PRESENTATION AND DIAGNOSIS OF LUNG CANCER

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LEARNING OBJECTIVES

- Understand the presentation of lung cancer
- Understand the steps and investigations required to diagnose lung cancer
- Understand the decision making processes in managing these patients
- Consider screening for lung cancer

EPIDEMIOLOGY

- Leading cause of cancer-related death in the world
- Male:female ratio 6:5
- Male incidence decreasing, female increasing
- 75% patients present with symptoms due to advanced disease not amenable to cure
- 5-year survival rate is just 16%

RISK FACTORS

- Smoking history positive in at least 85-90%
- Occupational exposure e.g. asbestos, silica, uranium
- Radon gas
- Air pollution
- Genetic – hereditary predisposition

PRESENTATION OF LUNG CANCER

1) EFFECTS OF TUMOUR IN CHEST

- Cough
- Dyspnoea
- Recurrent/persistent pneumonia
- Haemoptysis
- Chest pain
- Shoulder/arm pain

2) EFFECTS OF METASTASIS OR INVASION WITHIN THE CHEST

- Airway obstruction
- Superior vena cava obstruction
- Hoarse voice due to recurrent laryngeal nerve invasion

- Dyspnoea due to pleural or pericardial effusion

3) DISTANT METASTASIS

- Brain – headache, seizure
- Bone – pain
- Liver - pain
- Adrenal – insufficiency/haemorrhage
- Lung – dyspnoea/haemoptysis

4) PARANEOPLASTIC SYNDROMES

= is a syndrome that is the consequence of cancer in the body but that, unlike mass effect, is not due to the local presence of cancer cells. These phenomena are mediated by humoral factors (by hormones or cytokines) excreted by tumour cells or by an immune response against the tumour.

4) PARANEOPLASTIC SYNDROMES

- Hypercalcaemia – squamous cell carcinoma
- Acanthosis nigricans
- Syndrome of inappropriate anti-diuretic hormone secretion (SIADH)
- Cushings syndrome – excessive ACTH secretion
- Lambert-Eaton syndrome

5) INCIDENTAL

- Imaging for some other reason

RED-FLAG SYMPTOMS

- Persistent cough for more than three weeks
- Pleuritic chest pain
- Dyspnoea
- Haemoptysis
- Persistent nocturnal cough
- Wheeze
- Recurrent chest infections
- Unintentional weight loss

→ **2-week wait referral**

DIAGNOSIS OF LUNG CANCER

HISTORY AND EXAMINATION

- What questions are important to ask?

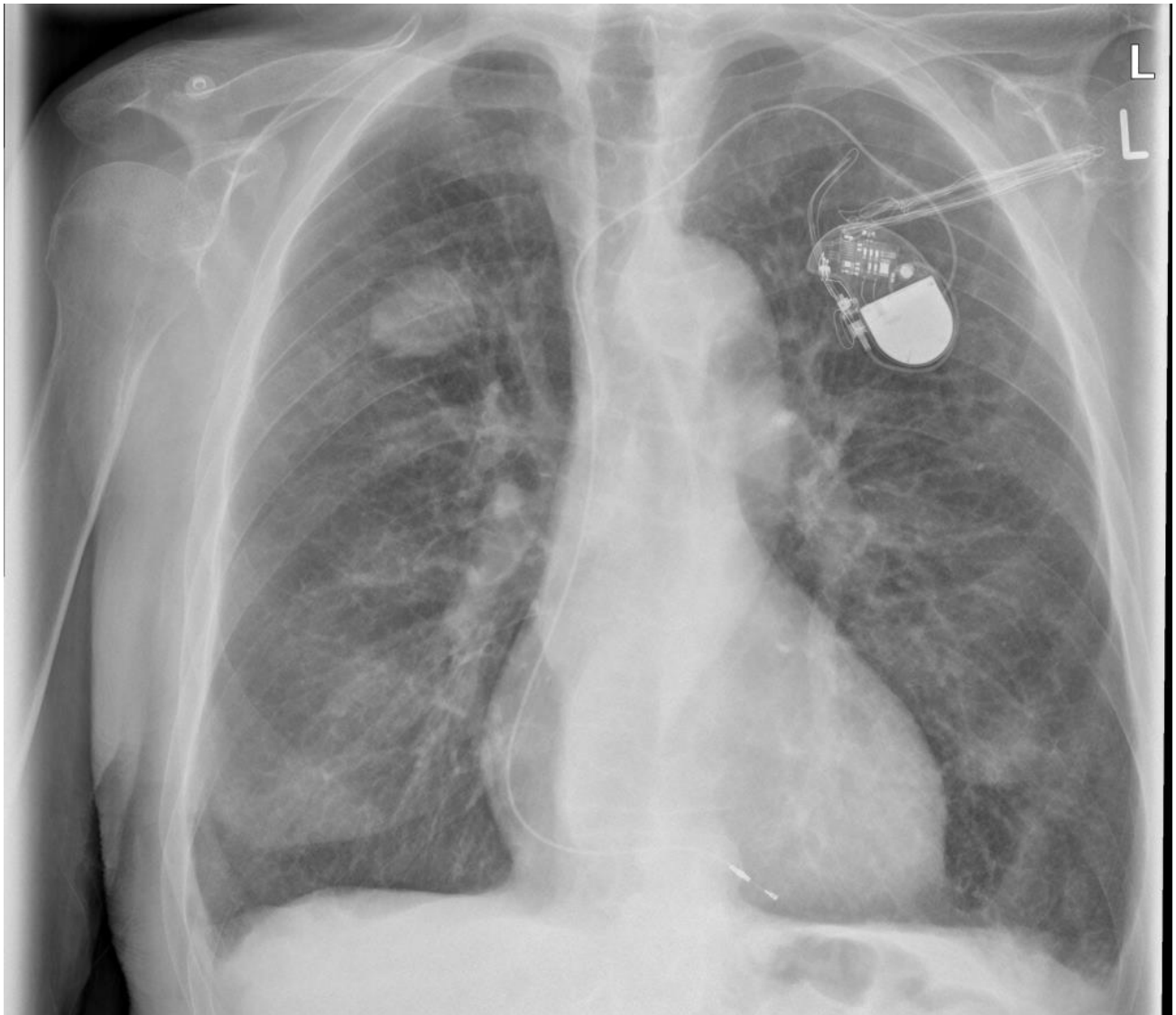
  - Explore red-flag symptoms of lung cancer
  - Explore symptoms described above

  - Smoking?
  - Exposure to risk factors?
  - Family history?

INVESTIGATIONS: CXR

- May demonstrate:
  - Primary tumour
  - Lymph node involvement
  - Metastatic disease
  - Pleural effusion
  - Obstructive pneumonia/atelectasis

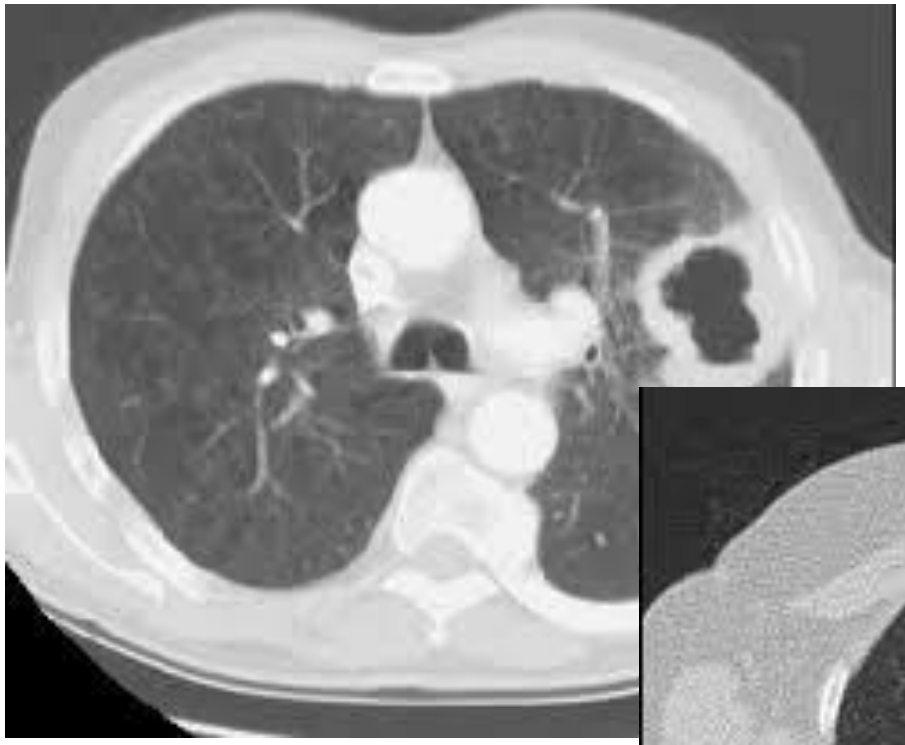
INVESTIGATIONS: CXR



INVESTIGATIONS: HRCT

- Allows assessment of:
  - Primary lesion
    - Site
    - Size
    - Local spread
  - Lymph node involvement
  - Presence of metastatic disease

INVESTIGATIONS: HRCT



INVESTIGATIONS: BIOPSY

- To confirm type of lung cancer
  - CT guided
  - Bronchoscopic
  - Endobronchial ultrasound guided

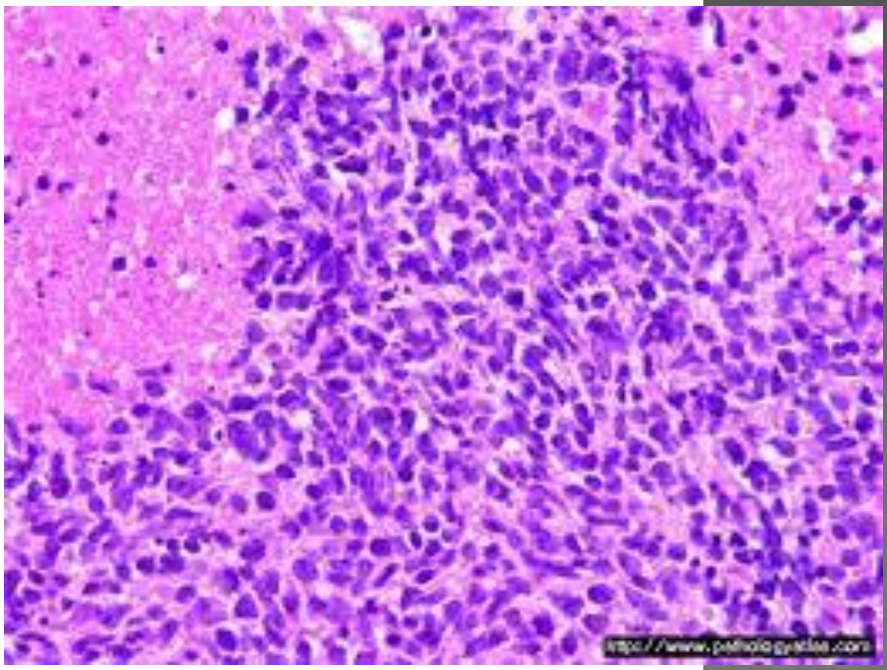
TYPES OF LUNG CANCER

- Small cell carcinoma (15%)
- Non-small cell carcinoma
  - Adenocarcinoma (40%)
  - Squamous cell carcinoma (25%)
  - Large cell carcinoma (10%)
  - Carcinoid tumour (a neuroendocrine tumour)

SMALL CELL LUNG CANCER

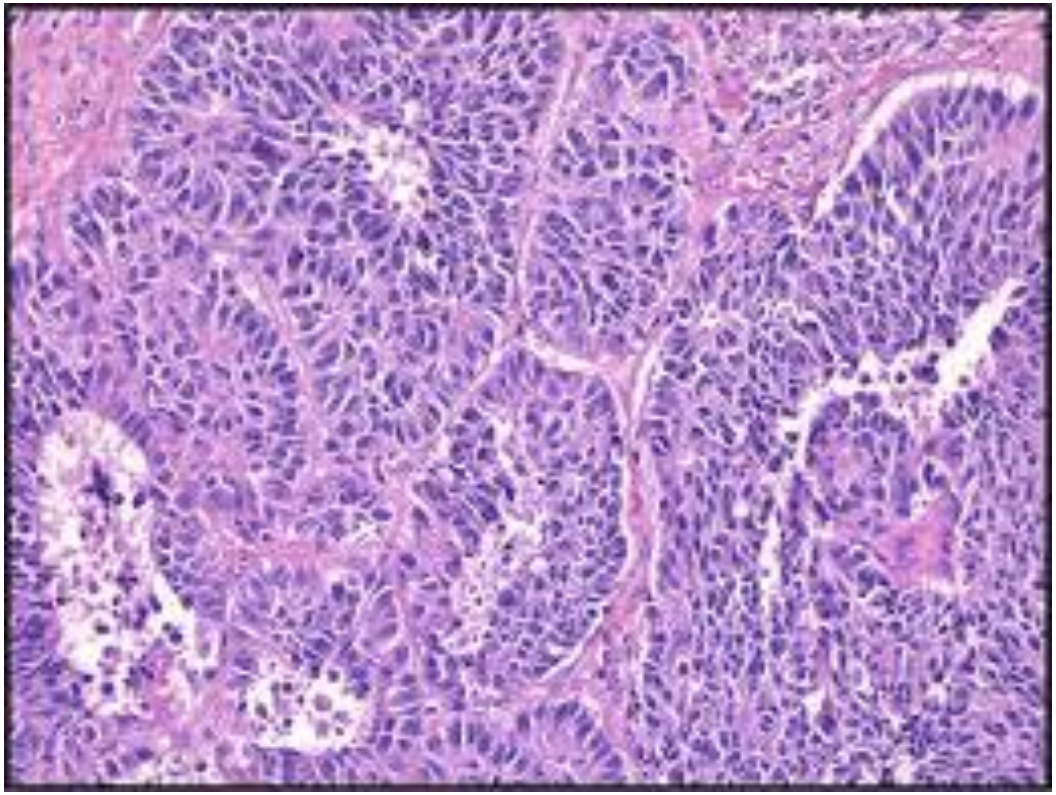
- Malignant neuroendocrine epithelial tumour consisting of small cells

- Tend to be:
  - Centrally located
  - Associated with paraneoplastic syndromes
  - Exhibit aggressive behaviour: rapid growth and early metastasis
  - Very chemo and radio-sensitive



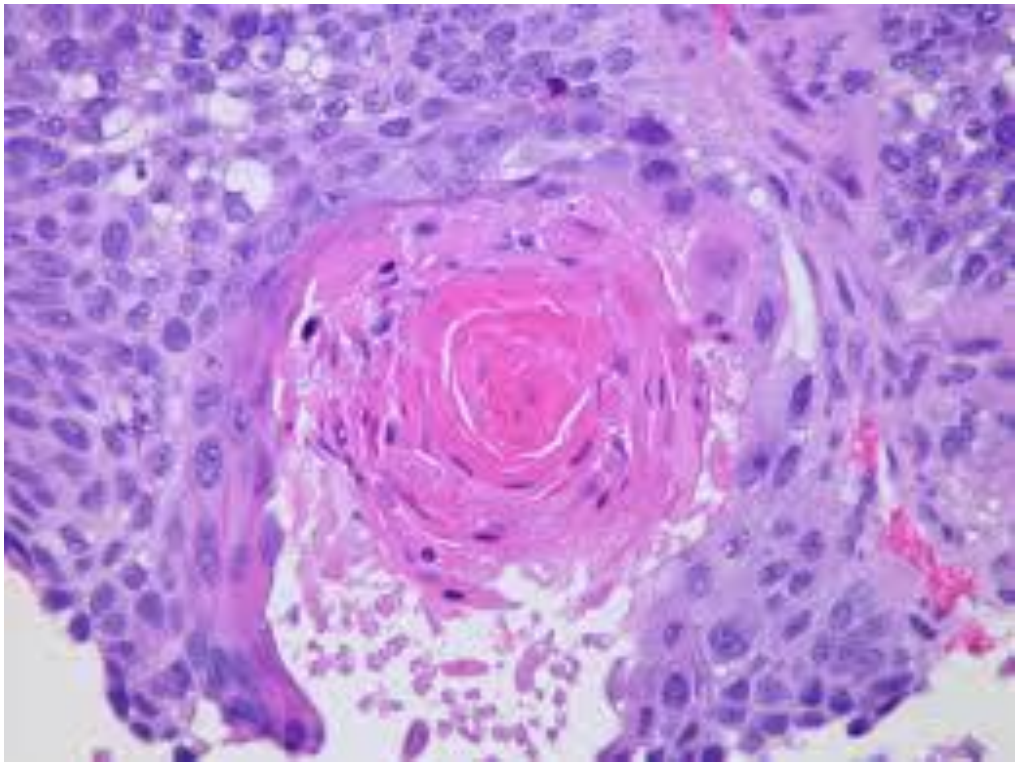
NON-SMALL CELL LUNG CANCER

- Adenocarcinoma
  - Glandular structures



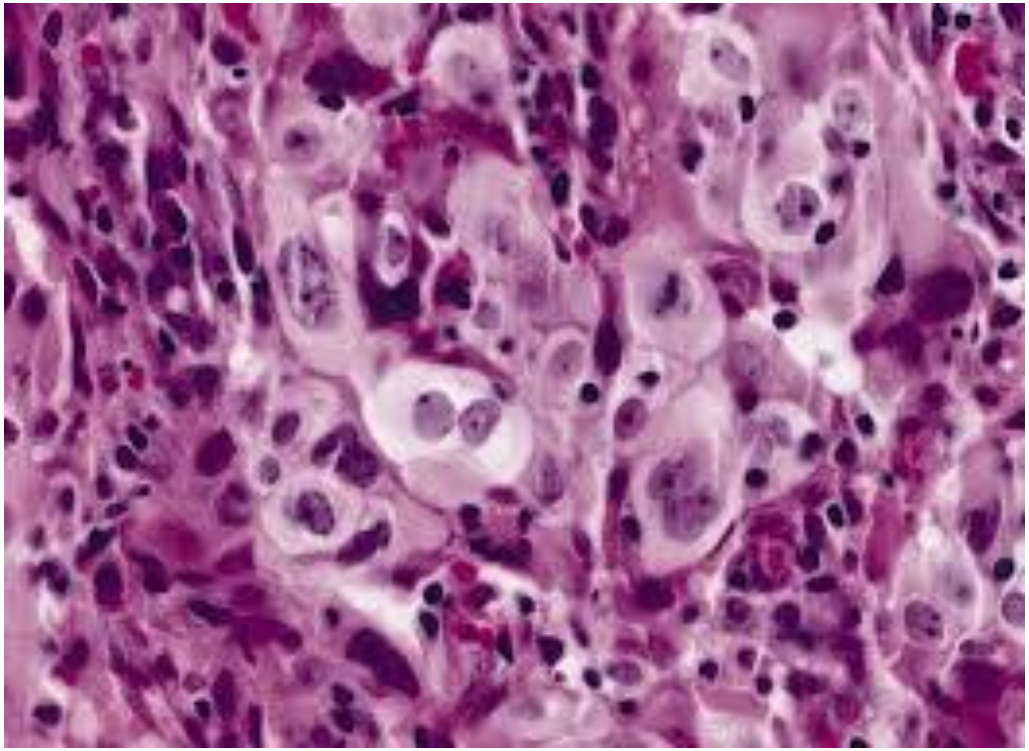
NON-SMALL CELL LUNG CANCER

- Squamous cell carcinoma
  - Keratin pearls



NON-SMALL CELL LUNG CANCER

- Large cell carcinoma
  - Absence of morphological features of the above



WHAT NEXT = MDT

- Multidisciplinary team meeting

- Members?
  - Respiratory physician
  - Radiologist
  - Histopathologist
  - Oncologist
  - Thoracic surgeon
  - Lung cancer specialist nurse
  - Palliative care team

MANAGEMENT DECISIONS

- Further investigations:
  - Staging
  - Operability
- Management options:
  - Surgery
  - Oncology
  - Palliative care

⟹ Focus of next lecture

SCREENING FOR LUNG CANCER

WHAT IS SCREENING?

- a strategy used in a population to identify the possible presence of an as-yet-undiagnosed disease in individuals without signs or symptoms. This can include individuals with pre-symptomatic or unrecognized symptomatic disease. As such, screening tests are somewhat unique in that they are performed on persons apparently in good health - enabling earlier intervention and management in the hope to reduce mortality and suffering from a disease

CURRENT NHS CANCER SCREENING PROGRAMMES?

- Pap smear or liquid-based cytology to detect potentially precancerous lesions and prevent cervical cancer
- Mammography to detect breast cancer
- Colonoscopy and faecal occult blood test to detect colorectal cancer

REQUIREMENTS FOR SCREENING

WHO 1968

- The condition should be an important health problem.
- There should be a treatment for the condition.
- Facilities for diagnosis and treatment should be available.
- There should be a latent stage of the disease.
- There should be a test or examination for the condition.
- The test should be acceptable to the population.
- The natural history of the disease should be adequately understood.
- There should be an agreed policy on whom to treat.
- The total cost of finding a case should be economically balanced in relation to medical expenditure as a whole.
- Case-finding should be a continuous process, not just a "once and for all" project.

NLST STUDY

- National Lung Screening Trial
- Prospective, randomised controlled trial between 2002 and 2004, reporting in 2011
- Assessing patients at high risk for lung cancer in USA
  - Group 1: annual screening with low-dose CT
  - Group 2: single CXR
- Group 1: relative reduction in mortality from lung cancer of 20%. 6.7% reduction in rate of death from any cause.
- Trial stopped early

UKLS

- UK Lung Cancer Screening Trial
- Aiming to identify 4000 high risk patients who will be randomised to receive a low dose CT scan
- Outstanding questions:
  - Cost effectiveness
  - Identifying patients at risk

POTENTIAL PROBLEMS

- Detection of nodules, majority of which are benign
  - NLST – 96% of abnormal results false positive
- Radiation from serial imaging
- Prolonged follow-up of nodules – anxiety of patients
- Some tumours would not have affected mortality during the patients lifetime ‘overdiagnosis’

SUMMARY

- Lung cancer is a common disease
- The majority of patients present with advanced disease
- Lung cancer diagnosis and management is a multidisciplinary process and involves a variety of imaging modalities
- Prevention is likely to have a far greater impact on lung cancer mortality than is screening