## Role of Surgery in diagnosis & management of Bronchogenic Carcinoma

### Magnitude of the problem
- Lung cancer is common, often insidious, & it may produce no symptoms until the disease is well advanced.
- Early recognition of symptoms may be beneficial to outcome.
- At initial diagnosis, 20% of patients have localized disease, 25% have regional metastasis & 55% have distant spread.

### Pathological types
There are four major types of lung cancer:
1. Squamous cell carcinoma,
2. Adenocarcinoma,
3. Small cell carcinoma,
4. Large cell carcinoma

However, for treatment purposes, lung cancer is usually differentiated according to small cell carcinoma or non-small cell carcinoma, which includes the three other types. Other rare types of primary cancer are carcinoid & Pleuropulmonary blastoma (Children).

### How the diagnosis is made

#### Radiographic
1. Chest X-ray shows a mass, pleural effusion (fluid, blood, cancer cells or a combination) or an infiltrate
2. CAT scan (computerized axial CT)
3. Spiral CT scan (low dose helical CT)
4. CT virtual bronchoscopy
5. MRI (magnetic resonance imaging)
6. PET (positron emission tomography)
7. Bone scans

#### Diagnostic pathologic procedures
1. Sputum cytology
2. Bronchoscopy (cytology or biopsy)
3. Needle biopsy (FNA, true cut)
4. Thoracentesis
5. Surgical procedures

#### Surgery
1. Mediastinoscopy
2. LN biopsy
3. Thoracoscopy
4. Thoracotomy

These methods are resorted to if none of the diagnostic methods (cytology via thoracentesis, sputum, or bronchoscopy; Needle biopsy pleural or CT guided; bronchoscopic biopsy) yields a diagnosis.

### Staging

#### NSCLC
- **Stage I**: confined to the lung
- **Stage II**: confined to the chest
- **Stage III**: II but larger & more invasive
- **Stage IV**: spread outside of the chest

#### SCLC
- **Limited stage (confined to area of origin)**
- **Extensive stage (spread outside chest)**

### Treatment of lung cancer depends on:
1. Cancer specific cell type
2. How far it has spread
3. The patient performance status

### Lines of treatment
1. Surgery
2. Chemotherapy
   - Adjunct to surgery or combination with radiotherapy
   - Platinum based drugs
   - Of choice for most SCLC
3. Radiotherapy
   - Curative or palliative
   - External irradiation; Brachytherapy; Gamma knife
   - Complications (leucopenia, thrombocytopenia...etc)
4. Combination therapy

### General rules
1. If investigations confirm cancer, CT scan & often PET are used to determine whether the disease is localized & amenable to surgery or whether it has spread and surgery cannot be done
2. Blood tests & lung function tests are also necessary to assess whether the patient is well enough to be operated on
3. Surgery is either curative or palliative
4. Role of surgery in SCLC is limited (early spread)
5. Surgery is of choice in stage I, sometimes in NSCLC
6. Complications (bleeding, infection, anesthesia...etc)
7. Operative death rate is about 4.4%, depending on lung functions & other risk factors
8. Adjunct chemotherapy for NSCLC for patients with stage II or III (+ve LNs)

### Surgery procedures include
1. Wedge resection
2. Wedge resection with radioactive
3. Iodine brachytherapy at the margins
4. Segmentectomy
5. Lobectomy

### Technique
- a) Conventional surgery
- b) VATS

### Criteria for inoperability
1. Invasion of trachea, carina, main stem bronchus
2. Metastases outside lungs & chest
3. Malignant pleural fluid
4. Phrenic or recurrent laryngeal nerve palsy
5. Superior vena cava syndrome
6. Esophageal or pericardial involvement
7. LNs (+ve) on opposite side of mediastinum
8. Extensive involvement of chest wall
9. Poor general condition

### Role of surgery in management
1. Curative for primary operable tumor (lungen resection)
2. Palliative resection for primary inoperable tumor
3. Local recurrence (confined to one side of chest)
4. Complications (hemo / hemopneumothorax...etc)
5. Pleurodesis for recurrent effusion or chylothorax
6. Metastases (localized; primary controlled)