

Cancers of the Lung

هذه المذكرة عبارة عن هاند أوت الدكتور عمار الركابي بعد تنسيقها.
شاملة لكل ما هو مطلوب في هذه الجزئية

وأیضا:

- توجد بعض الجداول والصور التوضيحية مضافة من محاضرات الدكتور مهة عرفة.
- اضفنا ملاحظات خلال المحاضرات — الموجوده بداخل صندوق اصفر

Path. Team - 429

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GENERAL CONSIDERATIONS :

Regarding the tumors of the lungs :

- Both of them are malignant (primary and secondary) , *small percentage are benign* .
- And (very important) : secondary metastasis to the lung *are more common* than primary .
- *Most lung tumors are malignant*; those that arise from metastases from primary tumors elsewhere occur more frequently than those that originate in the lung.

TUMORS OF THE LUNG:

BENIGN TUMORS:

Adenochondroma (hammartoma of the lung)

Coin shaped lesion

in the case scenario: not coughing , no sign for weight loss (7000 no) .

Coin is likely to be benign, ((well shaped borders is main characteristic for benign)) , you can be sure if you exam it by histology .

Morphology :

- Cartilage.
- Adipose tissue.
- Epithelium (areas lined by epithelium) .

If you have benign tumor (lesion) consisting of different types of tissues which are indigenes (are created to be there) to this area , that means it's : **Hammartoma**.

MALIGNANT TUMORS :

- Primary (arising from the lung) .
- Secondary (metastatic) .

How do I classify them ?

- Squamous cell carcinoma .
- Adinocarcinoma.
- Small (oat) cell carcinoma.
- Large (anaplastic) cell carcinoma .

Squamous cell carcinoma : Obstruction of the lumen of the bronchus , anthracitic lymph node. Usually produce paraneoplastic syndromes : disorder not quite related to the disease , but related to the tumor (manifestation don't make sense to that organ extrasystemic).

secrete substances which are *resembling Parathyroid hormones*

therefore , one of the presentation is *hypercalcemia*

(parathyroid hormone secretes calcitonin which increase Ca and vitamin D) PDH like substances ..

TYPE	LOCATION	CHARACTERISTICS
<i>Uronchogenic carcinoma:</i> Squamous cell carcinoma (<i>major bronchogenic carcinoma</i>)	Central (arising from main bronchus)	<i>Appears as a hilar mass and frequently results cavitation</i> ; clearly linked to smoking ; incidence greatly increased in smokers; maybe marked by inappropriate <i>parathyroid hormone (PTH)</i> like activity with resultant Hypercalcemia. Patient presents : weigh loss , anemia , mild fever , caught
<i>Adenocarcinoma:</i> Bronchial-derived	Peripheral	(lined by glandular cells) <i>Develops on site of prior pulmonary inflammation or injury-scar or fibrosis- (scar carcinoma)</i> ; less clearly linked to smoking.
<i>Bronchioloalveolar</i>	Peripheral	<i>Peripheral Less clearly related to smoking</i> ; columnar to cuboidal tumor cells line alveolar walls; multiple densities on x-ray, mimicking interstitial pneumonia.
<i>Small cell (oat cell) carcinoma</i>	Central	<i>Undifferentiated tumor</i> ; most aggressive broncho-genic carcinoma usually already metastatic at diagnosis; is often associated with ectopic production of <i>corticotrophin (ACTH)</i> or <i>antidiuretic hormone (ADH)</i> : incidence greatly increased in smokers cannot be treated by surgery.
<i>Large(anaplastic) cell carcinoma</i>	Peripheral	<i>Undifferentiated tumor</i> which may show features of squamous cell or adenocarcinoma on electron microscopy(You can't tell till make Electron microscopy). May be related to smoking. Large cell carcinoma always treated with Chemotherapy , cause by the time you diagnosis , the tumor has metastasis already.
<i>Other carcinomas of the lung:</i> Carcinoid	Major bronchi	<i>Low malignancy, spreading by</i> direct extension into adjacent tissues, <i>may result in</i> carcinoid syndrome.
<i>Carcinoma, metastatic to the lung</i>		Higher incidence than primary lung cancer.

SOME TEAM NOTES NOTES:**Adinocarcinoma**

Types (has one type) : bronchiole-adenocarcinoma

Subtype : bronchiole-**alveolar**-carcinoma

It is located peripherally and has better prognosis , not related to smoking , arising from Clara cells

Small (oat) cell carcinoma

Related to smoking , Sputum cytology

It is located Centrally (a central mass) , associated with paraneoplastic syndrome

May secrete

- ADH **anti-diuretic hormones like**
not the hormones , but proteins similar to the hormones = acts on renal tubules and cause reabsorbing of Na
- **ACTH like hormones** = stimulate the secretion of cortisone= feature of *Cushing syndrome* = moon like face

SYMPTOMS OF NEOPLASIA (TWO TYPES)**SYSTEMIC (GENERAL) :**

- weight loss (within short period time)
- unexplained iron deficiency anemia
- wasting
- unexplained fever
(mild ,for long period of time - PUO : Pyrexia : other name for fever)
- unexplained infection (obstruction)
- Present with hemoptysis , cough , plural fusion (empyema , cancer or TB pleuritis) .. etc

SPECIFIC (TO THAT ORGAN):

Causes of lung cancer :

- Smoking (major cause) , but not for all cancer
- Irradiation
- Air pollution
- Asbestosis (1 bronchogenic carcinoma , 2 mesothelioma : mesothelial cells which line the pleura)

NOTE:

- Benign tumors are not very common , and secondary ones are more common than primary .
- Any patient with cancer in colon should take care after surgery by taking pictures of his lung to prevent any secondary lung cancer.
- lung , liver and brain are very good signs for metastasis.

Bronchogenic carcinoma

ETIOLOGY AND EPIDEMIOLOGY:

(a) Epidemiology

Bronchogenic Carcinoma, is the leading cause of death from cancer in both men and women. It is increasing in incidence, especially in women, in parallel with cigarette smoking.

(b) Etiology

This type of carcinoma is directly proportional in incidence to: the number of cigarettes smoked daily and to the number of years of smoking.

Dysplasia: abnormal development or growth of tissues, organs, or cells.

Carcinoma in Situ:

a cluster of malignant cells that has not yet invaded the deeper epithelial tissue or spread to other parts of the body

Various **histologic changes**, including

Squamous Metaplasia Of The Respiratory Epithelium

often with atypical changes ranging from *dysplasia* → to → *carcinoma in situ* which happen in *bronchogenic carcinoma* in cigarette smokers.

OTHER ETIOPATHOGENIC FACTORS

(a) Air pollution.

(b) **Radiation:** incidence increased in radium and uranium workers.

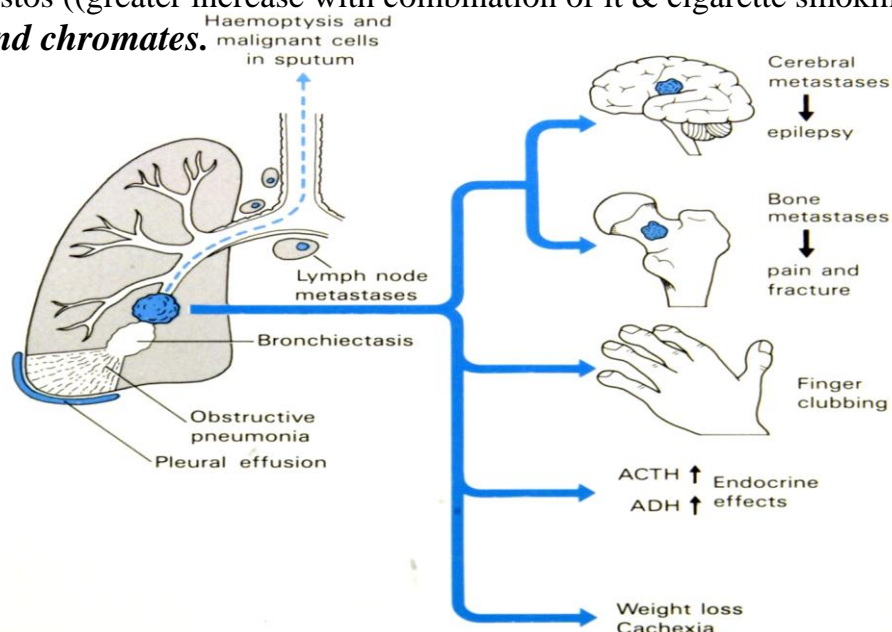
(c) **Asbestos:** high incidence with asbestos ((greater increase with combination of it & cigarette smoking)).

(d) **Industrial exposure to nickel and chromates.**

CLINICAL FEATURES

(a) The 5 year **survival rate** is **less** than 10% .

(b) The tumor often **spreads by** local extension into the pleura - pericardium or ribs.



Clinical manifestations may include:

cough - hemoptysis (coughing blood) - bronchial obstruction
((often with atelectasis and pneumonitis)).

Other clinical features include:

(1) Superior vena cava syndrome:

compression or invasion of the superior vena cava,
resulting in facial swelling and cyanosis
along with dilatation of the veins of the head, neck and upper extremities.

(2) Pancoast tumor (superior sulcus tumor):

involvement of the apex of the lung, often with *Homer syndrome*
(ptosis, miosis and anhidrosis):
due to involvement of the cervical sympathetic plexus.

Ptosis: Abnormal lowering/drooping of an organ (esp. a drooping of the upper eyelid caused by muscle weakness/paralysis)

Miosis: Constriction of the pupil of the eye

Anhidrosis: the absence of sweating

(3) Hoarseness from recurrent laryngeal nerve paralysis.

(4) Pleural effusion:

often bloody (bloody pleural effusion suggests malignancy, tuberculosis or trauma).

(5) Paraneoplastic endocrine syndrome:

the most frequent of which is adreno-corticotrophic hormone (ACTH)
or ACTH-like activity with small cell carcinoma

- also of note are the *syndrome of inappropriate diuretic hormone secretion*
with small cell carcinoma of the lung
- and parathyroid-like activity with squamous cell carcinoma.

CLASSIFICATION

(a) Bronchogenic carcinoma

is subclassified into

- squamous cell carcinoma
- adenocarcinoma (including bronchioloalveolar carcinoma)
- small cell carcinoma
- large cell carcinoma

➤ it appears that all share a common endodermal origin despite their morphologic differences.

(b) For therapeutic purposes the bronchogenic carcinomas are often subclassified into:

- **SMALL CELL CARCINOMA**, which is not considered amenable to surgery
- **NON SMALL CELL CARCINOMA**, in which surgical intervention may be considered.

DISEASES OF THE PLEURA

Can be divided for practical purposes into:

A) Inflammatory conditions (pleuritis)

which can be acute or chronic

often caused by

pyogenic organisms or *tuberculosis* → causing empyema ((pleural effusions and adhesions)).

B) Neoplastic lesions of the pleura

often caused by

- direct spread of a bronchogenic carcinoma
- metastases from other parts of the body (secondaries)
- a primary neoplasm called “mesothelioma”.

Primary tumors of the pleura are **rare** except after exposure to *asbestos*.

After exposure, there may be a latent period of it up to 50 years before, development of the tumor.

Patients usually present with

chest pain - breathlessness - commonly a pleural effusion.

Histologically:

mesotheliomas may have spindle cells (sarcoma like) and glandular patterns.

MESOTHELIOMAS

are highly *malignant tumors* that spread to adjacent structures like the pericardium and lung

- death usually occur 10 months after diagnosis
- metastases are rare.
- Exposure to asbestos also causes development of benign collagenous thickening of the pleura termed pleural plaques..

Diagnosis of pleural diseases: Is generally made by:

- *Radiological Investigations*
- *Cytological And Histological Assessments*
(Cytological Examination Of Pleural Fluid And Also Pleural Biopsies)
- *Bacteriological Assessment And Culture.*