain, bone, liver, adrenals

Clinical Features

- Respiratory: cough, hemoptysis, dyspnea, recurrent pneumonia
- Constitutional: weight loss, anorexia, fatigue
- Local invasion: hoarseness (RLN), dysphagia, SVC obstruction, chest pain
- Paraneoplastic syndromes:
 - SIADH, Cushing (SCLC)
 - Hypercalcemia (squamous cell)
 - Hypertrophic pulmonary osteoarthropathy

Diagnosis

- Imaging:
 - • CXR (initial)
 - • CT chest (staging, resectability)
- Tissue diagnosis:
 - • Sputum cytology
 - • Bronchoscopy with biopsy (central tumors)
 - • CT-guided biopsy (peripheral tumors)
- Staging workup: PET-CT, MRI brain, bone scan

Staging (TNM system)

- T: Tumor size & invasion
- N: Regional lymph nodes
- M: Distant metastasis
- Early-stage (I–II) → potentially resectable
- Advanced (III–IV) → multimodal, palliative

Management Principles

- NSCLC:
 - Surgery = treatment of choice for early stages (I & II, selected IIIA)
 - Lobectomy (standard), Pneumonectomy, Segmentectomy (selected)
 - Adjuvant chemo/radiotherapy as indicated
- SCLC:
 - Surgery rarely indicated (except very early T1–2N0)
 - Mainstay = chemotherapy \pm radiotherapy

Contraindications to Surgery

- Extrathoracic metastases (M1)
- Extensive mediastinal nodal disease (N2/N3)
- Poor cardiopulmonary reserve (low FEV1, DLCO)
- Severe comorbidities

Palliative Management

- Radiotherapy for local symptoms (pain, SVC obstruction, hemoptysis)
- Chemotherapy (systemic disease, SCLC)
- Targeted therapy / Immunotherapy (EGFR, ALK, PD-L1 mutations in NSCLC)

Prognosis

- 5-year survival:
 - Stage I → 60–70%
 - Stage II → 30–50%
 - Stage III → 10–20%
 - Stage IV → <5%
- Worse in SCLC (median survival untreated ~3–5 months)

Summary

- Lung cancer = leading cause of cancer death
- Strongly associated with smoking
- NSCLC vs SCLC (different biology & management)
- Surgery = cornerstone for early NSCLC
- SCLC → systemic therapy mainstay
- Prognosis depends on stage