

Lung cancer

# Objectives

- Describe the incidence of lung cancer in different groups
- Give an account of the aetiological factors involved in lung cancer
- Describe the typical pattern of symptoms reported by patients with lung cancer
- Describe the common clinical signs associated with the disease and understand the structural abnormalities underlying them
- Understand the imaging techniques used in the diagnosis and staging of the disease
- Describe the common methods used to obtain material for histological diagnosis
- Give an account of the histology and classification of common lung tumours
- Describe the behaviour of different histological types and their relationship to prognosis and treatment
- Describe in outline the different treatments available and how they may affect survival

# Epidemiology

## ○ Males

- Commonest male cancer
- Mortality rate is around 100 per 100,000
- Incidence slowly falling due to reduction in smoking but in non-proportional way

## ○ Females

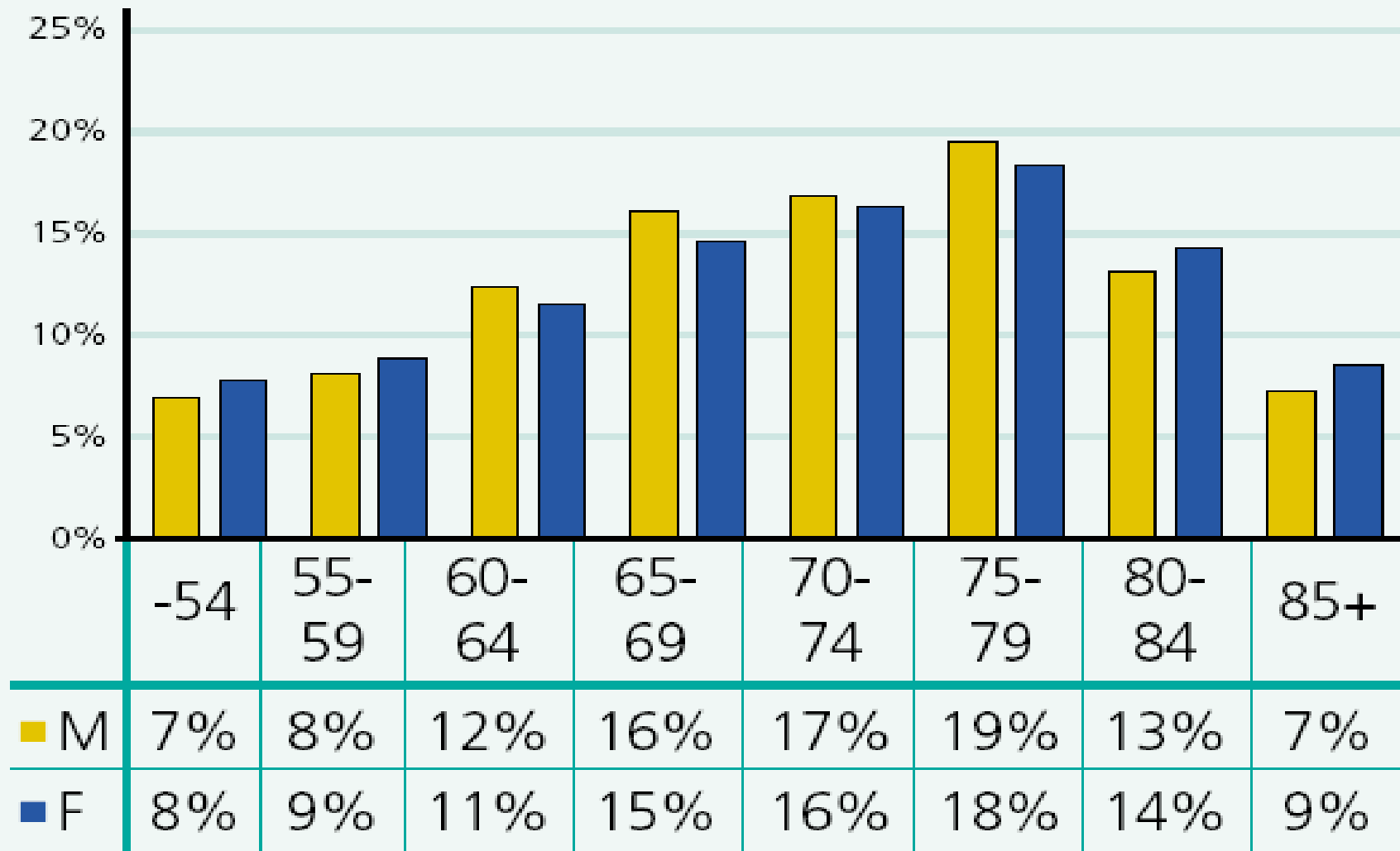
- Exceeds breast cancer as a cause of death in women
- Mortality rate is around 40 per 100,000
- Incidence is steadily rising

## ○ Socio-economic groups

- Wide variation
- Rate three times higher in lowest compared with highest

# Lung Cancer: Age distribution 2006

## England and Wales



# etiology

- **Smoking**
- Lung cancer is directly related to smoking, with the risk being proportional to the duration of the habit and the number of cigarettes smoked.
- **Around 90% of lung cancer in men and 80% in women are caused by smoking.**

# Etiology continued

- Passive smoker

# Other risk factors

- Asbestos exposure
- Radon exposure
- Genetic factors
- Dietary factors
- Chronic fibrotic dis. Of the lung

# Pathology

- Lung tumours are divided into two groups depending on the presence or absence of cells:
  - **Non-Small Cell Lung Cancer**
- **Small Cell Lung Cancer**
- Non-Small Cell
  - More than 2/3rds have inoperable disease at presentation
- Small Cell
  - $\frac{3}{4}$  have metastatic disease at presentation



# Clinical presentation

- Signs and Symptoms of lung cancer are relatively non-specific, with overlap with those of many respiratory diseases and may be subtle as the patients can not appreciate the serious problem that is why the first presentation to medical attention when they have advanced disease.

# Primary Tumour

- Cough  
Dyspnoea
- Wheezing
- Haemoptysis
- Chest pain
- Post-obstructive pneumonia
- Weight loss
- Lethargy / Malaise

# Regional Metastases

- Superior vena cava obstruction
- Hoarseness (Left recurrent Laryngeal nerve palsy)
- Dyspnoea (Phrenic nerve palsy)
- Dysphagia
- Pericardial effusion
- Pleural metastasis
- Rib metastasis

# Superior Vena Cava Obstruction



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Hollinger, Meissner, Riffarth & Co. Berlin.



# Lung Cancer : Finger Clubbing

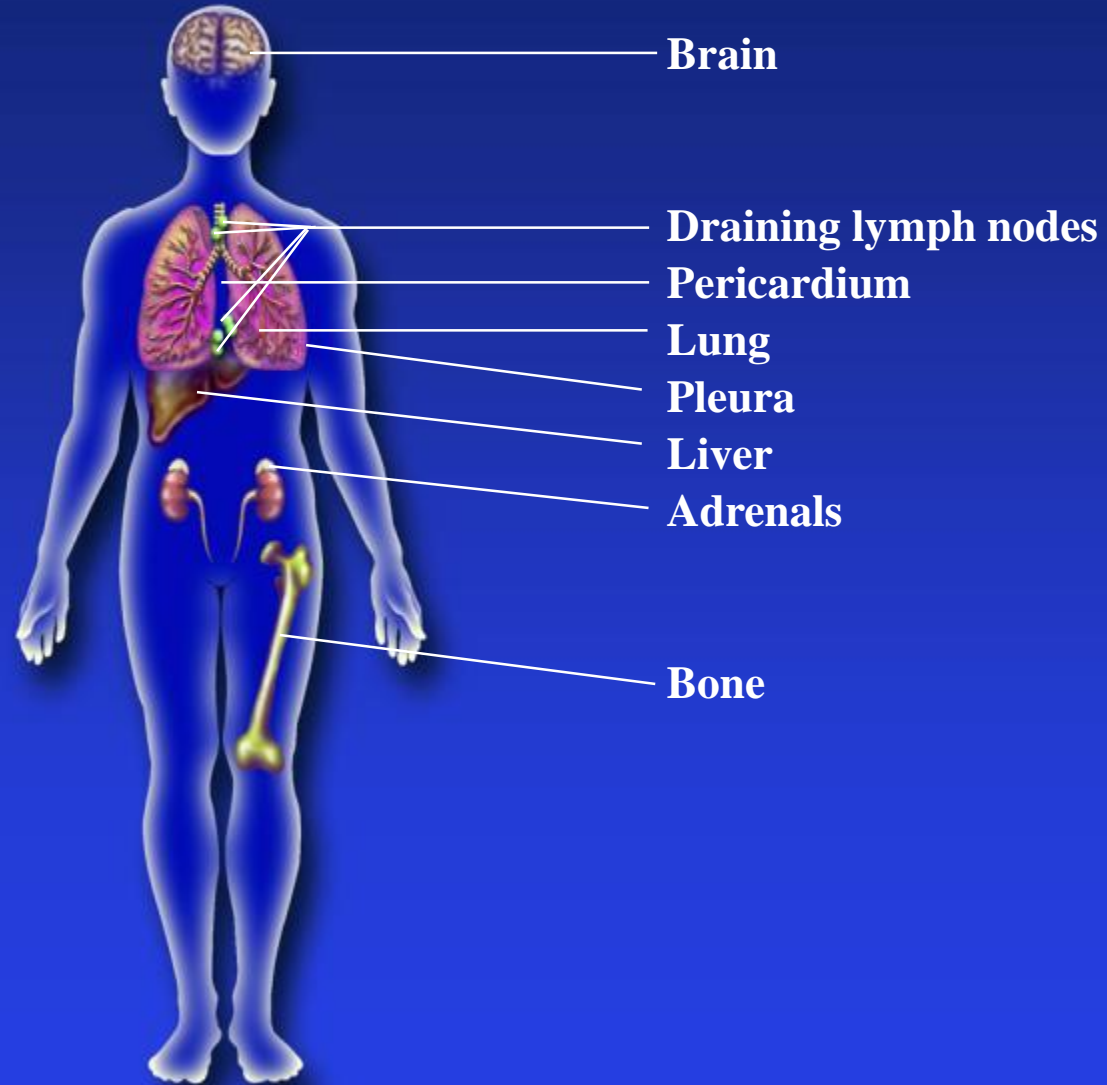


# Distant Metastases

- Bone pain / Fractures
- CNS symptoms (Headache, double vision, confusion etc.)
- Liver metasis
- Adrenal metastasis
- Skin metastasis

# LUNG CANCER:

## Local and distant spread



# Paraneoplastic Syndrome

- Paraneoplastic syndrome is the presence of a symptom or disease due to the presence of cancer in the body, but not due to the local presence of cancer cells.
- They are mediated by humoral factors (cytokines and hormones) secreted by tumour cells, or the immune response against tumour cells.



- **Endocrine**

- Hypercalcaemia
- Cushing's syndrome

- **Neurological**

- Encephalopathy
- Peripheral neuropathy

- **Skeletal**

- Finger clubbing

- **Haematological**

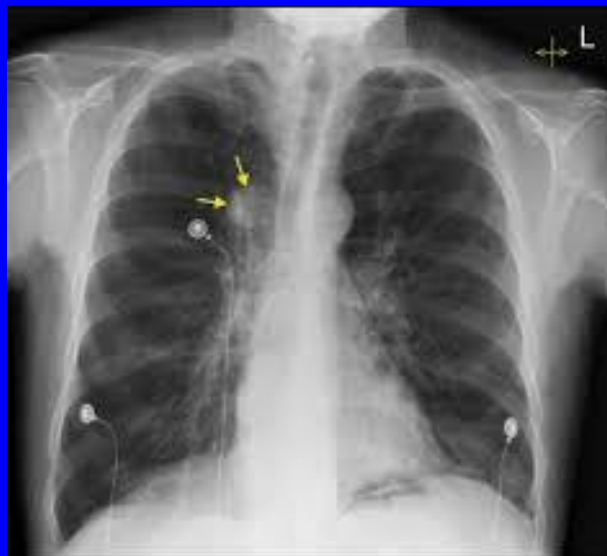
- Anaemia
- Thrombocytopenia
- Disseminated Intravascular Coagulation (DIC)

- **Other**

- Nephrotic syndrome
- Anorexia or cachexia

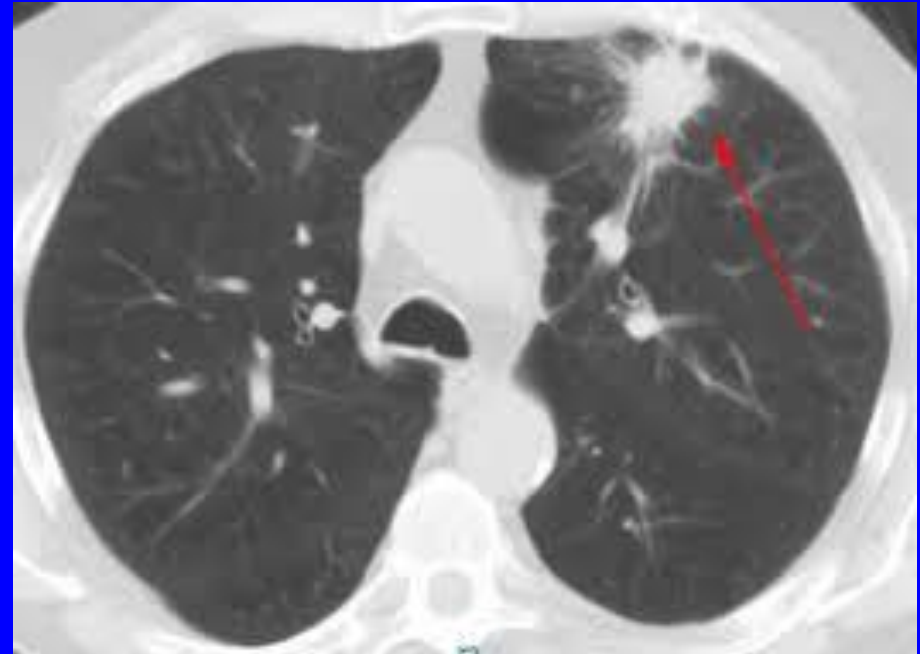
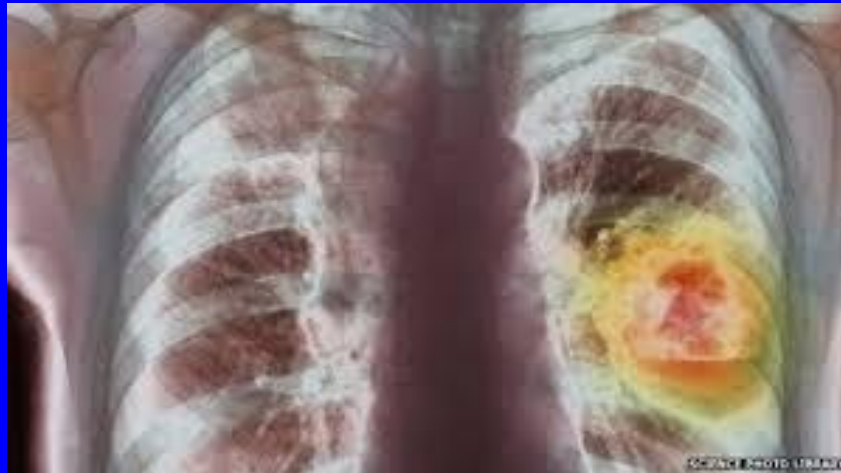
# Investigations

- Imaging investigations of various types are central to both the diagnosis and assessment of the disease (staging). Staging is one of the most important determinants of treatment and prognosis.
- First clinical suspicion
  - Plain Chest X-Ray



## ○ Diagnosis and staging

- CT scan
- PET scan
- Isotope bone scan



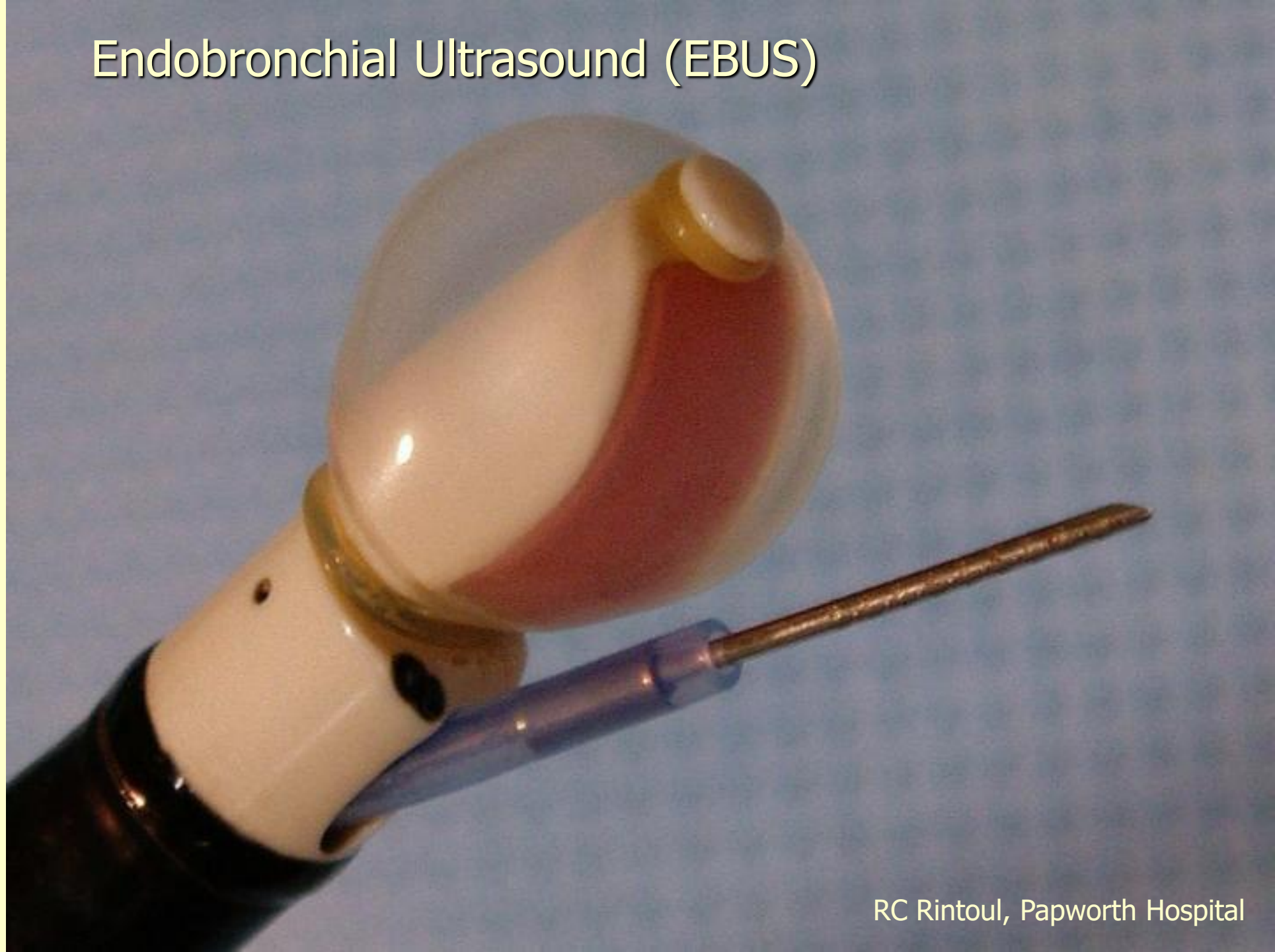
# Obtaining tissue diagnosis

- Bronchoscopy
- Trans-thoracic biopsy
- Trans-thoracic needle aspirate
- LN sampling
- Plerual fluid aspirate
- Plerual biopsy
- Pleuroscopy

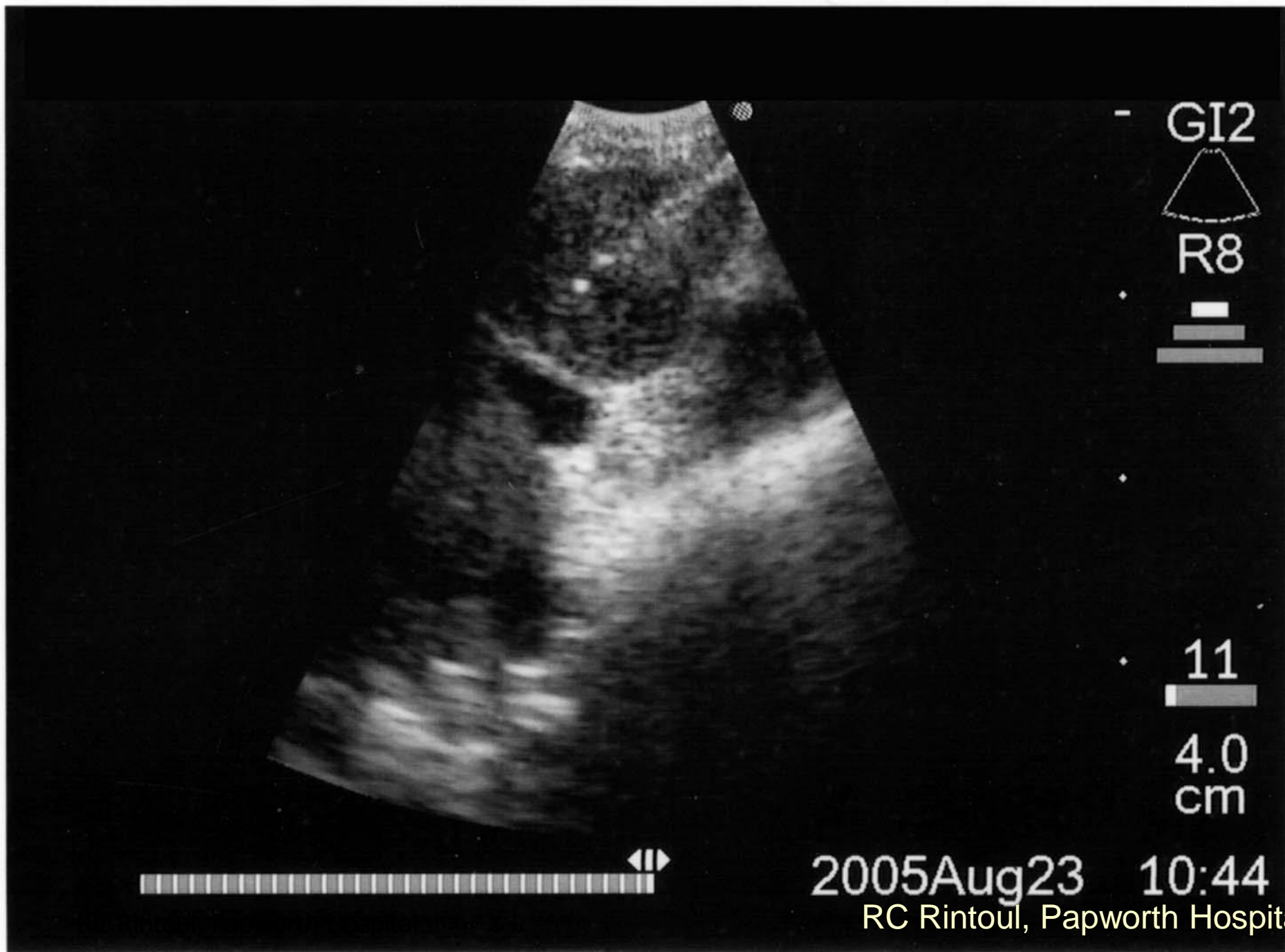
# Staging

- Ct contrast
- EBUS
- Pleuroscopy

# Endobronchial Ultrasound (EBUS)







# Operability

- Cardiac : ECG , echo. , trade mill test , catheterization
- Respiratory : PFT

# Staging

- Mainly done by TNM :
- T tumor size & invasiveness
- N lymph node involvement
- M metastasis

- This system used for NSCLC
- For SCLC localized to one hemithorax  
extended beyond the hemithorax

# Prognosis Depends On:

- Cell type
  - Small Cell worse than Non-Small Cell
- Stage of disease
- Performance status
- Biochemical & molecular markers
- Co-morbidities
  - E.g. Cardiac or chronic respiratory disease

# Treatment options

- Surgery
  - Mostly Non-Small Cell (<20% operable)
- Radiotherapy
  - Radical – Curative
  - Palliative – Symptom control
- Chemotherapy
  - Small cell – Potentially curative (Minority)
  - Non small cell – Modest survival increase, symptom control
- Combination therapy
  - Combination of chemo and radiotherapy
- Biological targeted therapies

Thanks

Any questions