

## Lung Cancer

### Introduction

Lung cancer is one of the most common cancers in the UK, with 38,000 new cases diagnosed each year, constituting 1 in 7 of all cancers. It causes 34,500 deaths annually, more than breast and prostate cancers combined. Globally, large increases will occur in developing countries such as China due to increased tobacco smoking. Traditionally men have been more frequently affected, but in the last five years a small decline in incidence in males has been observed whereas in women lung cancer is increasing. Age at presentation is usually over 50 years.

### Risk factors

Lung cancer is linked to smoking in over 85% of cases.<sup>1</sup> The relative risk for someone who smokes 20 cigarettes per day is approximately 20 times greater than that of a lifetime non-smoker. Female smokers appear more susceptible. Stopping smoking before middle age avoids 90% of the risk. Passive smoking increases risk.

Patients with COPD are 3-5 times more likely to develop lung cancer than smokers without COPD. Other risk factors include occupational exposure to asbestos, nickel, cadmium and arsenic. Recently, a change on chromosome 15 has been identified which may confer genetic susceptibility. A strong relationship exists between lung cancer and socioeconomic deprivation, leading to some of the highest rates of lung cancer in Scotland and Northern England.

### Screening

Analysis of screening methods has not yet shown any form of screening which reduces overall mortality. Chest X-ray (CXR) and sputum cytology were found ineffective in the 1990s. The use of CT scans will detect tumours earlier but there is a large proportion of false positive nodules detected. Results of trials underway are awaited.

### Why is the prognosis so bad?

Lung cancer has a very poor prognosis which has sadly improved very little in the last 40 years. Only 21% of patients are

alive after 1 year and at 5 years a mere 9% are still surviving. UK survival figures are 3 percentage points lower than the European average and 7-10 points lower than the USA. There is thus considerable room for improvement.

The main problem appears to be the late presentation of lung cancer which is often first diagnosed when metastatic disease is already present. The public are poorly informed about the symptoms and seem to have little idea of the scale of risk of lung cancer from smoking. In a recent Scottish study<sup>2</sup> the median time from the earliest reported symptom from a checklist to consultation was 99 days. On questioning, 75% of participants had unrecognised symptoms of lung cancer. The presence of COPD, long-term smoking and living alone lengthened the time to presentation.

### Diagnosis

Although a common cancer, most GPs will see only 1-2 new cases a year. The symptoms of lung cancer (see Table 1) are similar to other more common diseases. Making a diagnosis is often not easy. Symptoms such as haemoptysis tend to lead to rapid referral, but more non-specific symptoms of fatigue and weight loss may not always alert the clinician to the possibility of lung cancer. Perhaps the most common symptom is cough that does not improve after a few weeks. Primary care practitioners need a greater awareness of lung cancer.

Table 1 shows the frequency of initial symptoms and signs, after Beckles *et al.*<sup>3</sup>

**Table 1. Frequency of initial symptoms and signs in lung cancer**

Symptoms and signs	Range of frequency %
Cough	8-75
Weight loss	0-68
Dyspnoea	3-60
Chest pain	20-49
Haemoptysis	6-35
Bone pain	6-25
Clubbing	0-20
Fever	0-20
Weakness / fatigue	0-10
Superior Vena Cava Obstruction	0-4
Dysphagia	0-2
Wheezing and stridor	0-2

The NICE lung cancer guideline of 2005<sup>1</sup> gives helpful advice on symptoms and referral.

**Remember the high risk groups: patients over 50 years of age, smokers, and patients with COPD.** But be aware that 1 in 7 lung cancers occur in never-smokers and that it can present in younger patients.

**Table 2. Summary of NICE guidance on referral for suspected lung cancer**

#### Urgent referral for CXR with symptoms

- Haemoptysis or unexplained or persistent, more than 2 weeks
- Cough
- Dyspnoea
- Chest / shoulder pain
- Weight loss
- Chest signs
- Hoarseness
- Finger clubbing
- Supraclavicular or cervical persistent lymphadenopathy
- Features of metastases - brain, bone, liver, skin

#### Urgent referral to a member of a lung cancer Multi-Disciplinary Team - chest physician

- If CXR suggests lung cancer
- Even if CXR is normal, there may be high suspicion of lung cancer clinically
- Persistent haemoptysis in smoker or ex-smoker over the age of 49 years
- Signs of SVC obstruction or stridor

A CXR will show abnormalities in over 90% of patients with lung cancer, **but it is important to remember that a normal CXR does not exclude lung cancer if there is a high index of clinical suspicion.**

### Referral

There are well established referral pathways to the lung cancer Multi-Disciplinary Team (MDT) for patients to be seen within two weeks. Investigation, staging and diagnosis should be completed within 31 days and specialist treatment begun within 62 days of GP referral.

Investigation in secondary care has been considered by NICE Guidelines<sup>1</sup> and

includes confirming a diagnosis, making a tissue diagnosis and disease staging.

- CT scanning confirms the diagnosis and looks for metastatic spread in the abdomen
- PET scan gives accurate data on metastases and local spread of tumour
- On the basis of the above a decision can be made to find the best site for tissue biopsy. This may include a bronchoscopy for more proximal tumours, CT guided percutaneous needle aspiration for peripheral tumours, and lymph node biopsy using either trans-bronchial needle aspiration or mediastinoscopy. Other techniques include sampling of the pleura or pleural fluid and biopsy of accessible metastases. Tissue diagnosis and staging are vital in planning appropriate therapy. However if a patient has obvious advanced metastatic disease and their performance status is poor, management may be purely palliative without detailed investigation.

## Management

Treatment is decided on the basis of disease staging and cancer cell type together with a functional evaluation of overall fitness (performance status) as well as comorbidities. Management needs to be carefully discussed with the patient at the planning stage.

Tumour cell types are divided into **small cell carcinoma** (10-15% – rapidly growing with early metastases) and **non-small cell carcinoma**, subdivided into squamous cell (35-40%), adenocarcinoma (35-40%) and large cell (5-10%). Adenocarcinomas usually have a much longer doubling time and thus have a better prognosis than small cell cancers, with squamous cell tumours having an intermediate prognosis.

### 1. Non-small cell carcinoma therapy

Staging of the disease and overall fitness and performance ability will determine the type of treatment.

- Limited disease is best treated by surgery and offers the only chance of cure. Overall, only about 10% of patients are treated surgically in the UK, though this figure is well over 20% in some centres and in many other countries.
- Radical radiotherapy
- Chemotherapy
- Combination of radiotherapy and chemotherapy
- 'Targetted' agents, such as the EGFR Tyrosine Kinase Inhibitors, Erlotinib and Gefitinib

- Local airway debulking procedures e.g. using laser bronchoscopy
- Palliative

### 2. Small cell carcinoma therapy

These tumours are usually very chemosensitive and, in fit patients, the standard treatment is 4-6 cycles of multidrug platinum-based chemotherapy with thoracic radiotherapy being given in parallel in patients with limited stage disease. Chemotherapy has improved, and modern anti-emetic regimes have significantly reduced the problems of nausea and vomiting. However, fatigue and hair loss remain common side effects. A very high proportion of patients will respond to chemotherapy, and overall around 9-12 months of life is added compared with untreated patients. Less than 5% will survive 5 years or more. Small cell cancer is usually well advanced at diagnosis and surgery is rarely an option.

The availability of oncology, radiotherapy and thoracic surgery is very variable around the UK in different regions. The National Lung Cancer Audit ([www.ic.nhs.uk](http://www.ic.nhs.uk)) has shown that in 2008 only 54% of patients received any active anti-cancer treatment, with cancer network rates varying from 10-80%. This postcode lottery is obviously unacceptable.

Patients of any cell type with advanced disease may be suitable only for palliative care.

### Primary care role

The primary care role post-diagnosis is important and includes

- General advice and education about the disease and its treatments
- Counselling and support for patient and carers
- Regular review, assessing symptoms, nutrition, mood and social situation.

The Quality Outcomes Framework (QOF) requires you to keep a register of cancer patients. Most PCTs will request a multi-team approach to identify and manage those patients who have become terminal – i.e. those who are likely to have less than six months life expectancy.

### Palliative care

As the cancer progresses, patients may experience a wide range of symptoms such as dyspnoea, cough, haemoptysis, chest pain, fatigue, weight loss and also symptoms from distant metastases. Palliative care is best provided by a MDT which will include specialist palliative care nurses and doctors, primary care teams and also members of the hospital cancer

MDT. The principles of care are based on:

- Providing relief from pain and other distressing symptoms
- Integrating the psychological and spiritual aspects of patient care
- Offering support to help patients live as actively as possible until death and helping the family cope during the patient's illness and in their bereavement
- Providing care early in the course of the illness in conjunction with other therapies to prolong life including investigations to understand and manage distressing clinical complications.

Help and support are usually available from the hospital cancer MDT, Macmillan nurses, social services and community nursing teams.

### Summary

- Lung cancer is a common malignancy which presents late and overall has a poor prognosis
- If diagnosed early and properly managed, the outlook is significantly better
- Patient awareness is low and generally patients take too long before they consult with symptoms
- NICE has set criteria for those symptoms and signs which necessitate urgent CXR and referral
- The MDT in hospital have a systematic approach to investigation, staging and management
- Primary care has an important role in patient support and education in the early phase of diagnosis and in palliative care later.

### References

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More detailed information can be found in Spiro SG, Huber RM, Janes SM. (Editors). Thoracic Malignancies. European Respiratory Monographs (June 2009) No. 44.

**Date of Preparation:** March 2010 **Author:** David Bellamy, Bournemouth, UK and with grateful assistance from Dr Mick Peake, Leicester, UK **Conflict of interest:** None  
**Editor-in-Chief:** Mark L Levy, PCRS-UK

**Address for Correspondence:** PCRS-UK, Smithy House, Waterbeck, Lockerbie, DG11 3EY, UK **Telephone:** +44 (0)121 351 4455 **Facsimile:** +44 (0)121 336 1914

**Websites:** <http://www.pcrs-uk.org>, <http://www.thepcrj.com> **Email:** [info@pcrs-uk.org](mailto:info@pcrs-uk.org)

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