

# LUNG CANCER

## Bronchogenic or bronchial carcinoma

Year One

The incidence of this type of cancer is steadily increasing, particularly in women.

### Common types of lung cancer

- Squamous cell carcinoma is a relatively common form, in which symptoms usually occur early, but the cancer doubles in size every three months on average, and spreads early to lymph nodes.
- Oat cell (small cell) carcinomas are far more serious, double in size every month on average, spread rapidly to other parts of the body, and are almost impossible to cure.
- Adenocarcinomas and large cell carcinomas develop at the edge of the lung, have few symptoms, are not easily detected, double in size every three to six months, but spread early to distant parts of the body.
- Secondary cancers are the spread of cancer from other parts of the body to the lungs.

Many other rarer types of lung cancer are known. Eg: Mesothelioma (almost always due to asbestos exposure)

### SYMPTOMS - HISTORY

Early symptoms –

- weight loss
- recurrent chest infections (bronchitis)
- persistent cough
- change in the normal type of cough
- haemoptysis (coughing blood)
- worsening dyspnoea.

Later symptoms include -

- anorexia (loss of appetite)
- chest pain
- hoarseness
- axillary adenitis

Metastasises most commonly to bone and the brain, and adenitis may block the veins draining the head and arms (superior vena cava syndrome).

One quarter of patients have no symptoms when the diagnosis is made, often by a routine chest X-ray, so smokers should consider having a routine chest X-ray every few years.

### RISK FACTORS

Smoking

Asbestos or chrome exposure

Family history

Prevention is always better than cure, and that means stop smoking. Even in heavy smokers, after five years of non-smoking, the risk of developing lung cancer will reduce to near normal.

### SIGNS - EXAMINATION

Alphabetical order – NOT order of importance. See below for explanation of signs.

Bronchial breathing

Cachexia

## LUNG CANCER

Clubbing of fingernails  
Cushing syndrome – due to secretion of ACTH by oat cell carcinomas.  
Dull percussion note  
Pancoast syndrome  
Pleural friction rub  
Rhonchi  
Vocal fremitus

### **INVESTIGATIONS - PATHOLOGY, RADIOLOGY ETC.**

Chest X-ray (CXR)(Pulmonary nodule seen on chest X-ray)  
CT scans  
Sputum examination  
Biopsy of the tumour using a bronchoscope if possible.  
S.calcium (high with bony metastases),  
S.ACTH (high with oat cell form)

### **POSSIBLE CAUSES**

Smoking causes 90% of all lung cancers - effect of smoking is usually delayed until the patient is 55 or older.

Other known causes include asbestos dust, irradiation and chrome dust.

### **TREATMENT - MANAGEMENT**

Major surgery  
Radiotherapy (may be used palliatively)  
Chemotherapy (eg. methotrexate, vincristine, cyclophosphamide, etc. depending on type of cancer)  
Cytotoxic chemotherapy for oat-cell forms  
Immunotherapy (controversial).

### **PROGNOSIS**

Poor – 40% one year survival, 15% five year survival overall.

Those with small cell (oat cell) carcinoma usually die within a year, while those with squamous cell carcinoma tend to live longer than average.

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## ADDITIONAL INFORMATION

### **Bronchial Breathing**

Harsh, clear, breath sound that is equal in inspiration and expiration  
Sign of pneumonia, pulmonary tumours, TB, pulmonary consolidation  
Due to suppression of vesicular component of breath sound when alveoli not working.

### **Cachexia**

Widespread muscular wasting, grey pallor, dry and wrinkled skin

### **Clubbing of Fingers**

Soft terminal part of fingers and/or toes immediately proximal to nail is bulbous, and nail is excessively curved in lateral and longitudinal planes  
Caused by chronic diseases of heart, lungs or alimentary system (eg. lung carcinoma, pneumoconiosis, bacterial endocarditis, TB, bronchiectasis, sarcoidosis, cirrhosis, lung abscess, regional enteritis, tetralogy of Fallot), congenital or in association with hypertrophic pulmonary osteoarthropathy etc.  
Due to overgrowth of soft tissues and subjacent periosteum. Exact cause unknown but may be due to increase in peripheral blood flow and reduced pO<sub>2</sub>

### **Cushing Syndrome**

Characterised by central obesity (moon face, buffalo hump, abdominal protuberance), purple striae, psychosis, plethoric, oligomenorrhoea or impotence, weakness, headache, backache, hypertension, acne and chloasma due to excess corticosteroid in the body/  
Usually due to pituitary or adrenal disease. May be due to ACTH secretion by other neoplasms (eg. oat cell carcinoma of lung), or steroid therapy

### **Dull Percussion Note, Thoracic**

One index finger is laid flat on the chest wall and is struck firmly with the other index finger. Lower than normal pitch of percussion is dullness  
Caused by pneumonia, fibrosis, consolidation, TB, pleural effusion, extensive carcinoma  
Solid lung tissue does not reflect sound as readily as aerated lung

### **Pancoast Syndrome**

Syndrome characterised by shoulder, arm and chest wall pain, ipsilateral Horner syndrome and bronchogenic carcinoma of lung apex.

### **Pleural Friction Rub**

Chest auscultation reveals a grating sound associated with each breath  
Caused by pleurisy, pulmonary thrombosis, lung cancer, empyema  
Due to friction between the two inflamed layers of pleura

### **Rhonchi (Dry Rales)**

Musical wheezing sounds caused by air flow through narrowed or congested bronchi, heard on chest auscultation. Deeper pitched sonorous rhonchi originate in large bronchi. Higher pitched sibilant rhonchi originate in smaller bronchi  
Due to bronchitis, tracheobronchitis, asthma, pulmonary tumours, bronchial oedema or spasm  
Explanation : Air passing through the narrowed part of a tube becomes turbulent and produces a sound

### **Superior Vena Cava Syndrome**

Defined as brawny oedema and flushing of head and neck, dilated neck and arm veins.  
Invariably due to secondary to bronchogenic carcinoma or other mediastinal neoplasms that cause blocking of the superior vena cava. Treatment urgent or cardiac failure occurs. Neoplasms usually inoperable by time this syndrome occurs

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### **Vocal Fremitus**

Ulnar border of hand is used to detect variations in the vibrations transmitted from the larynx through the airways and lungs to the chest wall when a patient repeats a phrase (eg. "ninety-nine")

Negative result - Feeble voice, blocked bronchus from foreign body, bronchial tumour, pleural effusion, pneumothorax, collapsed lung.

Positive result - Pneumonia, consolidation around major bronchus, TB.

Variations depend on the degree of interference of vibration conduction through lung tissue.

## LUNG CANCER

# CANCER TYPES

The most common types of non-skin cancer are:-

<u>CANCER</u>	<u>INCIDENCE PER 100,000 PEOPLE</u>
Prostate	142
Breast	137
<b>Lung</b>	<b>67</b>
Colon and rectum	54
Bladder	21
Lymphatic system (lymphomas)	20
Ovary	16
Melanoma of skin	15
Kidney	11
Leukaemia (white blood cells)	11
Pancreas	10
Cervix	9
Stomach	7
Thyroid	7
Brain	6
Testes	5
Oesophagus	4.9
Liver	4.8
Larynx	4.3
Tongue	2.5
Vulva	2.5
Gums	1.6
Small intestine	1.6
Tonsils	1.4
Throat	1.4
Anus	1.3
Salivary glands	1.2
Bones and joints	0.9
Pleura (membrane around lung)	0.9
Lip	0.9
Uterus	0.8
Mouth	0.8
Vagina	0.8
Nose	0.7
Penis	0.7
Eye	0.7
Thymus	0.6
Ureter	0.6
Peritoneum (abdomen lining)	0.5

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# CIGARETTES SMOKE ANALYSIS

Cigarette smoke contains hundreds of chemicals. Amongst the worst are:-

<u>CHEMICAL</u>	<u>MAY CAUSE</u>
Tar	Cancer
Carbon monoxide	Suffocates and blocks oxygen uptake
Nicotine	Stimulation and addiction
Aromatic hydrocarbons	Cancer
Phenol	Tissue irritant
Arsenic	Poison
Carbazole	Accelerates cancer growth
Hydrocyanic acid	Cancer
Acetaldehyde	Slows function of cilia (fine hairs) in airways
Ammonia	Tissue irritant
Nitrosamine	Cancer
Formaldehyde	Stops phlegm clearance from airways
Indole dyes	Accelerates cancer growth
Vinyl chloride	Cancer.

## **CURIOSITY**

### **Leser-Trelat Sign**

*The abrupt appearance, and rapid increase in size, of many seborrhoeic keratoses due to an underlying carcinoma (eg. adenocarcinoma). May also occur during lysis of tumour with cytotoxics.*

## **TOTALLY, COMPLETELY AND UTTERLY USELESS MEDICAL INFORMATION**

*The internal oxygen absorbing surface area of an adult lung is equivalent to that of a tennis court.*

Any student who would like a copy of a textbook called "Rationale for the Chest - a guide to the diagnosis of diseases that may cause symptoms in the chest", can download the book for free from:

[http://www.medwords.com.au/MW\\_Rationales.html](http://www.medwords.com.au/MW_Rationales.html)

## ADVERTISEMENT

"Carter's Encyclopaedia of Health and Medicine" is available as an app for iPod, iPhone and iPad from Apple's iTunes store.

Assoc. Prof. Warwick Carter  
wcarter@medwords.com.au