

CASE FOUR

Short case number: 3_10_4

Category: Respiratory System

Discipline: Medicine

Setting: General Practice

Topic: Cancer of the bronchus

Case

Ken Major, aged 56 years presents to your general practice with a four week history of a dry cough. Ken reports that the cough is irritating. You note that Ken was prescribed a course of antibiotics to treat a dry cough two weeks ago by a locum doctor. However, Ken reports that the antibiotics were not effective. Ken has a history of smoking 15 cigarettes a day for the past 25 years. Apart from the cough he feels well and reports no weight loss.

Questions

1. What further history & examination would you undertake?
2. What investigations would you order?
3. What are the presenting symptoms of cancer of the bronchus?
4. What are the common cell types in bronchial cancer and how frequent are they?
5. How does cancer of the bronchus typically present?
6. List the common causes of bronchial obstruction.
7. Describe the common radiological presentations of bronchial obstruction
8. Outline the principles of management of bronchial cancer.

Suggested reading:

- Colledge NR, Walker BR, Ralston SH, Penman ID, editors. Davidson's Principles and Practice of Medicine. 22nd edition. Edinburgh: Churchill Livingstone; 2014. Chapter 19.

ANSWERS

Cancer of the bronchus

1. What further history & examination would you take?

Cough is the most common early symptom; it is often dry but sputum may be purulent if there is secondary infection. A change in the character of the 'regular' cough of a smoker, particularly if it is associated with other new respiratory symptoms, should always alert the clinician to the possibility of bronchial carcinoma. **Haemoptysis** is a common symptom, especially in tumours arising in central bronchi. Bronchial obstruction may lead to pneumonia, which is often the first clinical manifestation of a bronchial carcinoma. **Recurrent pneumonia** at the same site or pneumonia which is slow to respond to treatment, particularly in a smoker, should immediately suggest the possibility of bronchial carcinoma. **Pleural pain**, epileptic seizures, personality change, jaundice, bone pain or skin nodules, lassitude, anorexia and weight loss usually indicate the presence of local invasion or metastatic spread.

Examination is usually normal unless there is significant bronchial obstruction, or the tumor has spread to the pleura, mediastinum or supraclavicular **nodes**. A tumor obstructing a large bronchus produces the physical signs of **collapse or pneumonia**. The presence of **stridor** indicates obstruction at or above the main carina. A **hoarse voice** indicates left recurrent laryngeal nerve palsy. **Phrenic nerve paralysis** causes unilateral diaphragmatic palsy and hence dullness to percussion and absent breath sounds at a lung base. Involvement of the pleura may produce a **pleural rub** or signs of **pleural effusion**. Bronchial carcinoma is also the most common cause of the **superior vena cava syndrome (SVCO)** and **Horner's syndrome** (ipsilateral partial ptosis, enophthalmos, a small pupil and hypohidrosis of the face). Digital **clubbing** is often seen and may be associated with a syndrome called **hypertrophic pulmonary osteoarthropathy (HPOA)**.

2. What investigations would you order?

The main aims of investigation are to confirm the diagnosis, establish the histological cell type and define the extent and operability of the disease.

X-ray chest may show pulmonary opacity (irregular but well circumscribed, may have irregular cavitation), collapse, pleural effusion, paratracheal lymphadenopathy & widening of the upper mediastinum.

Around three-quarters of primary lung tumours can be visualised directly using a **flexible bronchoscope**. **Bronchial biopsies and brush samples** can be taken for pathological examination and a direct assessment can be made of operability as judged by the proximity of central tumours to the main carina. For peripheral lesions not accessible to the bronchoscope, **percutaneous needle biopsy** under CT or ultrasound guidance is a more reliable way to obtain a histological diagnosis. In patients who are not fit enough for bronchoscopy, sputum cytology can be a valuable diagnostic aid. **Pleural biopsy** is indicated in all patients with pleural effusions. Not infrequently, **thoracoscopy or thoracotomy** is required to obtain a definitive histological diagnosis. In patients with metastatic disease the diagnosis can often be confirmed by needle aspiration or **biopsy of affected lymph nodes**, skin lesions, liver or **bone marrow**. **CT or MRI** can also help in diagnosis and staging.

3. What are the presenting symptoms of cancer of the bronchus?

Cough, haemoptysis, pleuritic chest pain, shortness of breath, anorexia, weight loss, ptosis (due to Horner's syndrome).

4. What are the common cell types in bronchial cancer and how frequent are they?

Cell type	%
Squamous	35
Adenocarcinoma	30
Small-cell	20
Large-cell	15

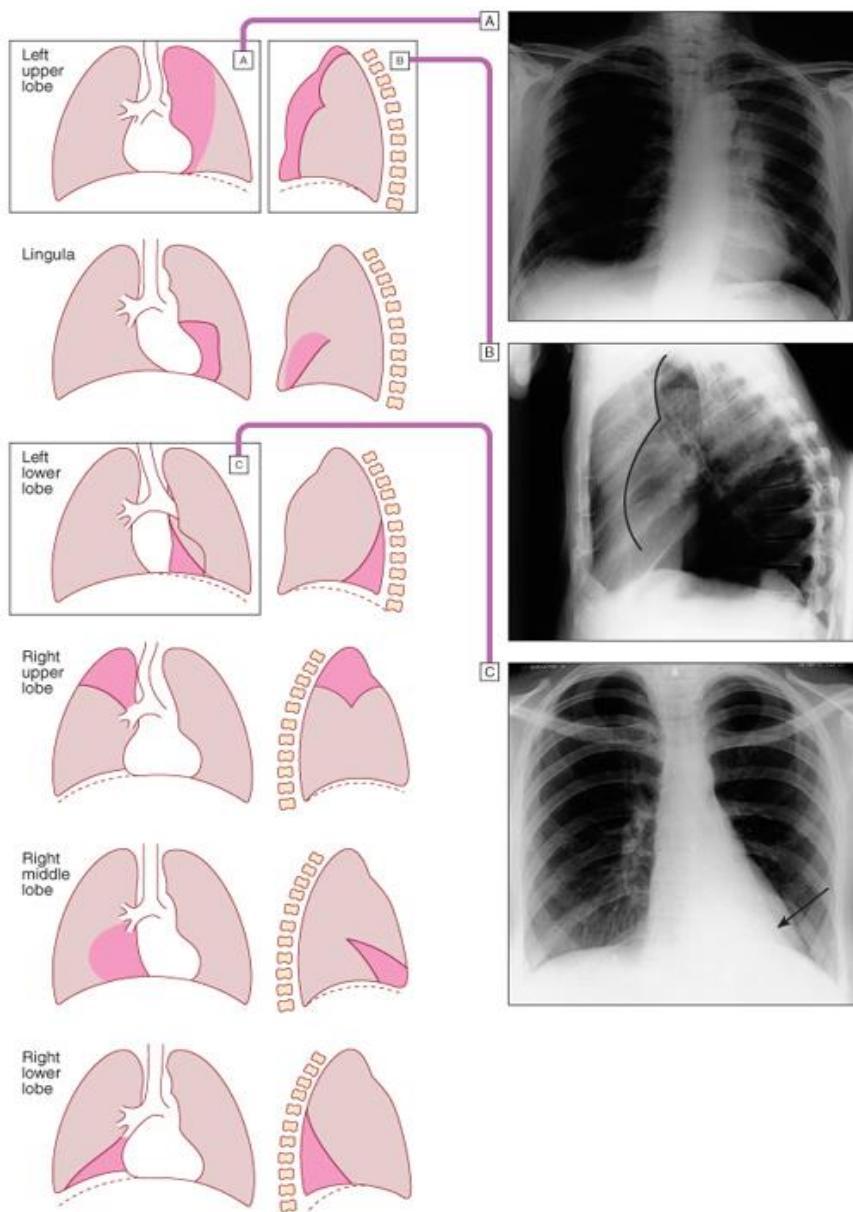
5. How does cancer of the bronchus typically present?

Lung cancer presents in many different ways. Most commonly, symptoms reflect local involvement of the bronchus, but may also arise from spread to the chest wall or mediastinum, from distant blood-borne spread or, less commonly, as a result of a variety of non-metastatic paraneoplastic syndromes. Refer to Q1.

6. List the common causes of bronchial obstruction.

- Bronchial carcinoma or adenoma
- Enlarged tracheobronchial lymph nodes (malignant or tuberculous)
- Inhaled foreign bodies (especially right lung and in children)
- Bronchial casts or plugs consisting of inspissated mucus or blood clot (especially asthma, cystic fibrosis, haemoptysis, debility)
- Collections of mucus or mucopus retained in the bronchi as a result of ineffective expectoration (especially post-operative following abdominal surgery)

7. Describe the common radiological presentations of bronchial obstruction



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Radiological features of lobar collapse caused by bronchial obstruction. The dotted line in the drawings represents the normal position of the diaphragm. The X-ray shows an example of left upper lobe collapse which is often the most difficult to identify; this is due to the hazy, ill-defined shadowing on the PA view. The collapsed left upper lobe is more easily seen on the lateral view (line indicates posterior margin of collapsed left upper lobe). X-ray of collapsed left lower lobe (arrow) causing increased density behind heart and loss of normal clarity between lung and both the left hemidiaphragm and descending thoracic aorta.

8. Outline the principles of management of bronchial cancer.

Surgical resection carries the best hope of long-term survival; however, some patients treated with radical radiotherapy also achieve prolonged remission or cure. Unfortunately, in over 85% of cases, surgery is not possible or is inappropriate due to extensive spread or co-morbidity. Radiotherapy, and in some cases chemotherapy, can relieve distressing symptoms.

Surgical treatment

Careful staging and assessment of the patient's respiratory reserve and cardiac status are essential prerequisites to surgery. The 5-year survival rates is over 75% in stage I disease (N0, tumour confined within visceral pleura) and 55% in stage II disease.

Radiotherapy

While much less effective than surgery, radical radiotherapy can offer long-term survival in selected patients with localised disease in whom co morbidity precludes surgery. The greatest value of radiotherapy, however, is in the palliation of distressing complications such as SVCO, recurrent haemoptysis, and pain caused by bone metastatic deposits. Radiotherapy can be used in conjunction with chemotherapy in the treatment of small-cell carcinoma and is particularly efficient at preventing the development of brain metastases in patients who have had a complete response to chemotherapy.

Chemotherapy

The treatment of small-cell carcinoma with combinations of cytotoxic drugs, sometimes in combination with radiotherapy, can increase the median survival of patients with this highly malignant type of bronchial carcinoma from 3 months to well over a year.

Neoadjuvant and adjuvant chemotherapy

In non-small-cell carcinoma, there is early evidence that chemotherapy given before surgery may increase survival and can effectively 'down-stage' disease with limited nodal spread.

Laser therapy and stenting

Laser treatment via a fibreoptic bronchoscope is essentially palliative, the aim being to clear tumour tissue occluding major airways and allow re-aeration of collapsed lung. Endobronchial stents can be used to maintain airway patency in the face of extrinsic compression by malignant nodes.

The best outcomes are obtained when lung cancer is managed in specialist centres by multidisciplinary teams including oncologists, thoracic surgeons, respiratory physicians and specialist nurses. Effective communication, pain relief and attention to diet are important. Treatment of anxiety and depression may also be necessary.