APROACH TO PATIENT OF REPIRATORY DISEASES

BRONCHOGENIC CARCINOMA,PAN COAST TUMOUR

INTRODUCTION

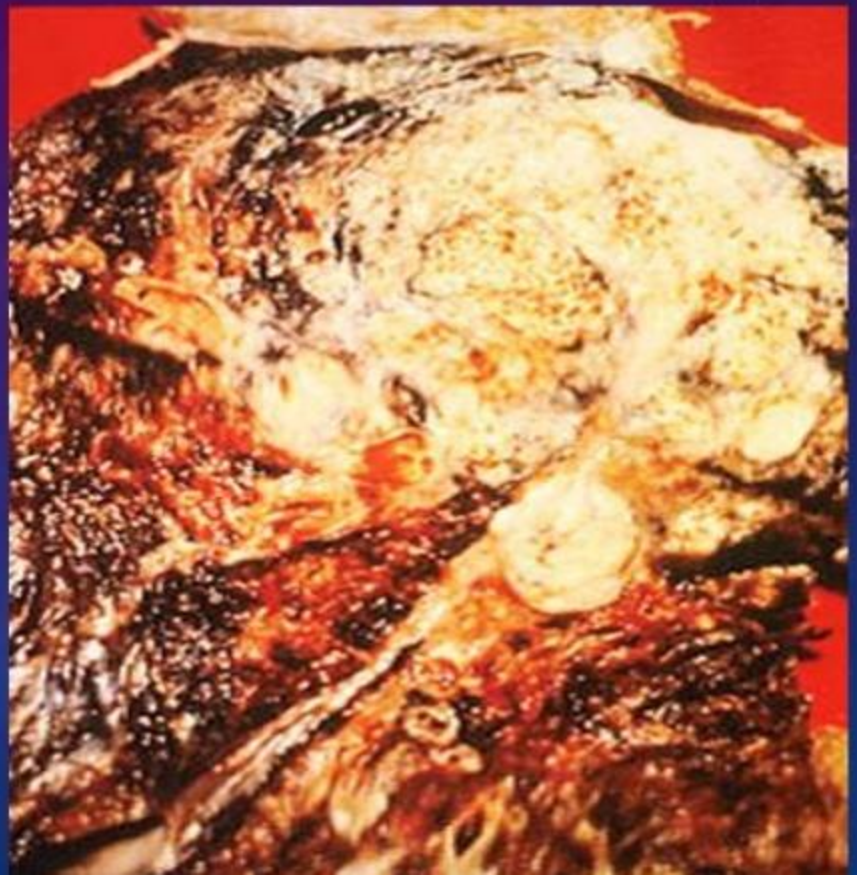
- Malignant proliferation of cells arising from the bronchial epithelium or mucous glands.

- Although largely preventable, carcinoma of the lung kills about 8.8 million people each year globally.

- It is the most common cause of cancer death in men and the second most common cause in women, afte breast cancer.

ETIOLOGY

1. **Cigarette smoking** – both active and passive smoking



- White area shows lung cancer.
- Blackish area shows discolouration due to tobacco smoke

ETIOLOGY

2. **Radon gas** – Colourless and odourless gas generated by breakdown of radium which is a radioactive substance.
3. **Asbestos** – Has a synergistic effect with cigarette smoking in causing lung cancer. Also causes *mesothelioma*(different fro lung cancer)
4. **Air pollution** – Fine particulates and sulphate aerosols.
5. **Genetics** - ~ 8%. Polymorphism on chromosomes 5, 6 and 15
6. **Others** – Ionisation radiation, arsenic and inorganic arsenic compounds, hemalite, vincristine-prednisone-nitrogen mustard-procarbazine mixture

CLASSIFICATION

1. Squamous (35%)
2. Adenosquamous (30%)
3. Small Cell (20%)
4. Large Cell (15%)

SPREAD

1. Direct
2. Lymphatics
3. Hematogenous

SPREAD

1. Direct

- ✓Invades pleura
- ✓Invades Chest wall
- ✓Invades Intercostal nerves
- ✓Invades Brachial plexus

SPREAD

2. Lymphatics

✓Mediastinal lymph nodes

Compressing:

- Pericardium
- Esophagus
- Superior vena cava
- Trachea
- Phrenic/ left recurrent laryngeal nerve

SPREAD

3. Hematogenous

- ✓Liver
- ✓Bone
- ✓Brain
- ✓Adrenal
- ✓Skin

TNM CLASSIFICATION

Stage	TNM	Operability	5-year survival
I	$T_{1-2}N_0M_0$	Operable	50–60
II	$T_{1-2}N_1M_0$	Operable	30
IIIa	$T_3N_1M_0$	Operable	
	$T_{1-2}N_{2-1}M_0$	Operable	20
IIIb	$T_{1-3}N_2M_0$	Inoperable	0
	$T_4N_0M_0$	Inoperable	
IV	Any T, any N, M_1	Inoperable	0

TNM CLASSIFICATION

- **Tumour (T)**
  T1: <3 cm and not involving main bronchus or pleura
  T2: >3 cm, or involving main bronchus and visceral pleura
  T3: any size, invading chest wall, or within 2 cm of carina
  T4: invading mediastinum, great vessels, trachea
- **Node (N)**
  N0: no regional node metastases
  N1: ipsilateral hilar node metastases
  N2: ipsilateral mediastinal or subcarinal node metastases
  N3: contralateral mediastinal or hilar nodes
- **Metastases (M)**
  M0: no distant metastasis
  M1: distant metastasis

CLINICAL FEATURES

- These may be due to:
  1. Local tumour effects
  2. Metastatic tumour effects
  3. Paraneoplastic manifestations.

- Many patients have no specific signs.
- In some, the lung cancer may be an incidental findi
  on CXR or CT performed for another reason.

CLINICAL FEATURES

- **Local Tumour effects**

✓Persistent cough or change in usual cough
✓Haemoptysis
✓Chest pain (suggests chest wall or pleural involvement)
✓Unresolving pneumonia or lobar collapse
✓Unexplained dyspnoea (due to bronchial narrowing or obstruction
✓Wheeze or stridor
✓Shoulder pain (due to diaphragm involvement)
✓Pleural effusion (due to direct tumour extension or pleural metastases)

CLINICAL FEATURES

- **Local Tumour effects**

✓Hoarse voice (tumour invasion of the left recurrent laryngeal nerve

✓Dysphagia

✓Raised hemidiaphragm (phrenic nerve paralysis)

✓SVCO

✓Horner's syndrome (miosis, ptosis, enophthalmos, anhydrosis) due to apical or pancoast's tumour damaging sympathetic chain

✓Pancoast's tumours can also directly invade the rib and brachial plexus, causing C8–T1 dermatome numbness, shoulder pain, and weakness of small muscles of the hand

CLINICAL FEATURES

- **Metastatic Tumour effects**

✓Cervical/supraclavicular lymphadenopathy (common, present 30%, and may be an easy site for diagnostic biopsy)

✓Palpable liver edge

✓Bone pain/pathological fracture due to bone metastases

✓Neurological sequelae 2° to cerebral metastases

✓Hypercalcaemic effects (due to bony metastases or direct tum production of parathyroid hormone (PTH)-related peptide or P

✓Dysphagia (compression from large mediastinal nodes)

CLINICAL FEATURES

• Paraneoplastic syndromes

- Endocrine syndromes are due to the ectopic production of hormones or hormonally active peptides.
- Neurological syndromes are due to antibody-mediated CN damage.

✓Cachexia and wasting

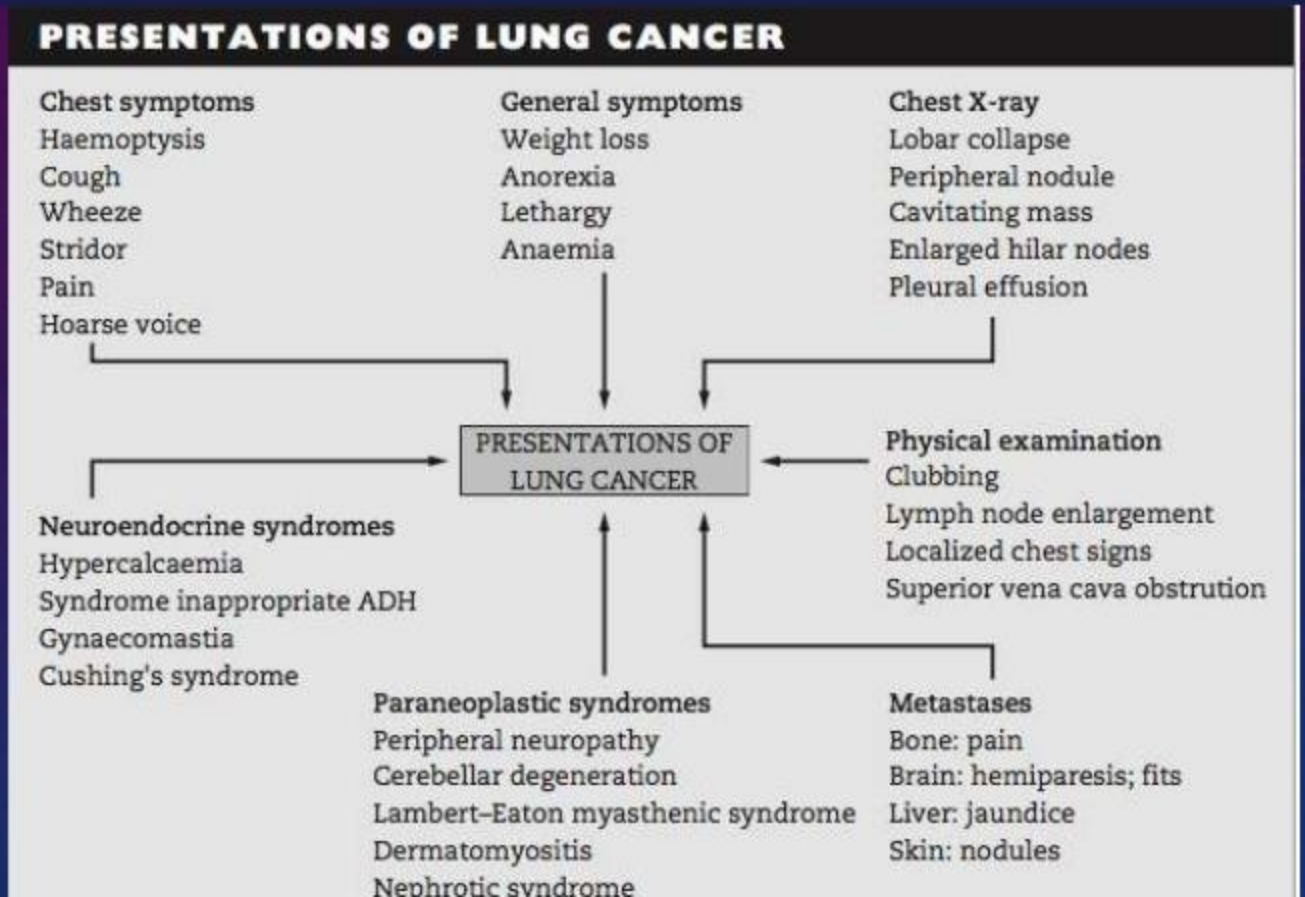
✓Clubbing (up to 29% of patients; any cell type, more comm in squamous and adenocarcinoma)

✓Hypertrophic pulmonary osteoarthropathy

CLINICAL FEATURES

- ✓Gynaecomastia
- ✓Ectopic ACTH (Cushing's syndrome)
- ✓Cerebellar syndrome (usually SCLC)
- ✓Limbic encephalitis (SCLC, also breast, testicular, othe cancers).
- ✓Dermatomyositis/polymyositis
- ✓Glomerulonephritis.

CLINICAL FEATURES



INVESTIGATIONS

- **In outpatients**

1. **History and examination**, including smoking and occupational histories
2. **Spirometry** pre-biopsy or surgery
3. **CXR** (PA and possibly lateral)—location of lesion, pleural involvement, ple effusion, rib destruction, intrathoracic metastases, mediastinal lymphadenopathy. CXR can be normal
4. **Blood tests**, including sodium, calcium, and LFTs. Check clotting if biopsy planned
5. **Sputum cytology** only indicated in patients who are unfit for bronchosco or biopsy
6. **Diagnostic pleural tap**, if effusion present
7. **FNA** of enlarged supraclavicular or cervical lymph nodes

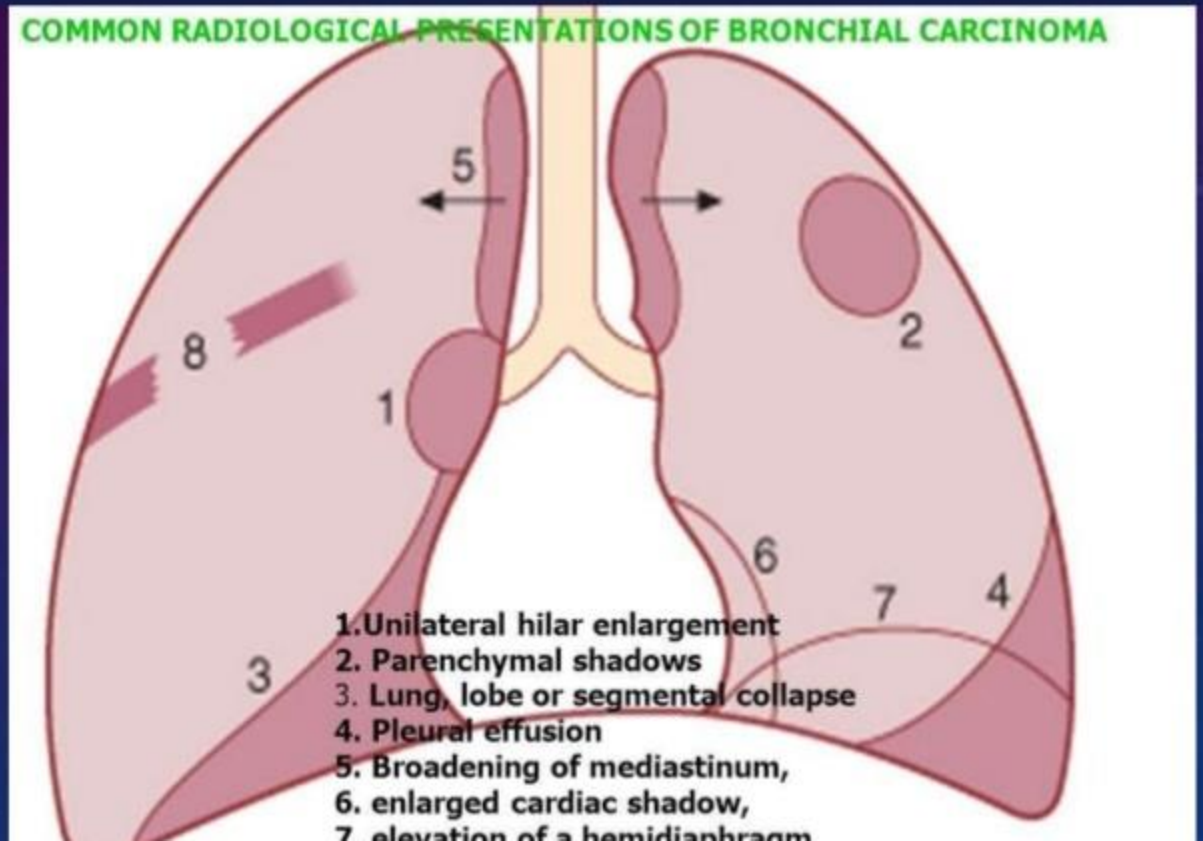
INVESTIGATIONS

- **Radiology**

1. **CT** *neck, chest, liver, adrenals (contrast-enhanced) to assess tumour site and size*
2. **USG** of neck or liver may provide information about enlarged lymph nodes metastases suitable for biopsy
3. **MRI** Used to answer specific questions relating to tumour invasion/ borders
4. **Bone scan** Indicated if any suggestion of metastatic disease such as bony pa pathological fracture, hypercalcaemia, raised ALP,highly suggestive of bony metastases if multiple areas of increased uptake.
5. **CT** *head* Indicated if any neurological evidence of metastatic

INVESTIGATIONS

- **Radiology (CXR)**



INVESTIGATIONS

- Radiology (CXR)

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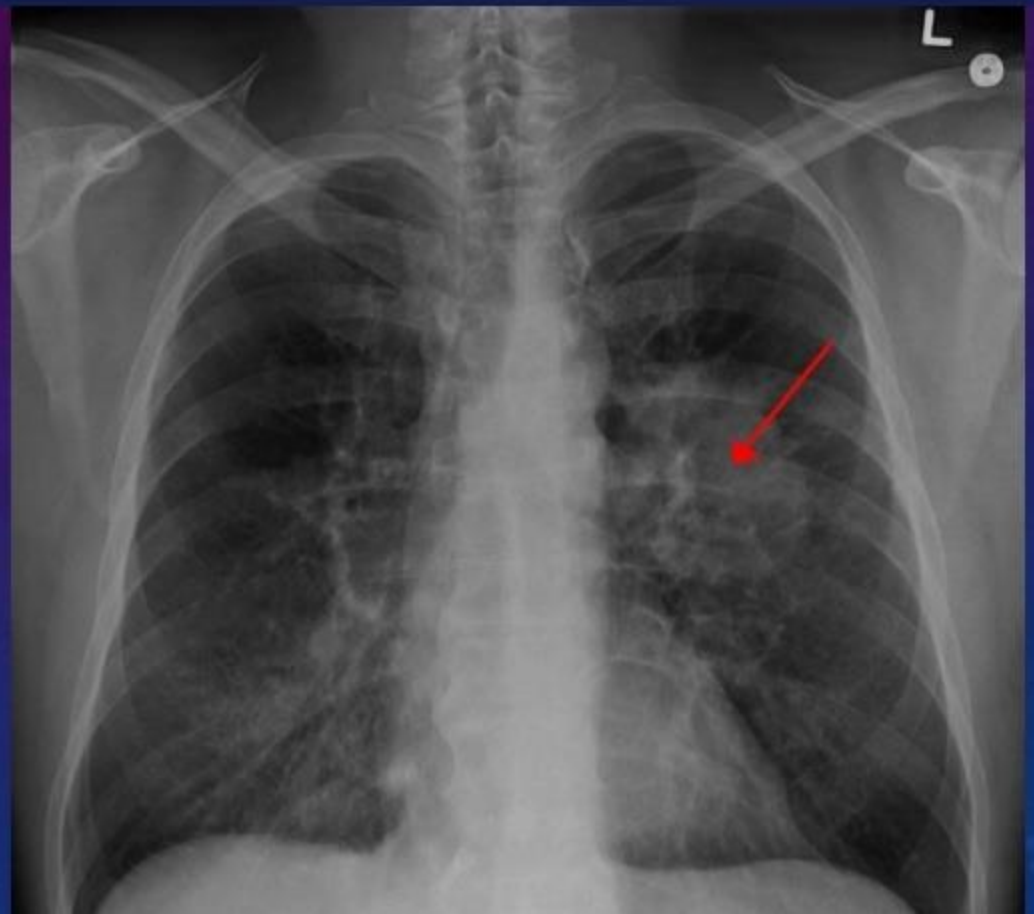

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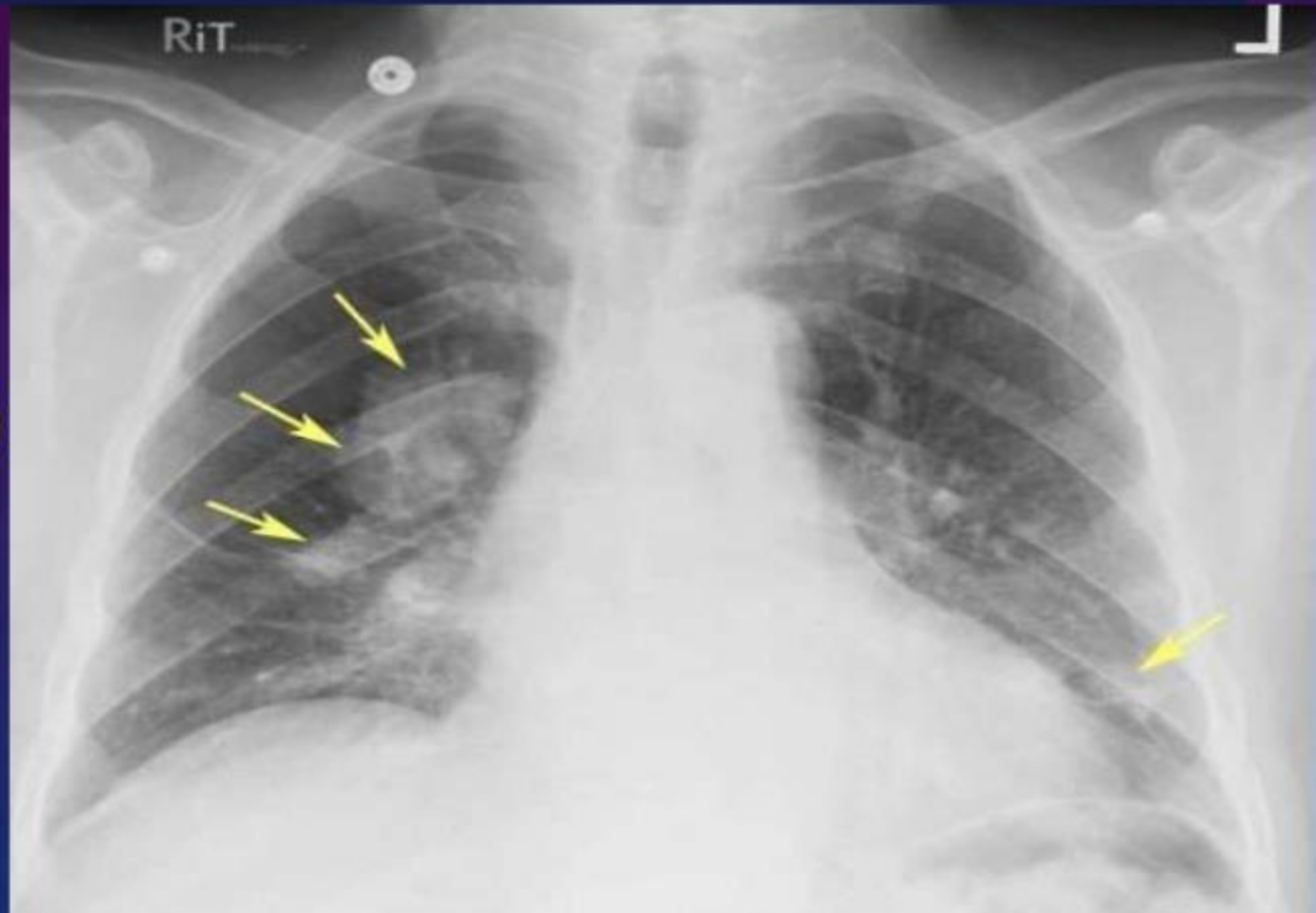

INVESTIGATIONS

- Radiology (CXR)

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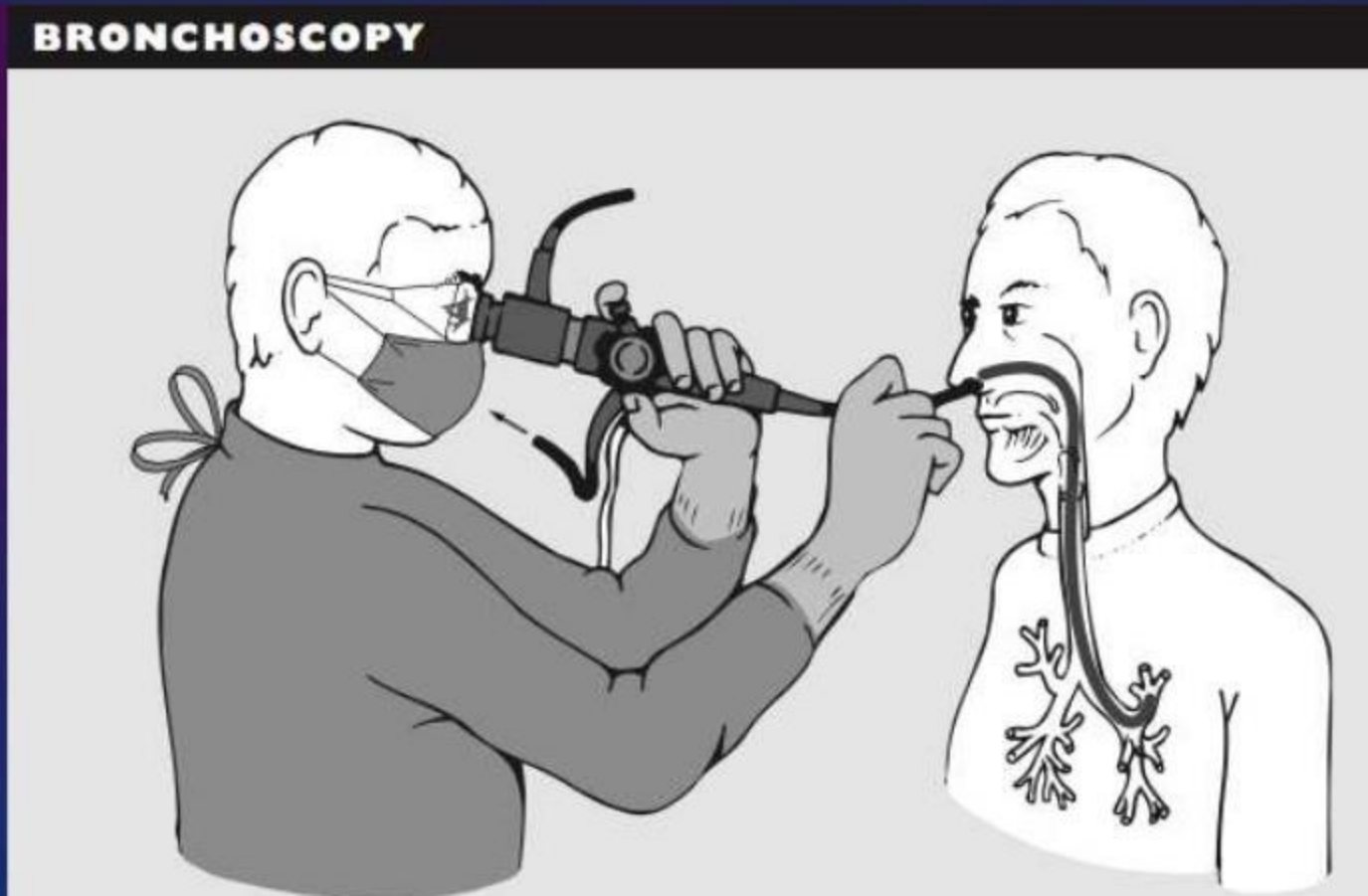
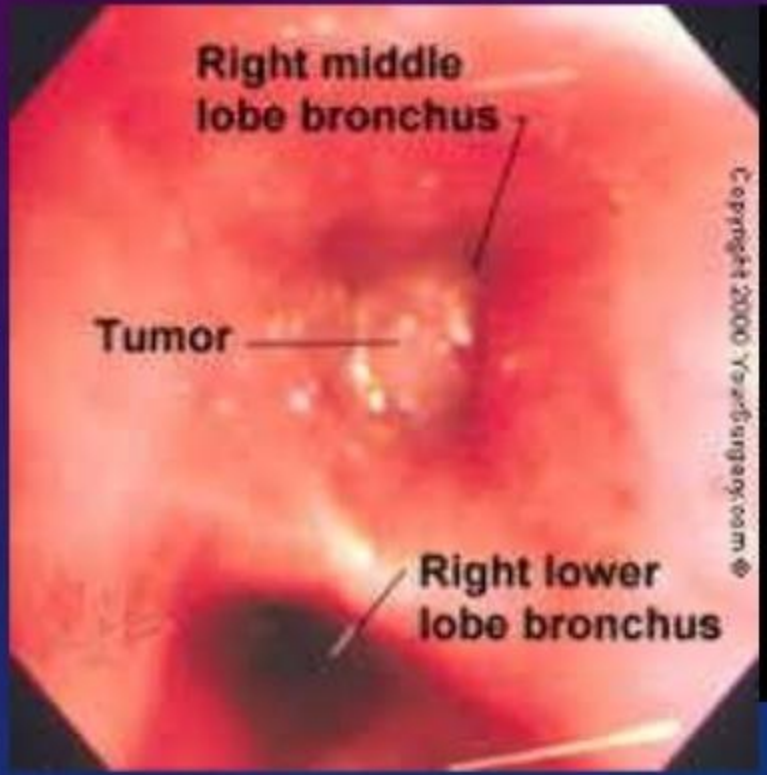
INVESTIGATIONS

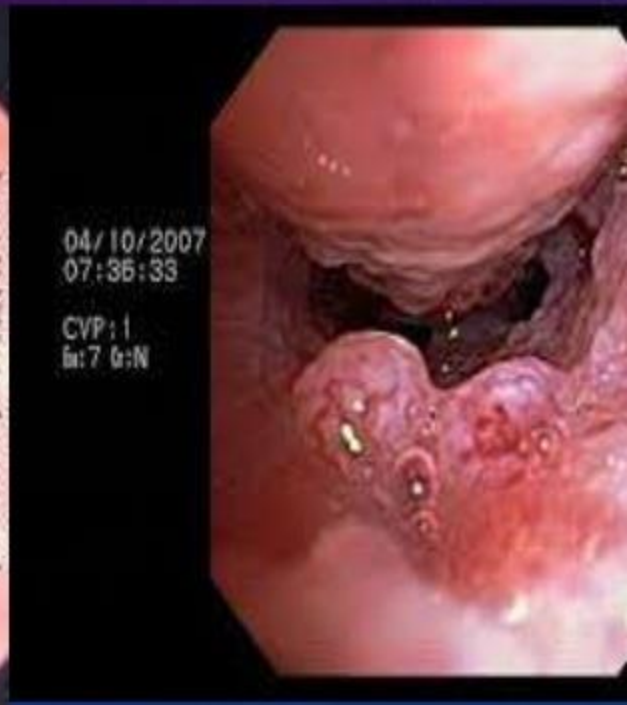
- Bronchoscopy



INVESTIGATIONS

- **Bronchoscopy**



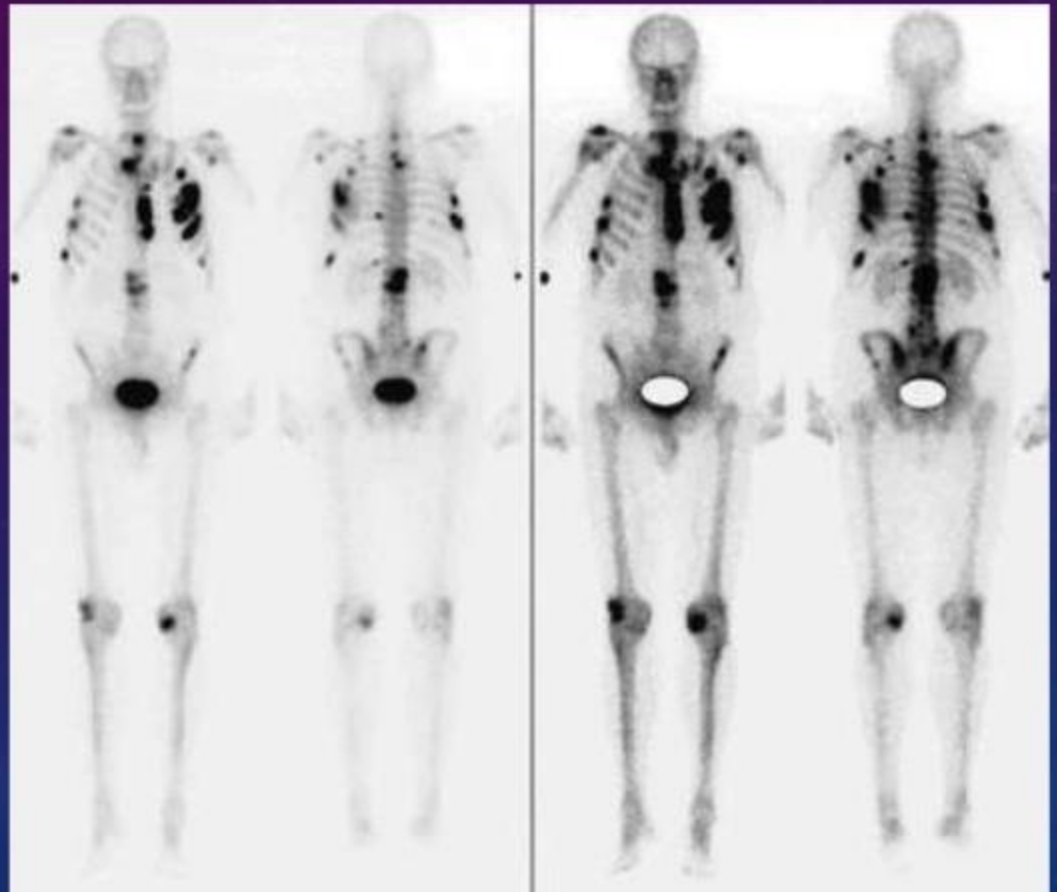


INVESTIGATIONS

- **Bronchoscopy**

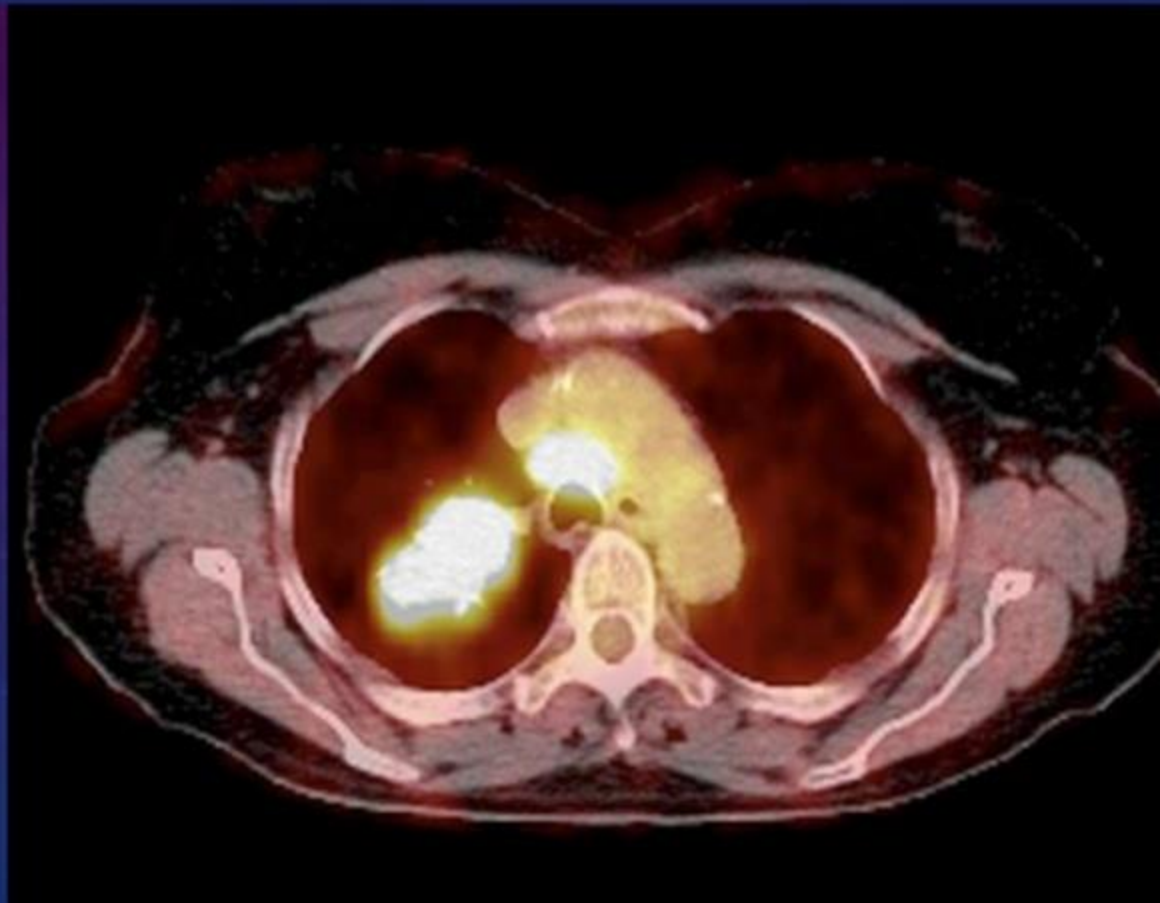
INVESTIGATIONS

- **Bone Scan**



INVESTIGATIONS

- Positron Emission Tomography (PET)



INVESTIGATIONS

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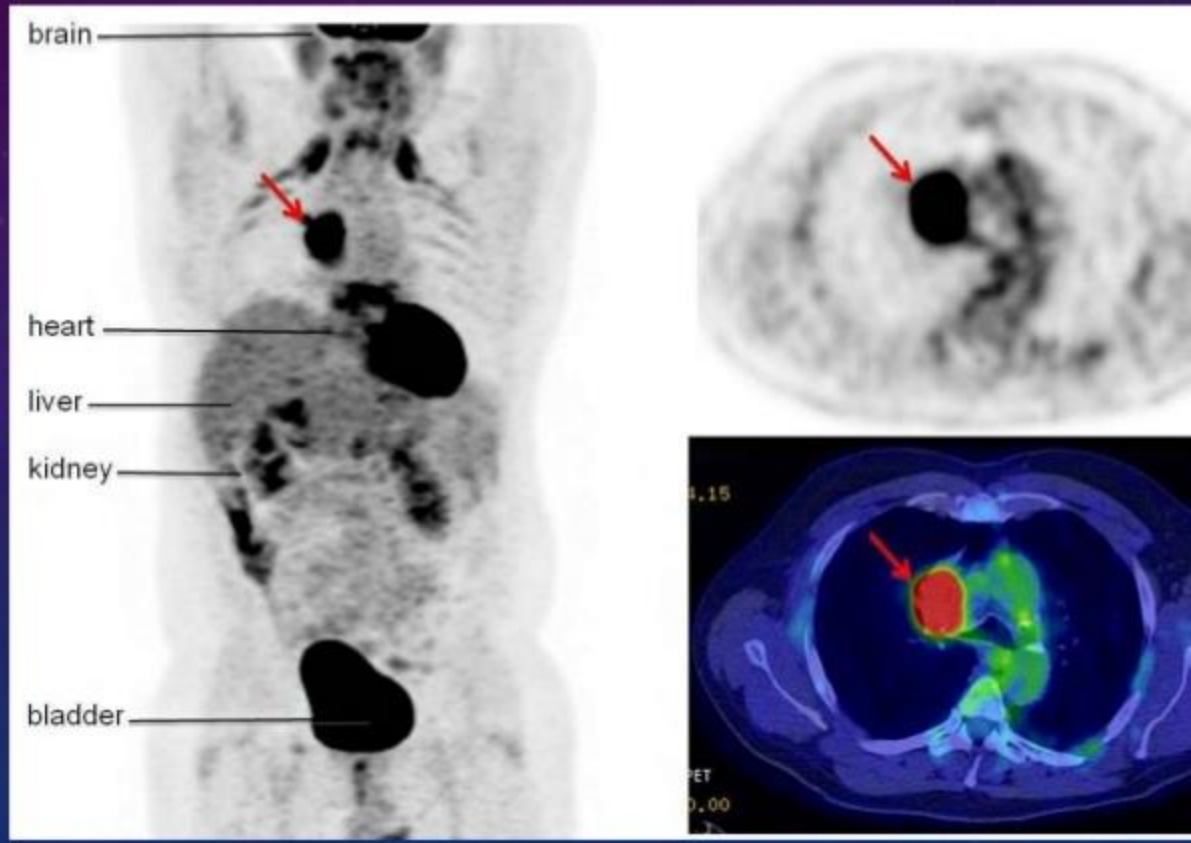


MANAGEMENT

1. Surgical resection in patients with ipsilate peribronchial or hilar node involvement
2. Radiotherapy
3. Chemotherapy
4. Laser therapy
5. General managment

MANAGEMENT

- **Radiotherapy**

✓SVCO

✓Recurrent hemoptysis

✓Pain caused by chest wall invasion or skeletal metastasis

✓To relieve obstruction of trachea & main bronch

✓With chemotherapy,it can prevent brain

MANAGEMENT

- **Chemotherapy**

✓Small cell carcinoma – Combined treatment with cytotoxic drugs & radiotherapy

✓IV Cyclophosphamide

✓Doxorubicin

✓Vincristine

✓Etoposide

MANAGEMENT

- **Laser Therapy**

✓Via fiber optic bronchoscopy

✓Palliative treatment

✓To destroy tumour tissue occluding major airways & to allow re aeration of collapsed lung

MANAGEMENT

- General Management

✓Pain relief

✓Good diet

✓Specific therapy to treat anxiety & depressi

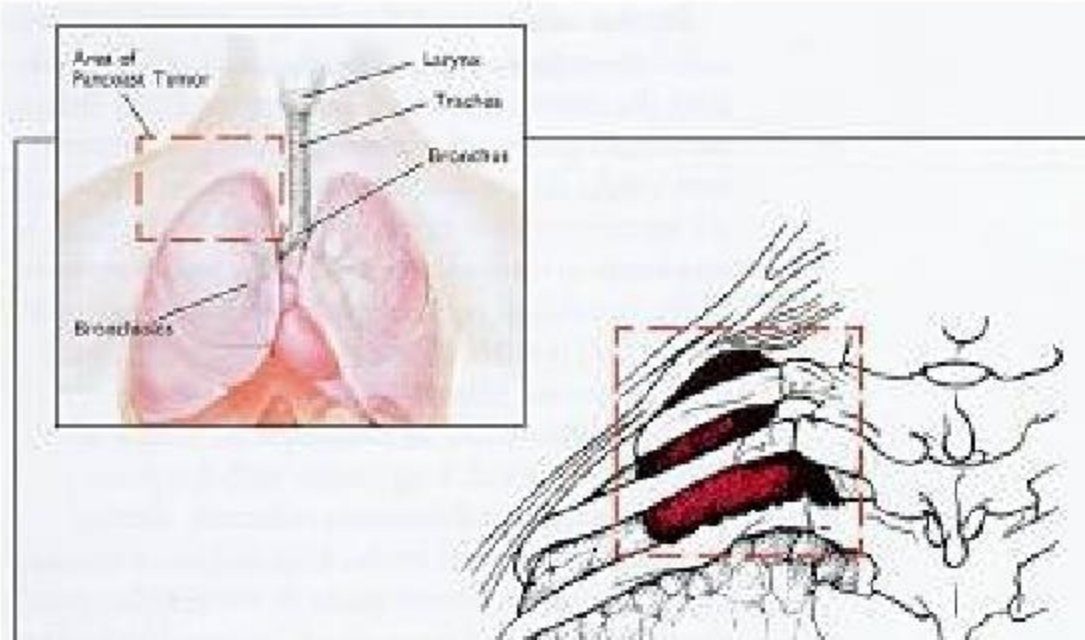
✓Treat Hypercalcemia

✓Manage malignant pleural effusions.

PANCOAST TUMOR

Introduction

- Henry Pancoast: early 20th century
- One region…Many names
- Location



Differential Diagnosis

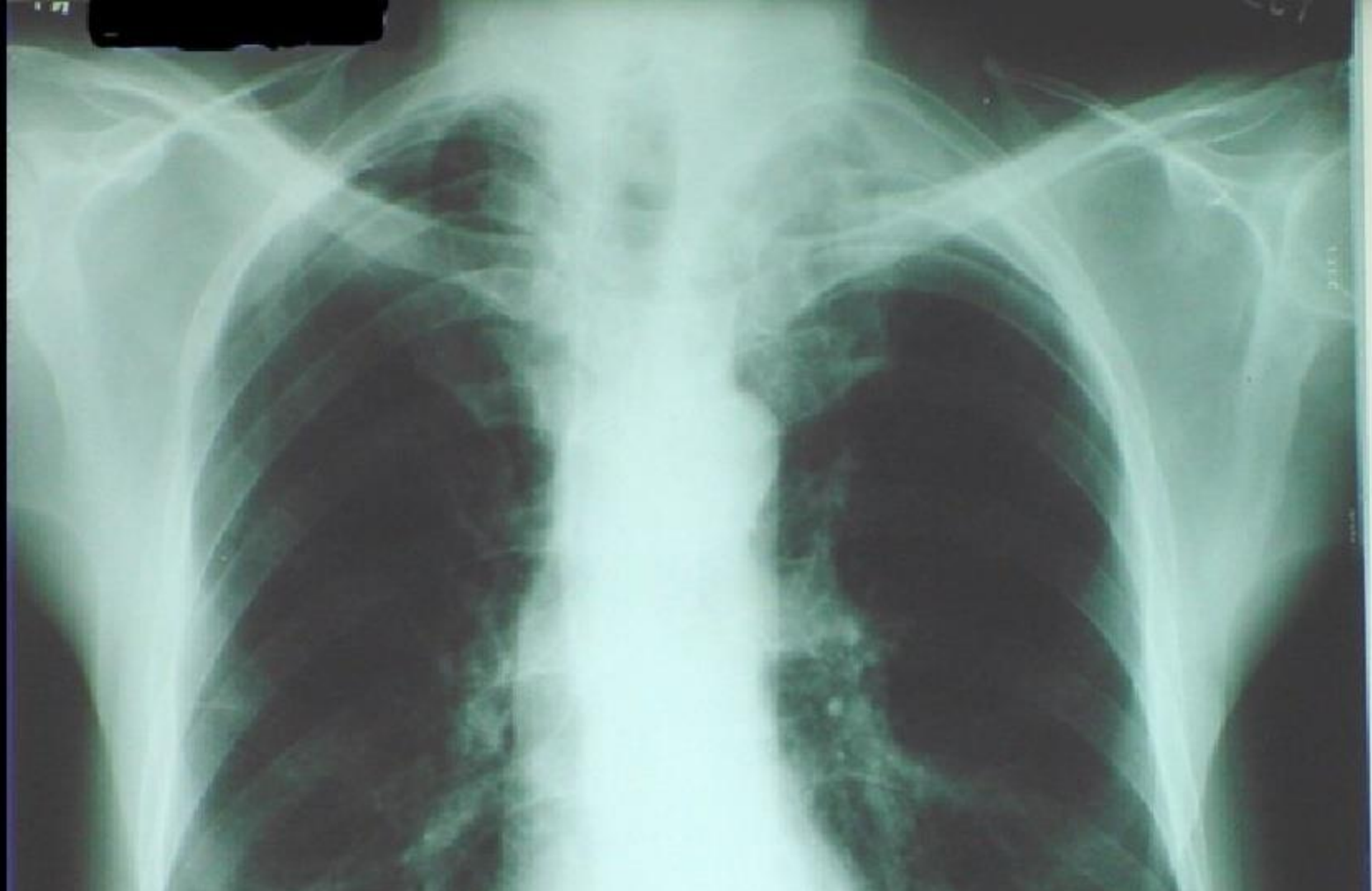
- Malignant Tumor
  - Pancoast's Tumor
  - Mesothelioma
  - Lymphoma
  - Metastatic Disease
- Benign Tumor (most commonly Neurofibroma
- Pleural Thickening
- Pleural effusion (loculated at apex)
- Hematoma
  - Extrapleural from aortic rupture
  - Vascular aneurysms
  - Iatrogenic (i.e. after attempted CVC placement)

Clinical Presentation

- Arm/shoulder pain
- Horner's syndrome
- Weakness/atrophy or hand muscles

Radiographic findings

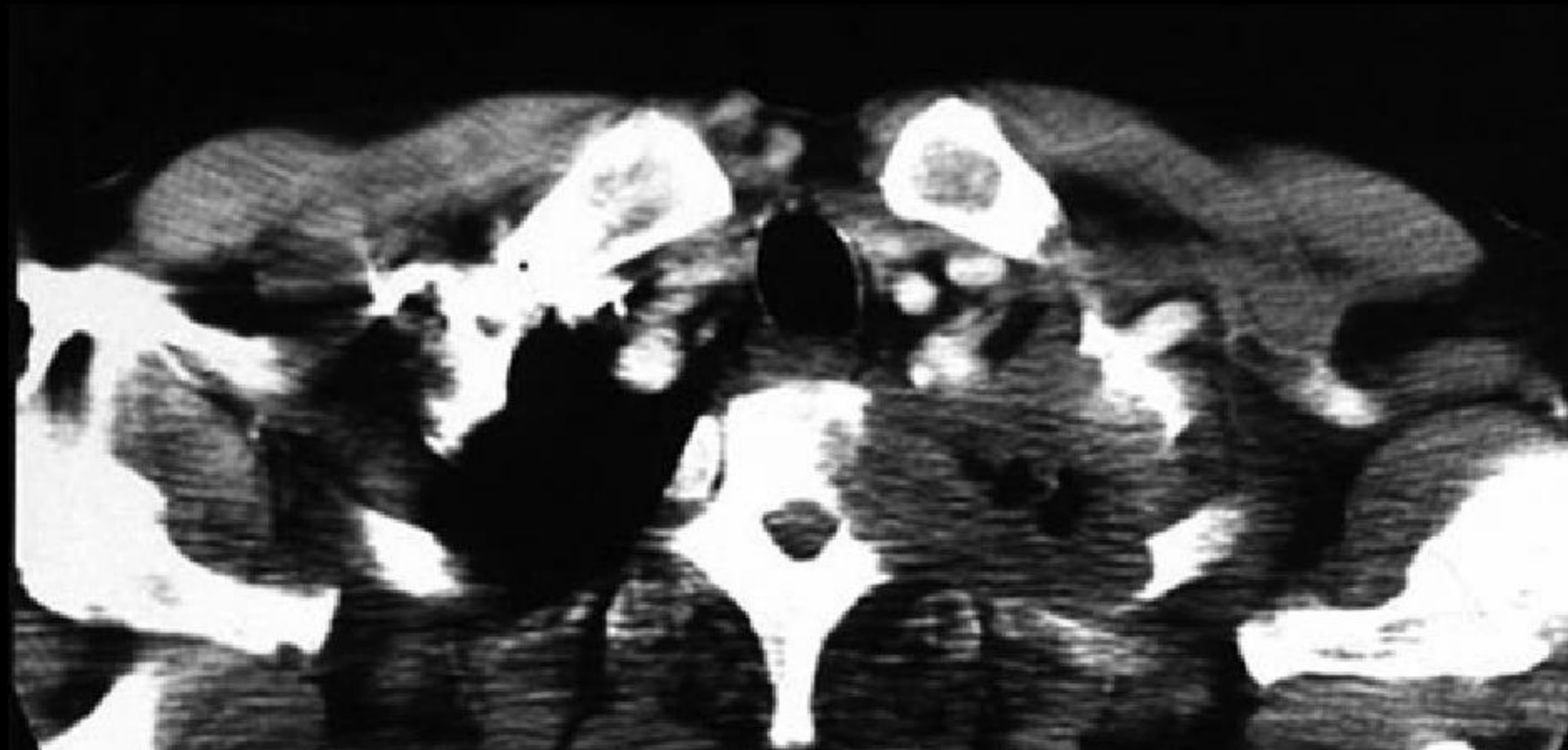
- X-Ray
  - Unilateral cap > 5mm
  - Asymmetry of bilateral caps > 5 mm
  - Apical mass
  - Bone destruction



Radiographic findings

- X-Ray
  - Unilateral cap > 5mm
  - Asymmetry of bilateral caps > 5 mm
  - Apical mass
  - Bone destruction
- CT
  - Presence of satellite nodules, parenchymal disease


R
10cm

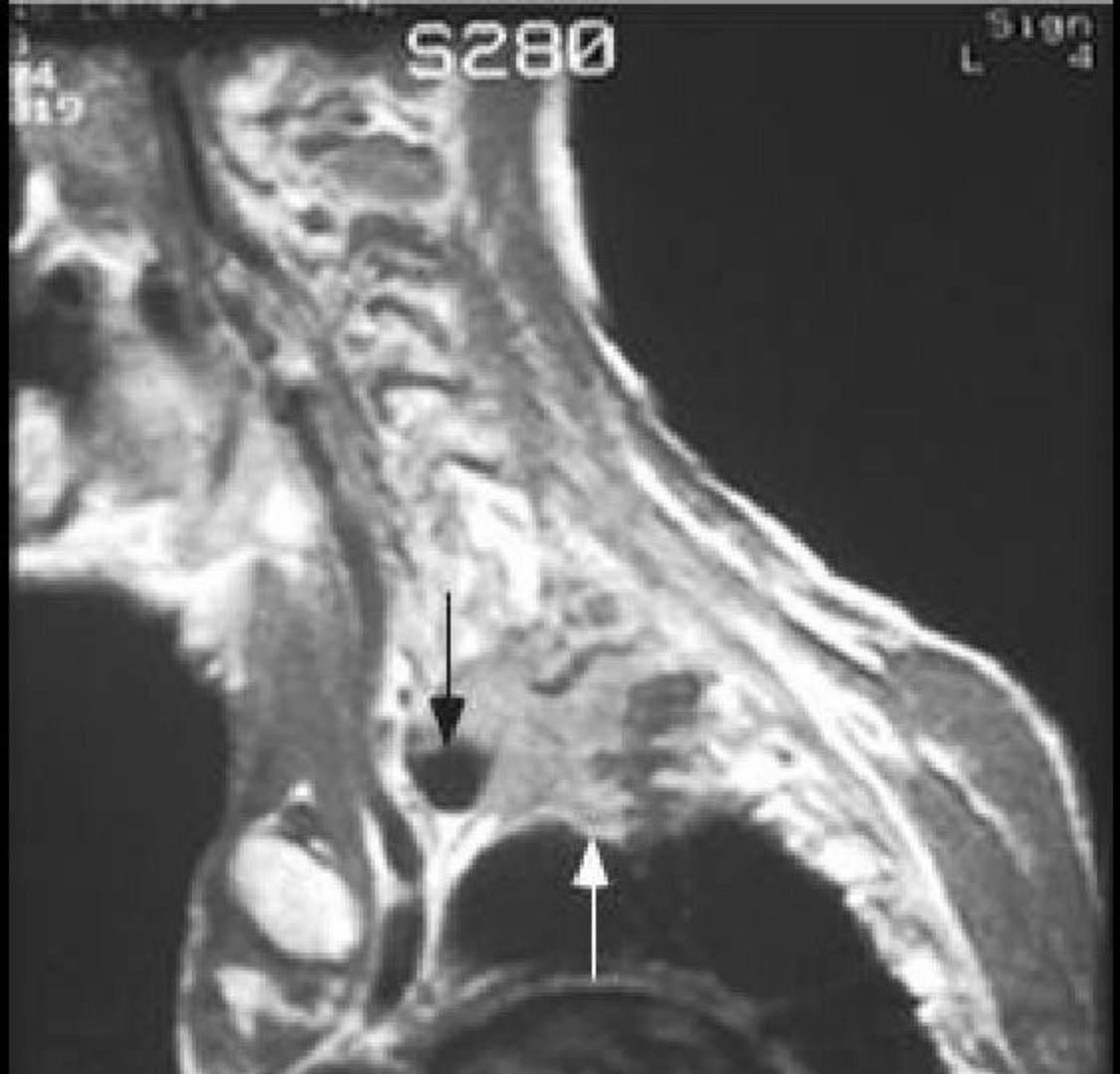


Radiographic findings

- X-Ray
  - Unilateral cap > 5mm
  - Asymmetry of bilateral caps > 5 mm
  - Apical mass
  - Bone destruction

- CT
  - Presence of satellite nodules, parenchymal disease, mediastinal


HA
BET
R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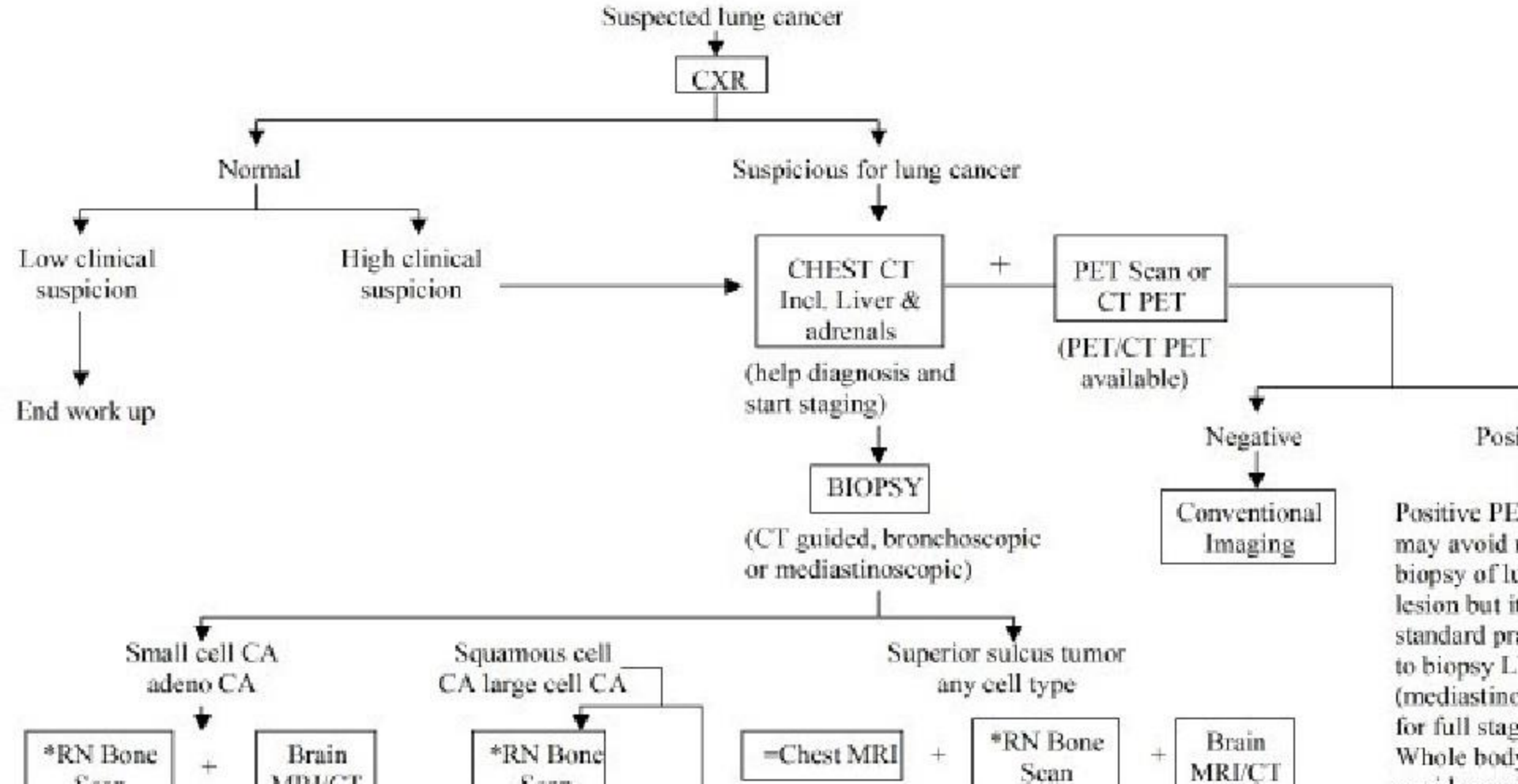
Diagnostic Work-Up

- Bronchoscopy and sputum cytology?
- Percutaneous needle biopsy
- VATS
- Thoracotomy

Pathology

- Mostly non-small cell lung cancer
  - Mainly squamous cell carcinoma
- Small cell carcinoma: 5% of cases

ALGORITHM FOR DIAGNOSING AND STAGING SUSPECTED LUNG CANCER



Staging/Preoperative Assessment

- Staging same as with NSCLC's (TMN staging)
- PET scan
- Mediastinoscopy
- Brain Imaging

Treatment

- Multimodality therapy
- Radiation therapy followed by en bloc extended surgical resection
- Chemotherapy/chemoradiotherapy

Prognosis

- Overall 5-year survival rates with preoperative RT and surgical resection: 30%
  - Patients with uninvolved lymph nodes: 30-40%
  - Patients with incomplete resection, mediastinal nodal involvement, or T4 vertebral body invasions: <10%
- 2/3 patients will have recurrent disease
- Poor prognostic factors:

Post-Therapy Surveillance

- Little data to support evidence-based guidelines for routine surveillance following therapy

Further Recommendations

- Whenever possible, patients with superior sulcus tumors should be enrolled in prospective clinical trials so that the optimal therapy may be determined.


Thank
You