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
- 4 major types of lung cancer:
  1. Squamous cell carcinoma
  2. Adenocarcinoma
  3. Small cell carcinoma
  4. Large cell carcinoma
- 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

<table>
<thead>
<tr>
<th>Diagnostic radiographic procedures</th>
<th>Diagnostic pathologic procedures</th>
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<tbody>
<tr>
<td>1. Chest X ray shows a mass, pleural effusion (fluid, blood, cancer cells or a combination ) or an infiltrate</td>
<td>• Sputum cytology</td>
</tr>
<tr>
<td>2. CAT scan (computerized axial CT)</td>
<td>• Bronchoscopy (cytology or biopsy)</td>
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<tr>
<td>3. Spiral CT scan ( low dose helical CT )</td>
<td>• Needle biopsy (FNA , true cut)</td>
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<td>4. CT virtual bronchoscopy</td>
<td>• Thoracentesis</td>
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<td>5. MRI ( magnetic resonance imaging )</td>
<td>• Surgical procedures</td>
</tr>
<tr>
<td>6. PET ( positron emission tomography )</td>
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<tr>
<td>7. Bone scans</td>
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Treatment of lung cancer

<table>
<thead>
<tr>
<th>Treatment of lung cancer depends on</th>
<th>Lines of treatment</th>
<th>NSCLC staging</th>
<th>SCLC staging</th>
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<tbody>
<tr>
<td>1. cancer specific cell type</td>
<td>o Surgery</td>
<td>Stage I : lung</td>
<td>o Limited stage (confined to area of origin)</td>
</tr>
<tr>
<td>2. How far it has spread</td>
<td>o Chemotherapy</td>
<td>Stage II : chest</td>
<td>o Extensive stage (spread outside chest)</td>
</tr>
<tr>
<td>3. The patient performance status</td>
<td>o Radiotherapy</td>
<td>Stage III (II but larger &amp; more invasive)</td>
<td></td>
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<tr>
<td></td>
<td>o Combination therapy</td>
<td>Stage IV (spread outside of the chest)</td>
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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 II,NSCLC.
6. Complications (bleeding, infection, anesthesia...etc)
7. Operative death rate is about 4.4%, depending on lung functions & other risk factors.
8. Adjuvant chemotherapy for NSCLC for patients with stage II or III (+ve L.Ns)

What determine operability?
- Invasion of trachea, carina, main stem bronchus
- Metastases outside lungs & chest
- Malignant pleural fluid
- Phrenic or recurrent laryngeal nerve palsy
- Superior vena cava syndrome
- Esophageal or pericardial involvement
- L.Ns (+ve ) on opposite side of mediastinum
- Extensive involvement of chest wall
- Poor general condition
### Role of Surgery in diagnosis of Bronchial Carcinoma

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

**Procedures include**

1. Wedge resection
2. Wedge resection with radioactive iodine brachytherapy at the margins
3. Segmentectomy
4. Lobectomy
5. Bilobectomy
6. Pneumonectomy

**Techniques**
- Conventional surgery
- VATS

### Role of Surgery in management of Bronchial Carcinoma

1. Curative for primary operable tumor (lung 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)

**Radiotherapy:**
1. Curative or palliative
2. External irradiation; Brachytherapy; Gamma knife
3. Complications (leucopenia, thrombocytopenia...etc)

**Chemotherapy:**
1. Adjuvant to surgery or combination with radiotherapy
2. Platinum based drugs
3. Of choice for most SCLC

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**Emergency Department (ER) Care:**

Definitive treatment of the underlying cancer is not the purview of the ER. Treatment is based on symptoms as follows

1. **Pain control**

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<tr>
<td>Admit the patient to the ICU</td>
<td>O2 &amp; suctioning</td>
<td>Massive intestinal dilatation with / without air-fluid level</td>
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<tr>
<td>Prepare for intubation &amp;/or cricothyroidotomy</td>
<td>Double lumen endotracheal tube</td>
<td>Correct electrolyte imbalance</td>
</tr>
<tr>
<td>ENT &amp;/or Surgical consultation for fibreoptic Laryngoscopy or intraoperative Tracheostomy</td>
<td>Positioning (bleeding side down)</td>
<td>Nasogastric tube</td>
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<tr>
<td></td>
<td>ABG, CBC, Coagulation studies, matching</td>
<td>Colonic decompression</td>
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<td>FOB</td>
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<td></td>
<td>ICU if moderate or severe</td>
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**Syndromes associated with Bronchial Carcinoma**

**I. Mechanical obstructive syndromes**

- Cough, dyspnea
- Dilated neck veins, fullness in the head
- Papilledema, facial cyanosis
- Prominent veins on face & chest
- Plethora

- Horner syndrome
- Bone destruction
- Hand muscle atrophy

- Paraplegia, sensory deficit
- Urinary incontinence or retention
- Vertebral pain

**II. Paraneoplastic syndromes**

- Cushing syndrome
- Eaton-Lambert syndrome
- Myasthenic syndrome
- Hypercalcemia
- SIAD syndrome

**III. Ogilvie intestinal pseudo-obstruction**

- Nausea, vomiting, abdominal discomfort
- Early satiety, weight loss
- Change in bowel habits

**TNM classification:**

- **Tumor staging**
  - T1 < 3cm, no invasion proximal to lobar bronchus
  - T2 > 3cm or pleural invasion or <2cm from carina
  - T3 direct extension (parietal pleura, diaphragm....etc)

- **Nodal staging**
  - No none
  - N1 Peribronchial or ipsilateral hilar lymph nodes
  - N2 Ipsilateral mediastinal lymph nodes
  - N3 Contra-lateral lymph nodes/ more distant LN

- **Metastatic staging**
  - Mo no
  - M1 distant metastases

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<th>Superior vena cava syndrome</th>
<th>Pancoast tumor</th>
<th>Acute spinal cord compression</th>
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<td>T2</td>
</tr>
<tr>
<td>N1</td>
<td>IIA</td>
</tr>
<tr>
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<td>IIIA</td>
</tr>
<tr>
<td>N3</td>
<td>IIIB</td>
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**Thus's**