Lung tumors -2

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SPREAD AND METASTASIS

- Spreads to LNs around the carina, mediastinum, neck and clavicular regions.
- Left supraclavicular node (Virchow node) involvement is particularly characteristic.
- Extend into the pleural or pericardial space >>>>> inflammation and effusion.
- Compress or infiltrate the SVC to cause either venous congestion or the vena cava syndrome.

Pancoast tumors (Pancoast syndrome):

- Apical neoplasms.
- Destruction of the first and second ribs and sometimes thoracic vertebrae.
- Invade the brachial or cervical sympathetic plexus to cause:
- Severe pain in the distribution of the ulnar nerve.
- Or Horner syndrome (ipsilateral enophthalmos, ptosis, miosis, and anhidrosis).

Clinical features:

- **Insidious lesions.**
- **Many cases unresectable by time of diagnosis.**
- **Localized lesions: Chronic cough and expectoration.**
- **Advanced lesions: Hoarseness, chest pain, SVC syndrome, pericardial or pleural effusion, or persistent segmental atelectasis or pneumonitis.**
- **Weight loss, dyspnea & chest pain.**

- Symptoms of Mets:

- Brain (mental or neurologic changes)
- Liver (hepatomegaly),
- Bones (pain).

Prognosis:

- **SCC and adenocarcinoma:**
- Carry more favorable Px than SCLC.
- Cure is possible by lobectomy or pneumonectomy if localized.
- Unresectable adenocarcinoma may respond to targeted Tx.

- **SCLCs:**
- Invariably spread by the time of diagnosis.
- Surgical resection is not curable.
- Very sensitive to chemotherapy but invariably recur.
- Median survival even with treatment is 1 year.

Paraneoplastic syndromes

- **(1) Hypercalcemia** (secretion of a PTHrp)
- **(2) Cushing syndrome** (production of ACTH);
- **(3) Syndrome of inappropriate secretion of ADH;**
- **(4) Neuromuscular syndromes,** including a myasthenic syndrome, peripheral neuropathy, and polymyositis**;**
- **(5) Clubbing of the fingers and hypertrophic pulmonary osteoarthropathy;**

- (6) **Coagulation abnormalities,** including migratory thrombophlebitis, nonbacterial endocarditis, and DIC.

- **Hypercalcemia** most often with SCC.
- **Hematologic syndromes** with adenocarcinomas.
- **Neurologic syndromes:** much more with SCLCs.
- **ACTH & ADH**: much more with SCLCs.

Staging:

- Tumor-Node-Metastasis(TNM) staging system is used to indicate the size and spread of the primary neoplasm.

CARCINOID TUMORS:

- 5% of all lung tumors.
- Composed of cells containing dense-core neurosecretory granules in their cytoplasm and, rarely, may secrete hormonally active polypeptides.
- Young adults (mean 40 years)
- Best regarded as malignant, low-grade neuroendocrine carcinomas.

- Subclassified as typical or atypical carcinoids; both are often resectable and curable.
- May occur as part of the multiple endocrine neoplasia syndrome (MEN syndrome).

Morphology: macroscopically:

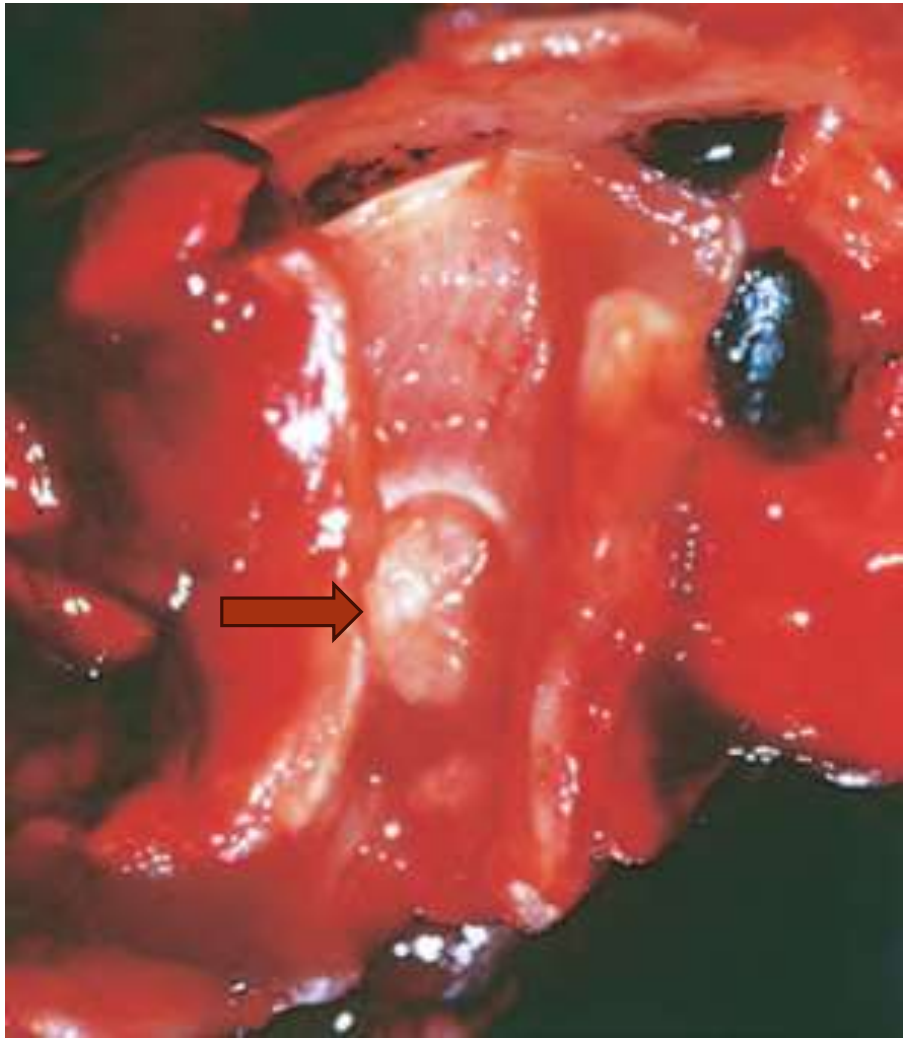
- In main bronchus, well demarcated.
- 5-15% Mets to LNs at presentation.
- Distant Mets is rare.

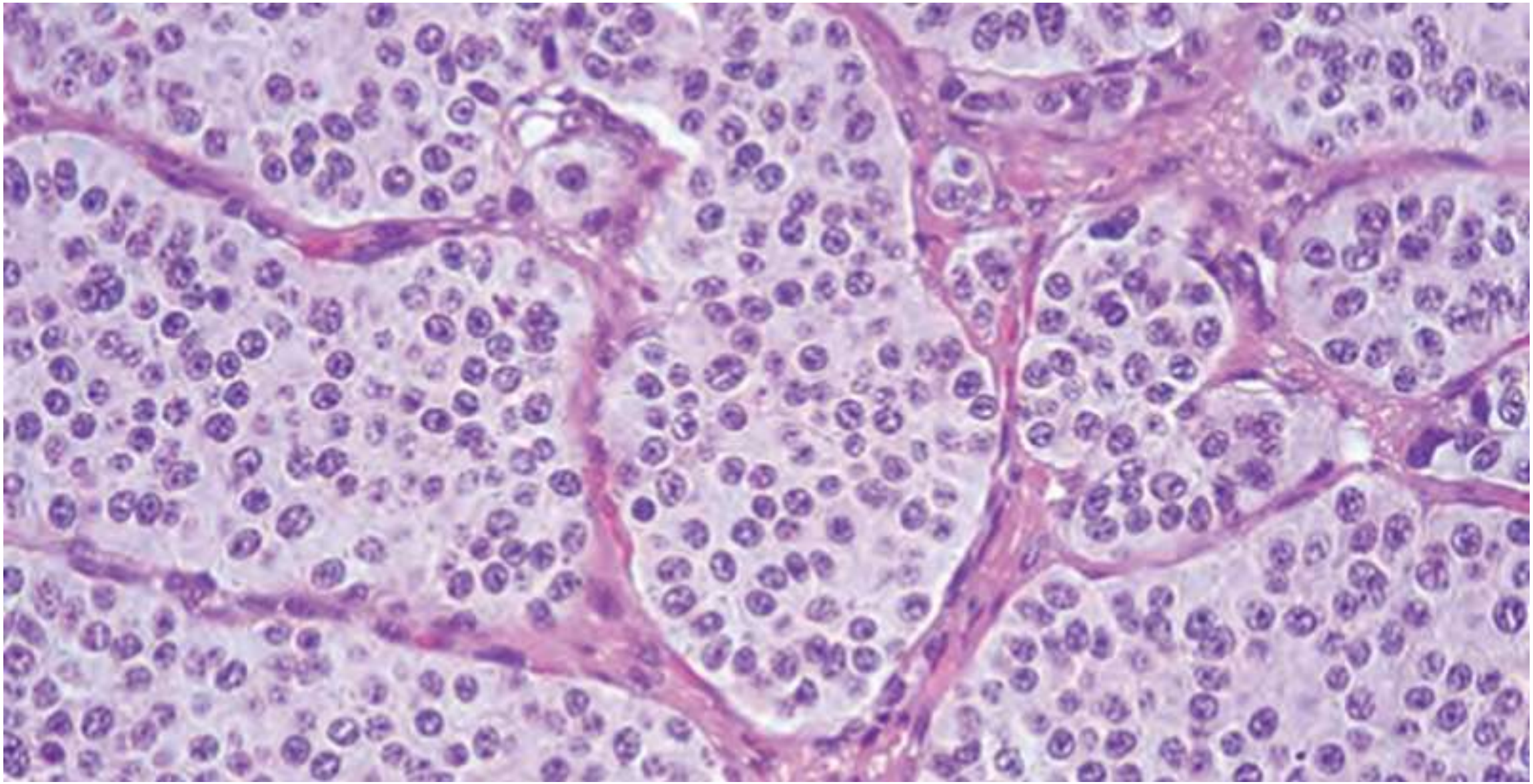
- Two growth patterns:
- 1-Polypoid intraluminal mass.
- 2-Mucosal plaque penetrating the wall to fan out in the peribronchial tissue (collar button lesion)

Microscopic:

- **Typical carcinoids:**
- Nests of regular uniform cells with round nuclei, salt and pepper chromatin, separated by a delicate fibrovascular stroma.
- Few mitoses and lack atypia and necrosis.

- **Atypical carcinoids:**
- Higher mitosis and/or foci of necrosis + pleomorphism.
- High incidence of LN and distant Mets.
- TP53 mutations in 20-40% of cases.





Clinical Features:

- Peripheral tumors: asymptomatic, incidental finding.
- Central tumors: cough, hemoptysis and recurrent infections due to obstruction.
- Carcinoid syndrome (rare): intermittent attacks of diarrhea, flushing, and cyanosis.

- Typical carcinoids have better prognosis than atypical.

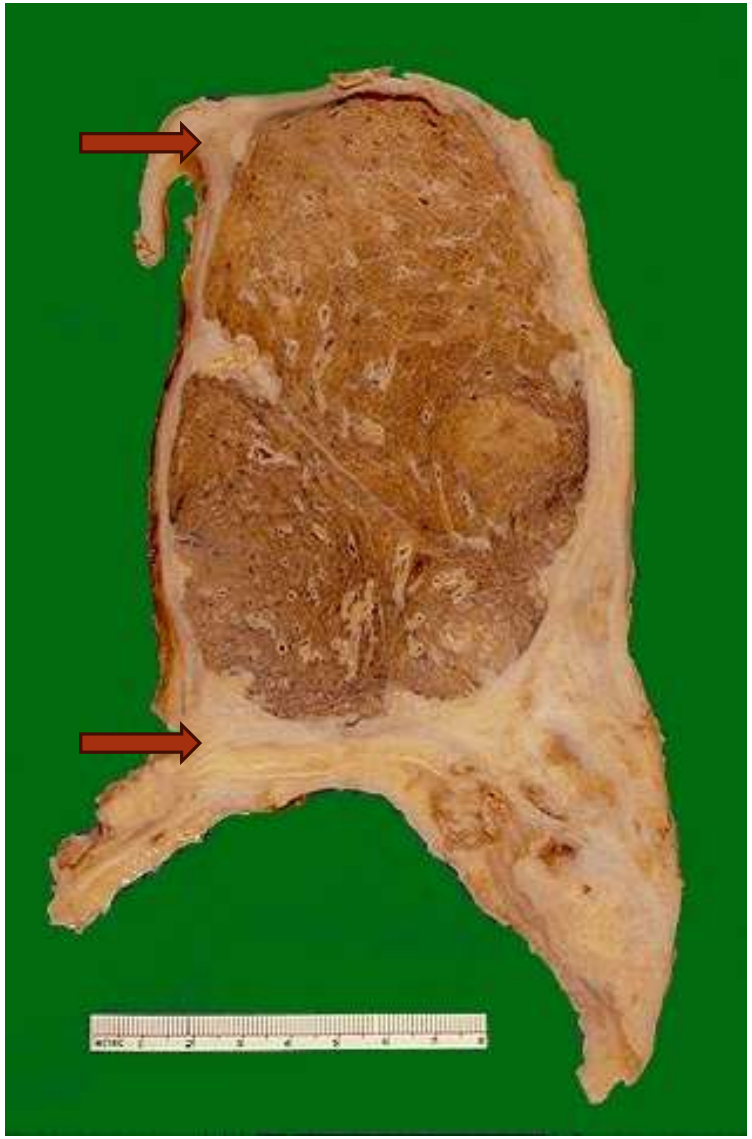
Malignant Mesothelioma

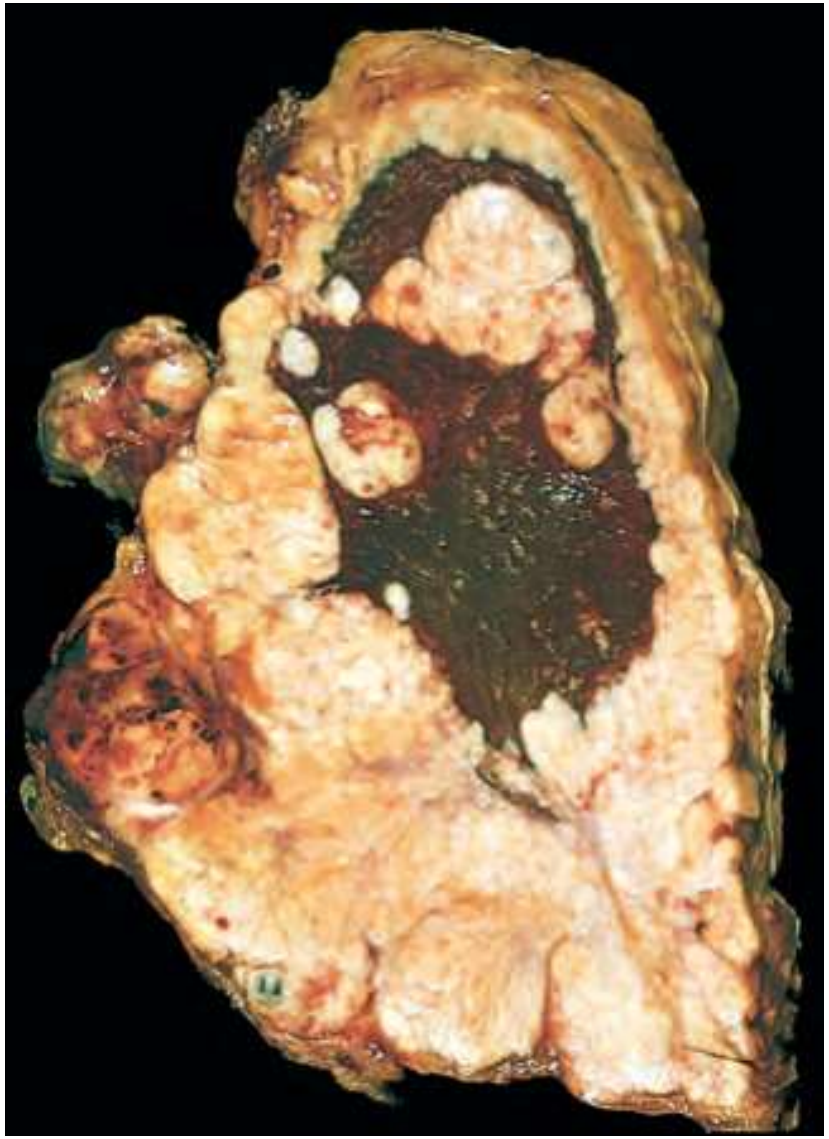
- Rare cancer of mesothelial cells in the parietal or visceral pleura.
- Less commonly in peritoneum and pericardium.
- Occupational exposure to airborne asbestos in 80-90% of cases.
- **Once inhaled, asbestos fibers remain in the body for life.**
- **The lifetime risk after exposure DOES NOT diminish over time (unlike with smoking cessation)**

- Risk in people living in proximity to an asbestos factory or being a relative of an asbestos worker
- Long latent period: occur after 25 to 40 years from initial asbestos exposure.
- The combination of cigarette smoking and asbestos exposure DOES NOT increase the risk of malignant mesothelioma.
- In asbestos workers (esp. smokers), the risk of dying of lung carcinoma exceeds that of developing mesothelioma.

Morphology:
Macroscopic:

- Preceded by extensive pleural fibrosis and plaque formation.
- Begin in a localized area and spread widely, either by contiguous growth or by diffusely seeding the pleural surfaces.
- Lung is ensheathed by a firm gelatinous tumor.
- May invade thoracic wall or lung tissue.
- Distant metastases are rare.

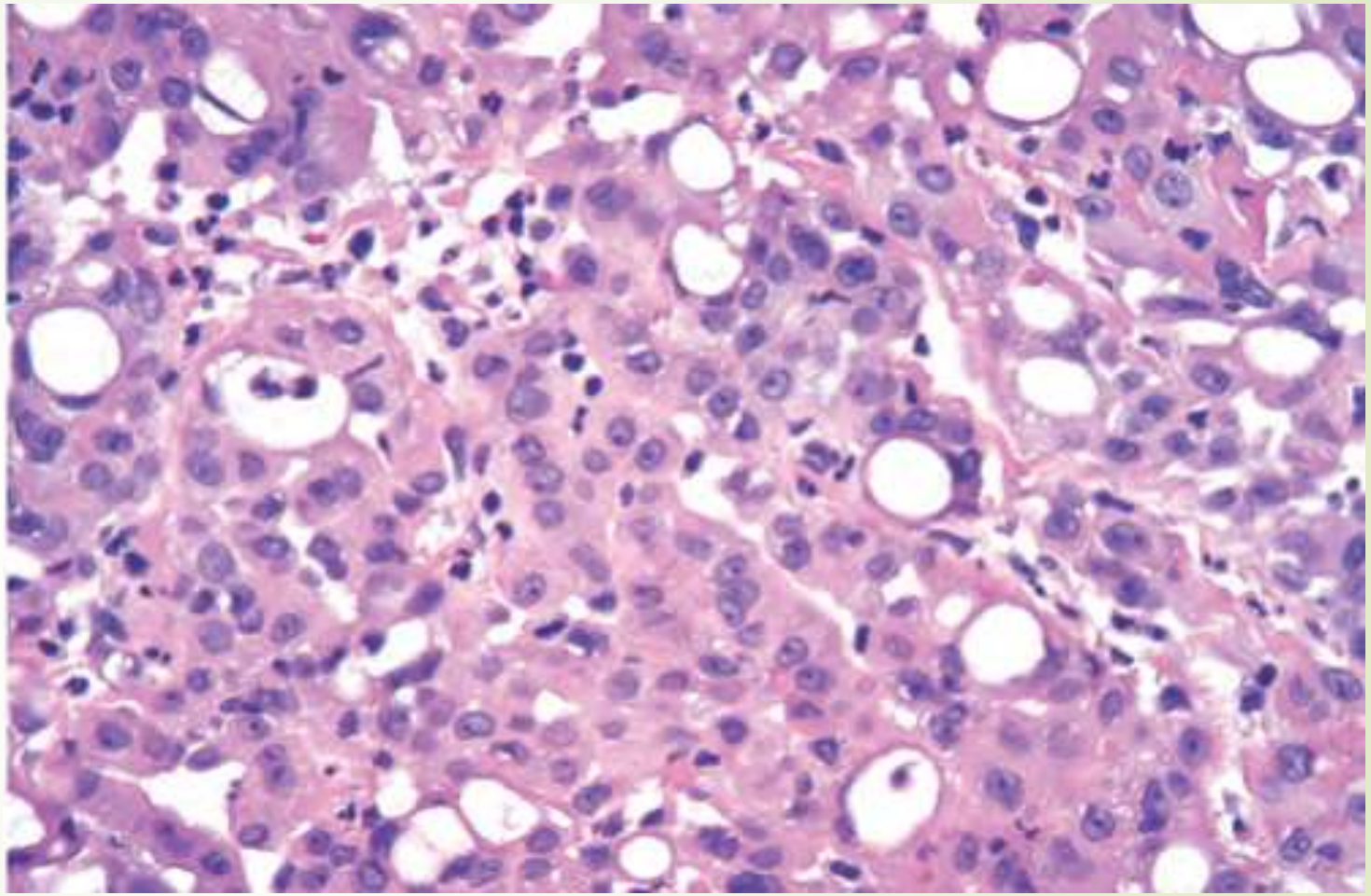




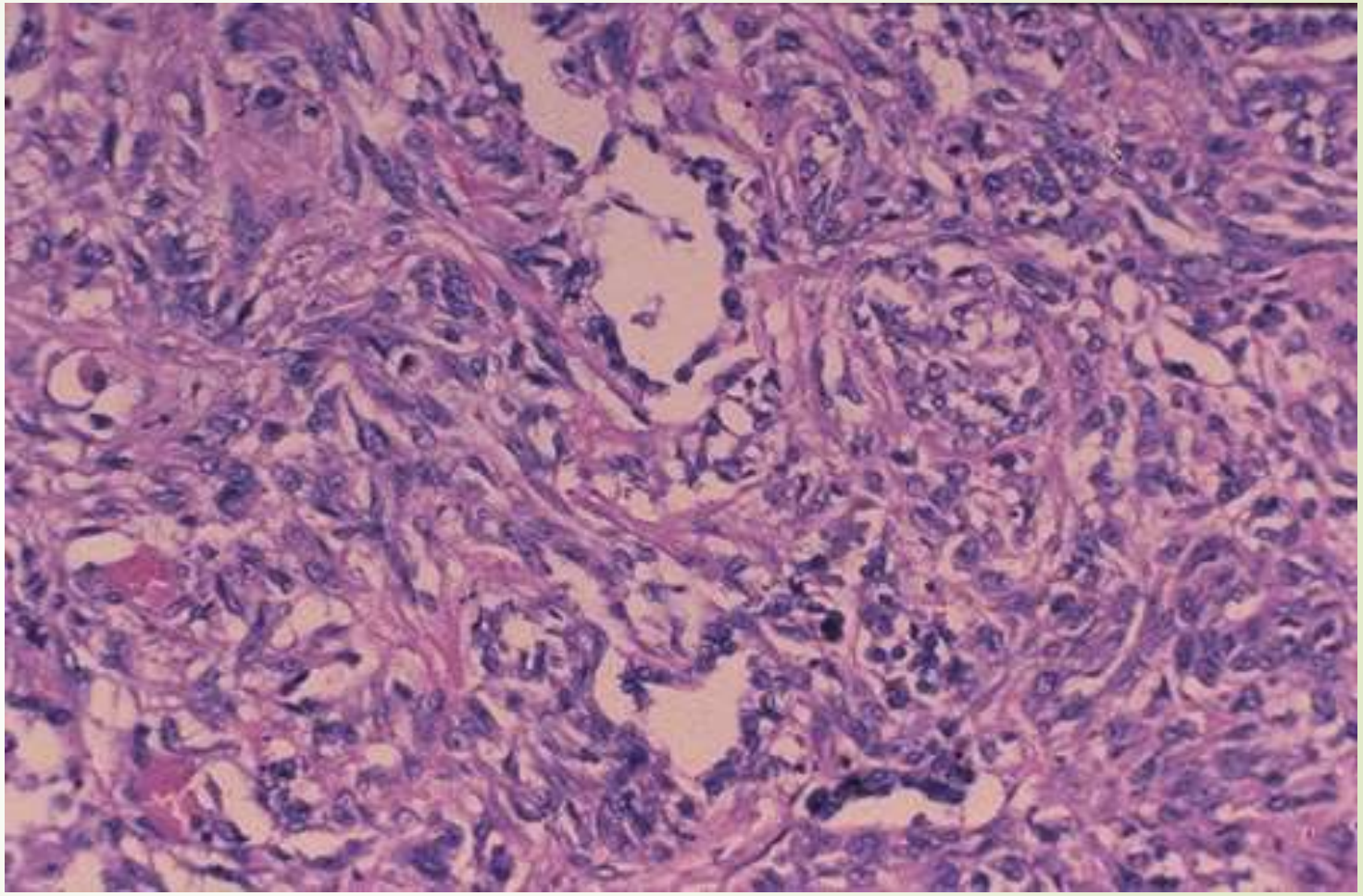
MICROSCOPIC

- **Three patterns:**
- (1) Epithelial: cuboidal cells line tubular and microcystic spaces (the most common & confused with a pulmonary adenocarcinoma)
- (2) Sarcomatous: spindled fibroblast-like cells grow in sheets.
- (3) Biphasic: both sarcomatous and epithelial areas.

Epithelial pattern:



Mixed pattern:



Clinical features:

- **Gradually worsening respiratory symptoms: cough & dyspnea.**
- **Thickening of pleura and pleural effusion on CXR.**
- **Shift of mediastinum**
- **50% die after 12 months of diagnosis.**