LUNG TUMORS

MARAM ABDALJALEEL, MD
DERMATOPATHOLOGIST &NEUROPATHOLOGIST

SPREAD AND METASTASIS

- Each of the Tumor types tends to spreads to **nodes** around the carina, mediastinum, and in the neck and clavicular regions
- Left supraclavicular node (**Virchow node**) involvement is particularly characteristic.
- When advanced Extend into adj structures:
  - pleural or pericardial space, leading to inflammation and effusion
  - Compress or infiltrate the SVC to cause either venous congestion or the vena cava syndrome.

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

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

CLINICAL COURSE

- Lung cancer is one of the most insidious and aggressive Neoplasms (Mostly Silent)

- The major presenting complaints are cough (75%), weight loss (40%), chest pain (40%), and dyspnea (20%).

- Hoarseness, superior vena cava syndrome, pericardial or pleural effusion, or persistent segmental atelectasis or pneumonitis

CLINICAL COURSE

Not infrequently, lung cancer is recognized though biopsy of tissues involved by metastatic disease

- Symptoms from metastatic spread:
  - Brain (mental or neurologic changes)
  - Liver (hepatomegaly),
  - Bones (pain).

PROGNOSIS:

- **Prognosis is poor** for most patients.
- Even with thoracic surgery, radiation therapy, and chemotherapy:
  - the overall 5-year survival rate is only 18.7%.
  - The 5-year survival rate is:
    - 52% for cases detected when the disease is still localized,
    - 22% when there is regional metastasis,
    - only 4% with distant metastases.

PROGNOSIS:

- adenocarcinoma and squamous cell carcinoma carry a slightly better prognosis than SCLCs.

- **SCLCs**, invariably spread by the time they are first detected even if the primary tumor appears to be small and localized

- Surgical resection is not a viable treatment.

- most patients present with advanced stage disease;
  - despite excellent initial responses to chemotherapy, the median survival is approximately 10 months and the cure rate is close to zero.

PARANEOPLASTIC SYNDROMES

(1) **Hypercalcemia** (secretion of a PTH related peptide, Parathormone, prostaglandin E)

SCC

(2) **Cushing syndrome** (production of ACTH) **SCLC, CARCINOID**

(3) **Syndrome of inappropriate secretion of ADH**, (production of ADH), hyponatremia

SCLC

(4) **Acromegaly** (growth hormone-releasing hormone (GHRH) or growth hormone (GH))

SCLC, CARCINOID

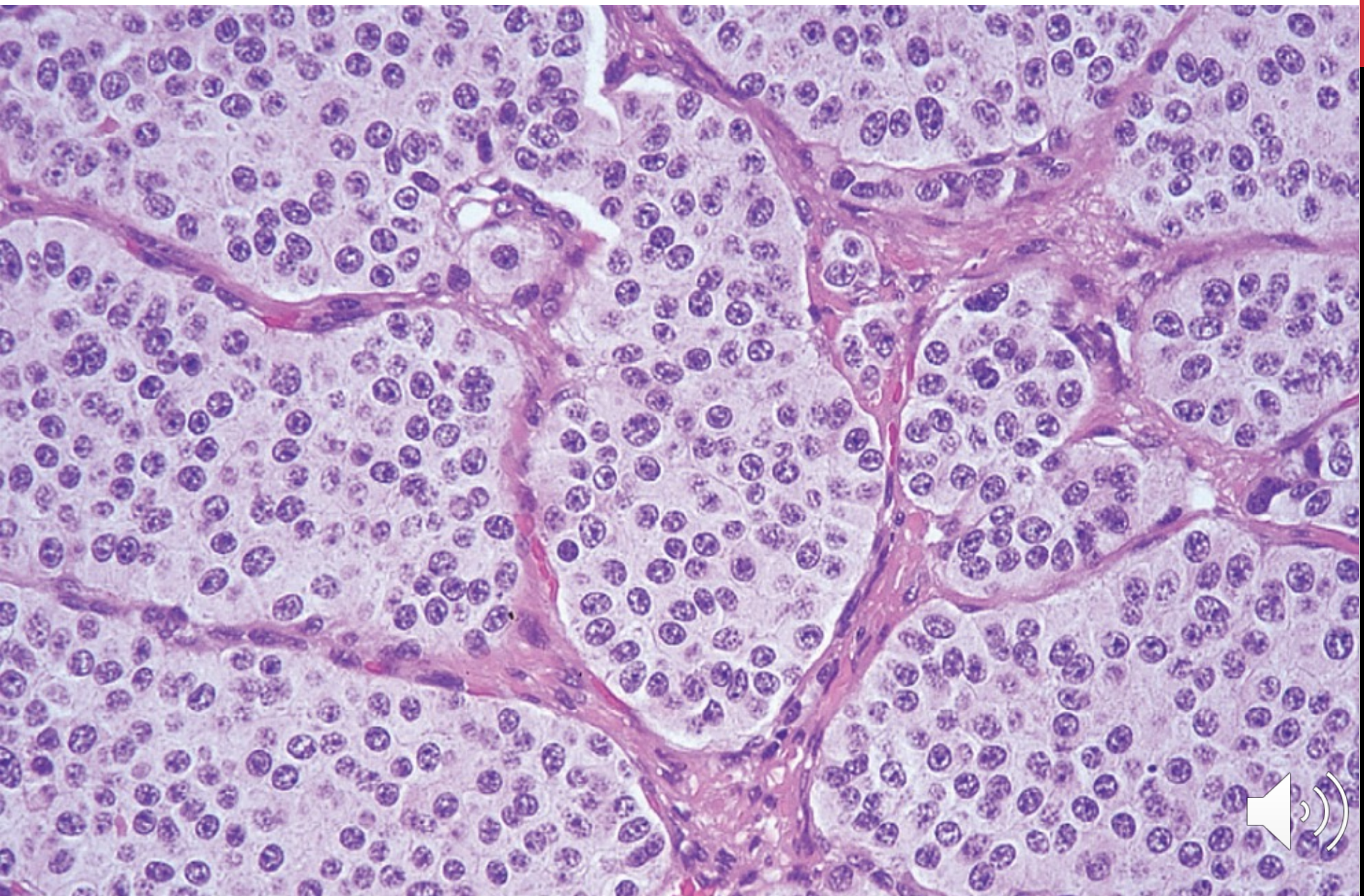
PARANEOPLASTIC SYNDROMES

(5) **Neuromuscular syndromes,** including a myasthenic syndrome, peripheral neuropathy, and polymyositis

(6) hypertrophic pulmonary osteoarthropathy which is associated with fingers clubbing **Adeno, SCC**

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

CARCINOID TUMORS



CARCINOID TUMORS

- **5%** of all pulmonary neoplasms.

- **malignant** tumors, **low-grade neuroendocrine carcinomas**

- composed of cells containing dense-core neurosecretory granules in their cytoplasm and, rarely, may secrete hormonally active polypeptides.

- subclassified as **typical or atypical**; both are often **resectable and curable**.

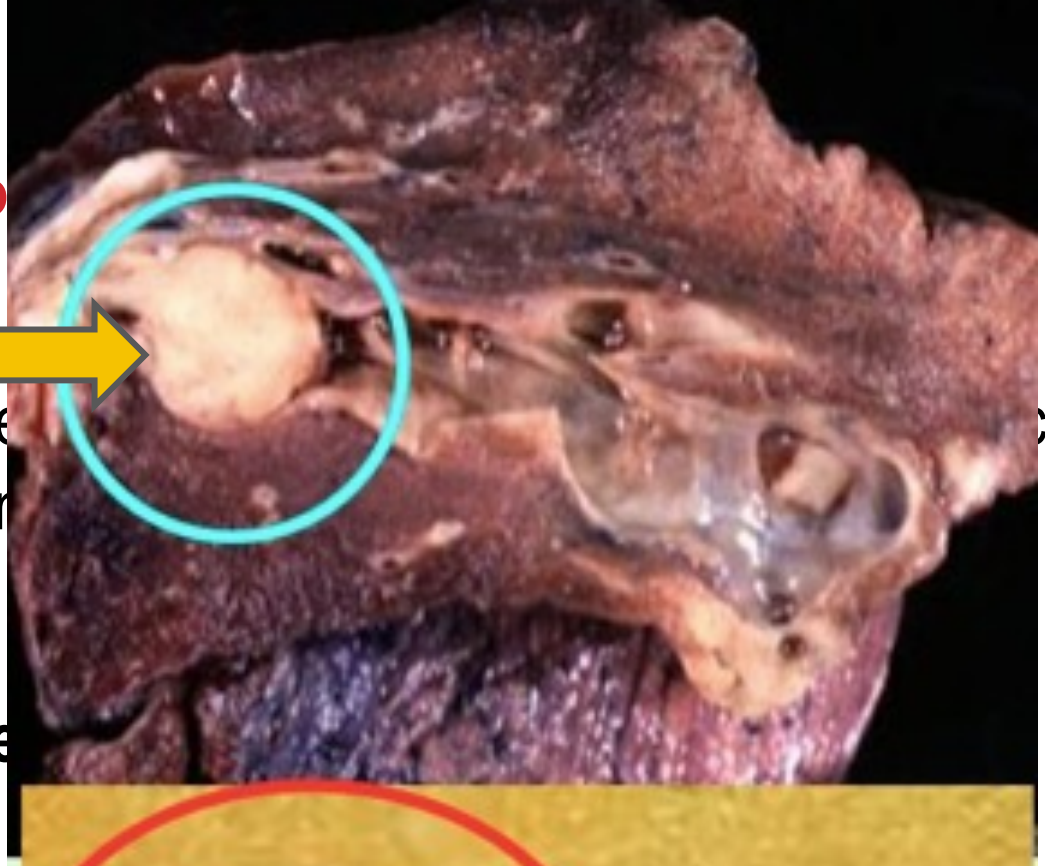
- May occur as part of the **multiple endocrine neoplasia syndrome (MEN syndrome)**

- **young adults** (mean 40 years)

- **5% to15%** of carcinoids have metastasized to the **hilar nodes at presentation**

- distant metastases are **rare**

MORP ICALLY:



- originate cinoids are less commor

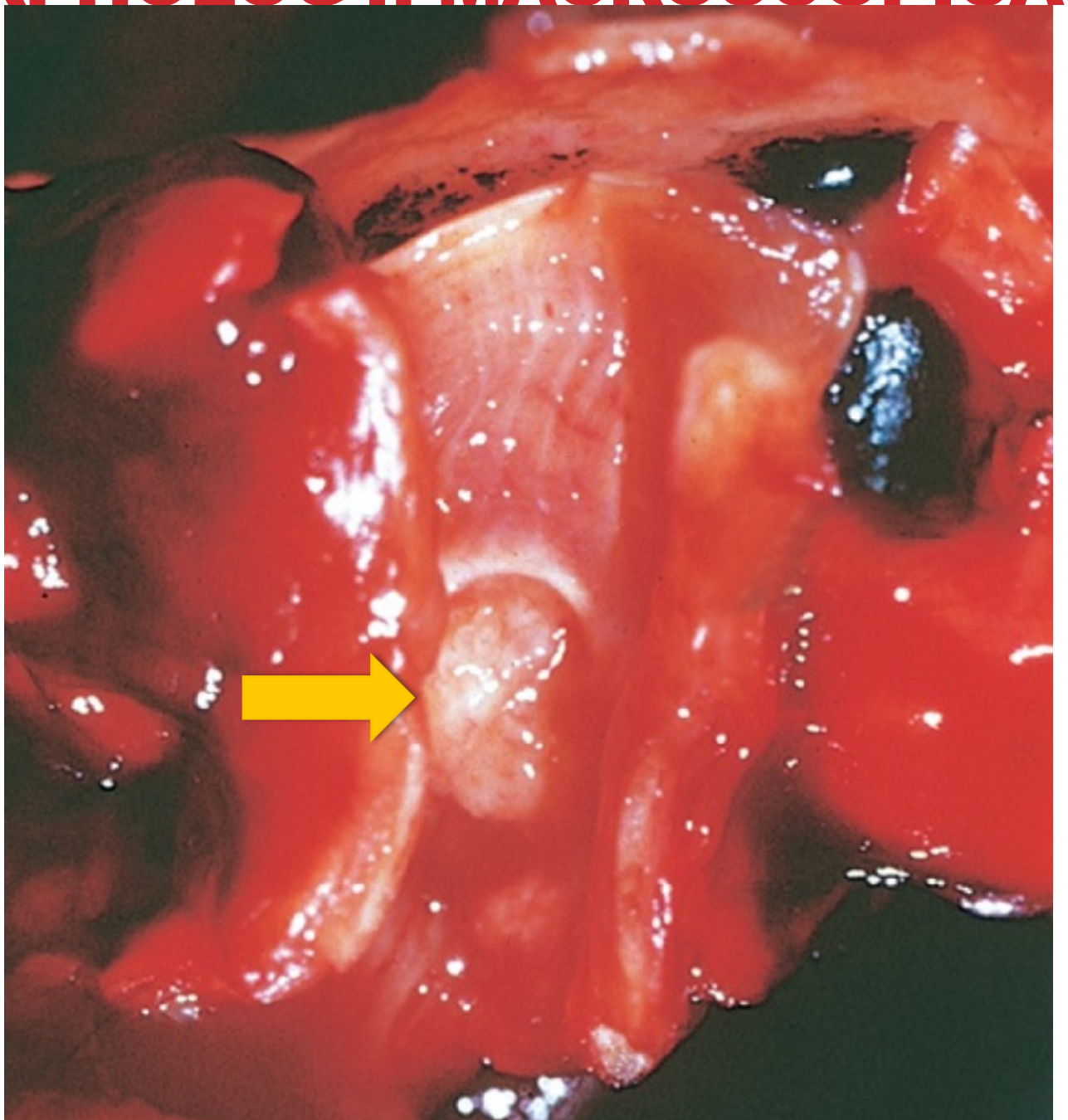
- **well de**

- grow in

  (1) an **o** **ninal mass**

  (2) a **mu** wall to fan out in the p **button lesion**

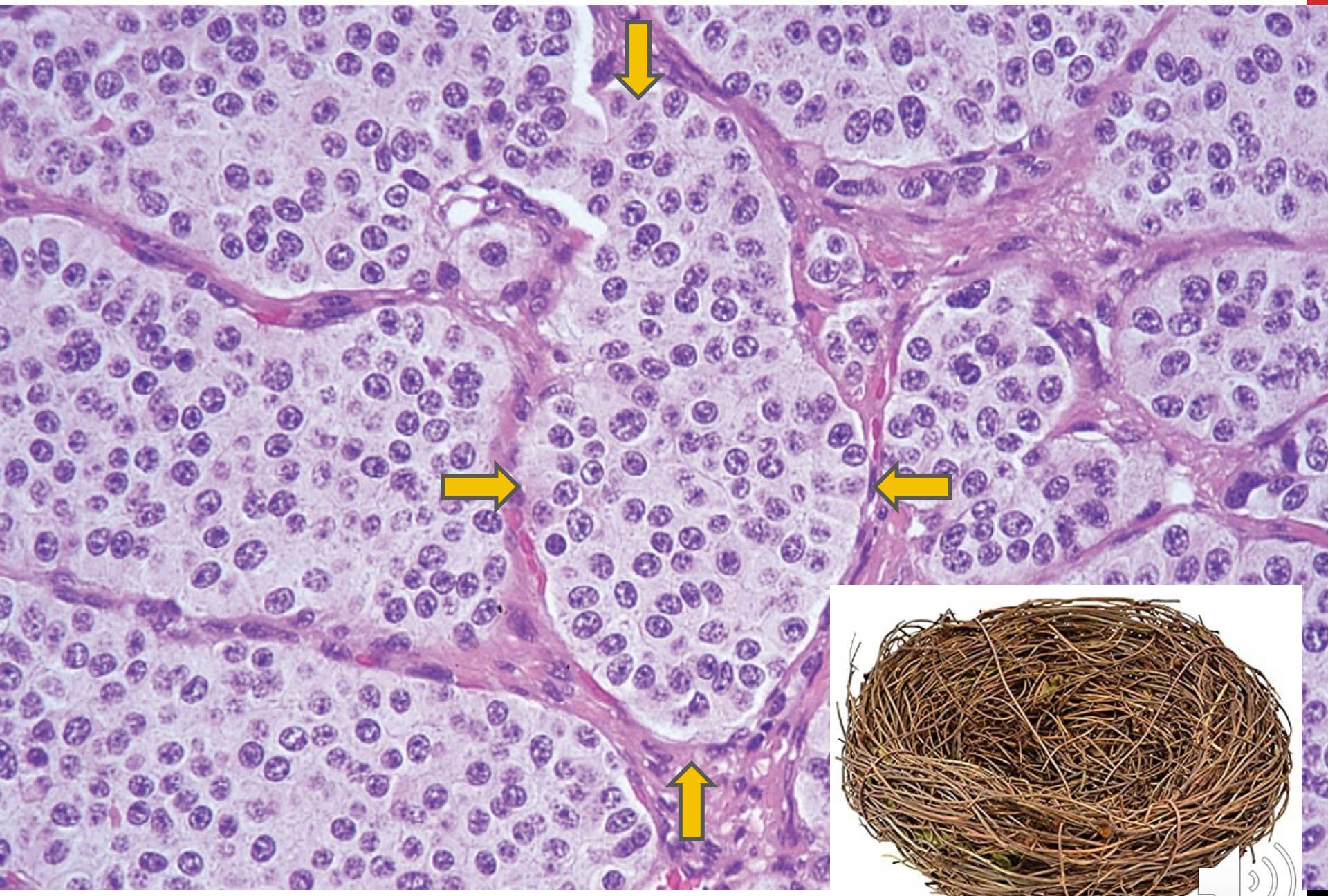
MORPHOLOGY. MACROSCOPICALLY:



MORPHOLOGY, MICROSCOPICALLY:

- **Typical carcinoids:** composed of nests of uniform cells that have regular round nuclei with “salt-and-pepper” chromatin, absent or rare mitoses and little pleomorphism

- **Atypical carcinoid:**
  - tumors display a higher mitotic rate and small foci of necrosis.
  - have a higher incidence of lymph node and distant metastasis than typical carcinoids
  - have *TP53* mutations in 20% to 40% of cases



https://www.amazon.co.uk/Props4shows-Fake-Birds-Nest-12cm/dp/B07BRDXDHX

CLINICALLY:

- Mostly manifest with signs and symptoms related to their **intraluminal growth**, including cough, hemoptysis, and recurrent bronchial and pulmonary infections.

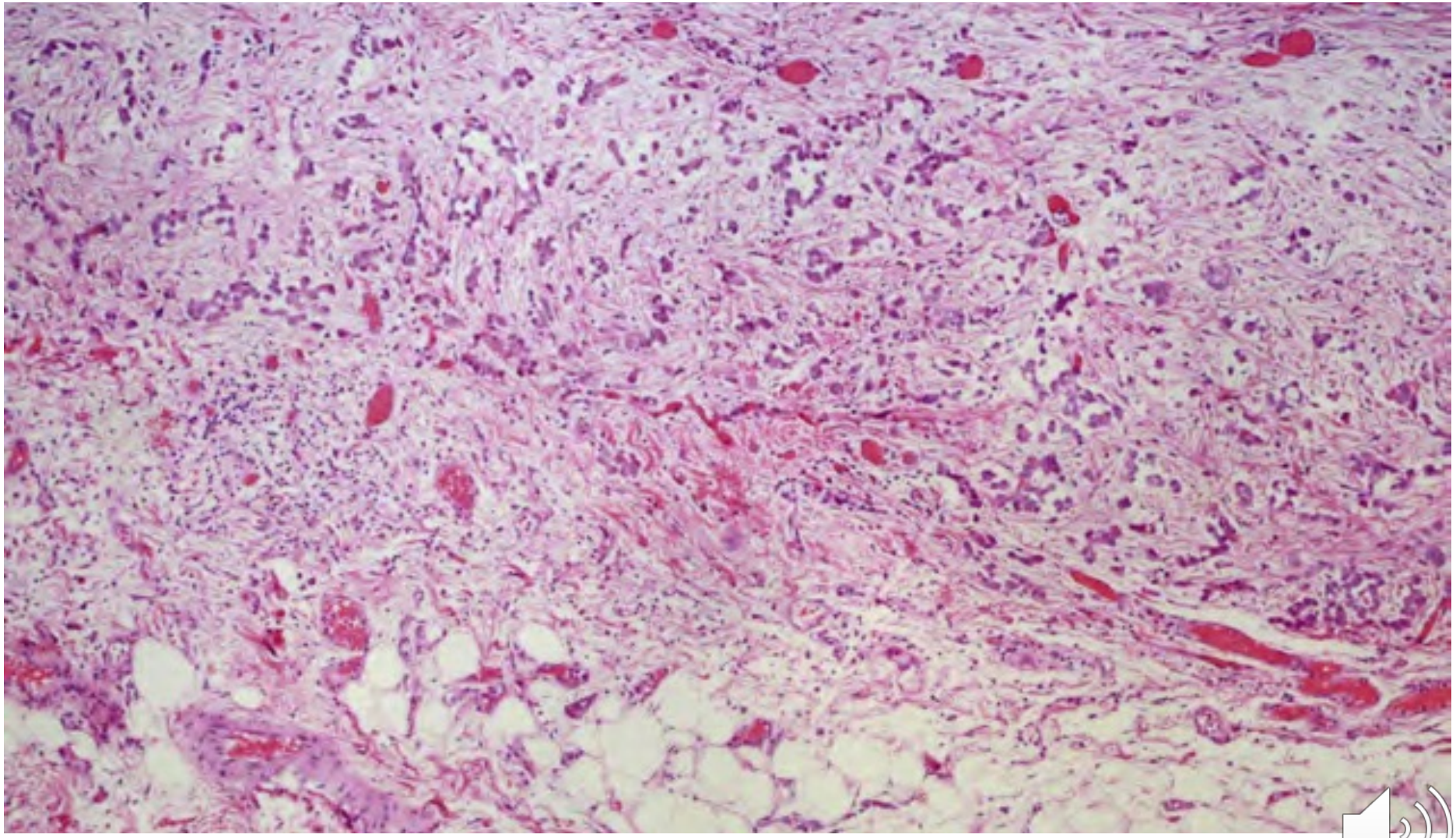
- **Peripheral tumors** are often **asymptomatic** and discovered incidentally.

- Rarely induces the **carcinoid syndrome:**
  - intermittent attacks of diarrhea, flushing, and cyanosis.

PROGNOSIS:

- **5- and 10-year survival rates:**
  - for typical carcinoids are above **85%**
  - For atypical carcinoid **56% and 35%,** respectively

MALIGNANT MESOTHELIOMA



MALIGNANT MESOTHELIOMA

- Rare cancer of **mesothelial cells** lining parietal or visceral pleura

- Less commonly in the peritoneum and pericardium

- highly related to **exposure to airborne asbestos (80% to 90%** of cases):
    - Not only limit to people working with asbestos but also only exposure was living in proximity to an asbestos factory or being a relative of an asbestos worker.

- **Long latent period: 25 to 40 years** after initial asbestos exposure

- The combination of cigarette smoking and asbestos exposure **DOES NOT** increase the risk of developing malignant mesothelioma **BUT INCREASES** the risk for developing lung carcinoma

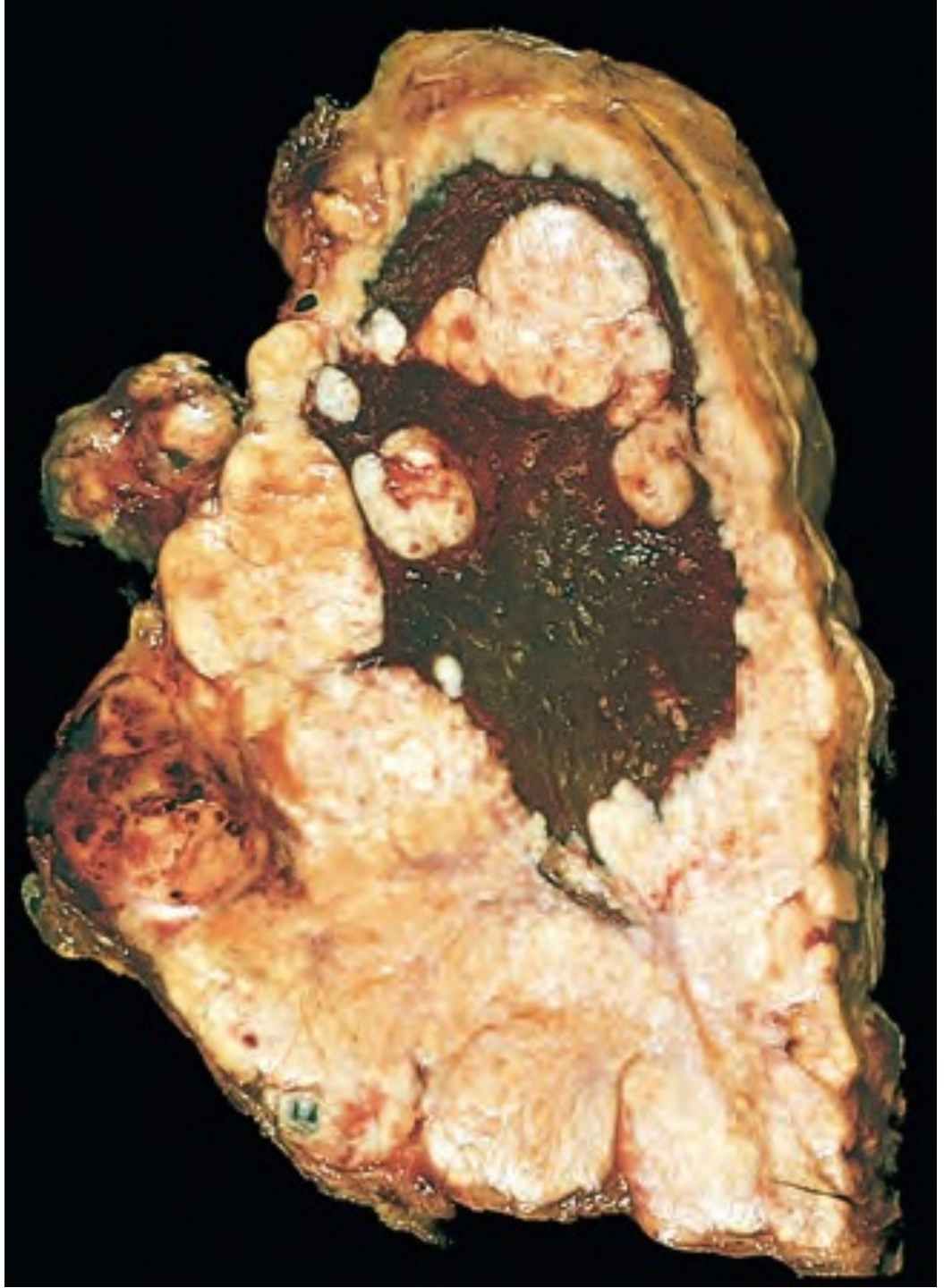
- Once inhaled, **asbestos fibers remain in the body for life**.

- the lifetime risk after exposure **DOES NOT** diminish over time (unlike with smoking, in which the risk decreases after cessation).

MORPHOLOGY, MACROSCOPIC:

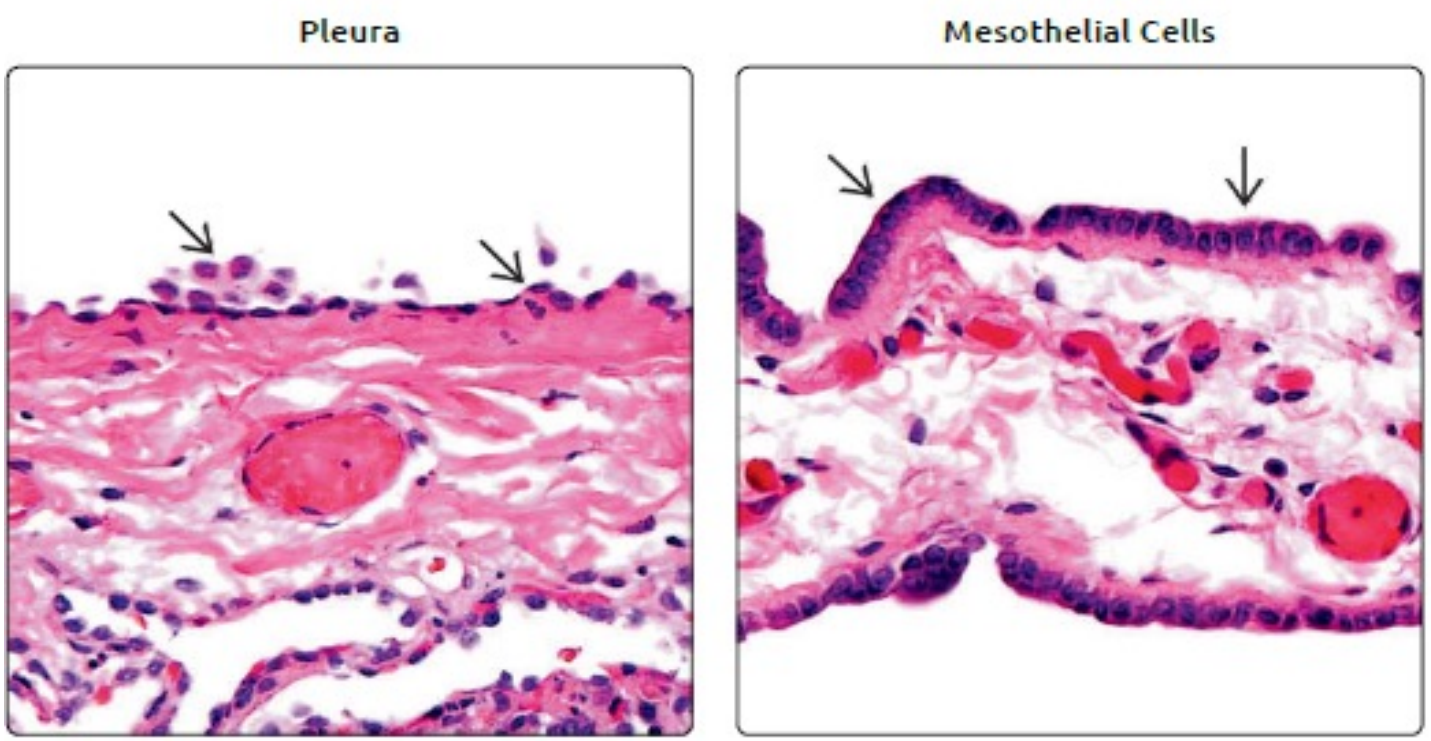
- Preceded **by extensive pleural fibrosis and plaque**
- begin in a localized area and spread widely, either by contiguous growth or by diffusely seeding the pleural surfaces.
- **Distant metastases are rare.**

Thick, firm, white pleural tumor tissue that ensheathes the lung



NORMAL HISTOLOGY:

- Normal mesothelial cells are biphasic, giving rise to pleural lining cells as well as the underlying fibrous tissue.



Diagnostic pathology, normal histology text book

MORPHOLOGY, MICROSCOPIC:

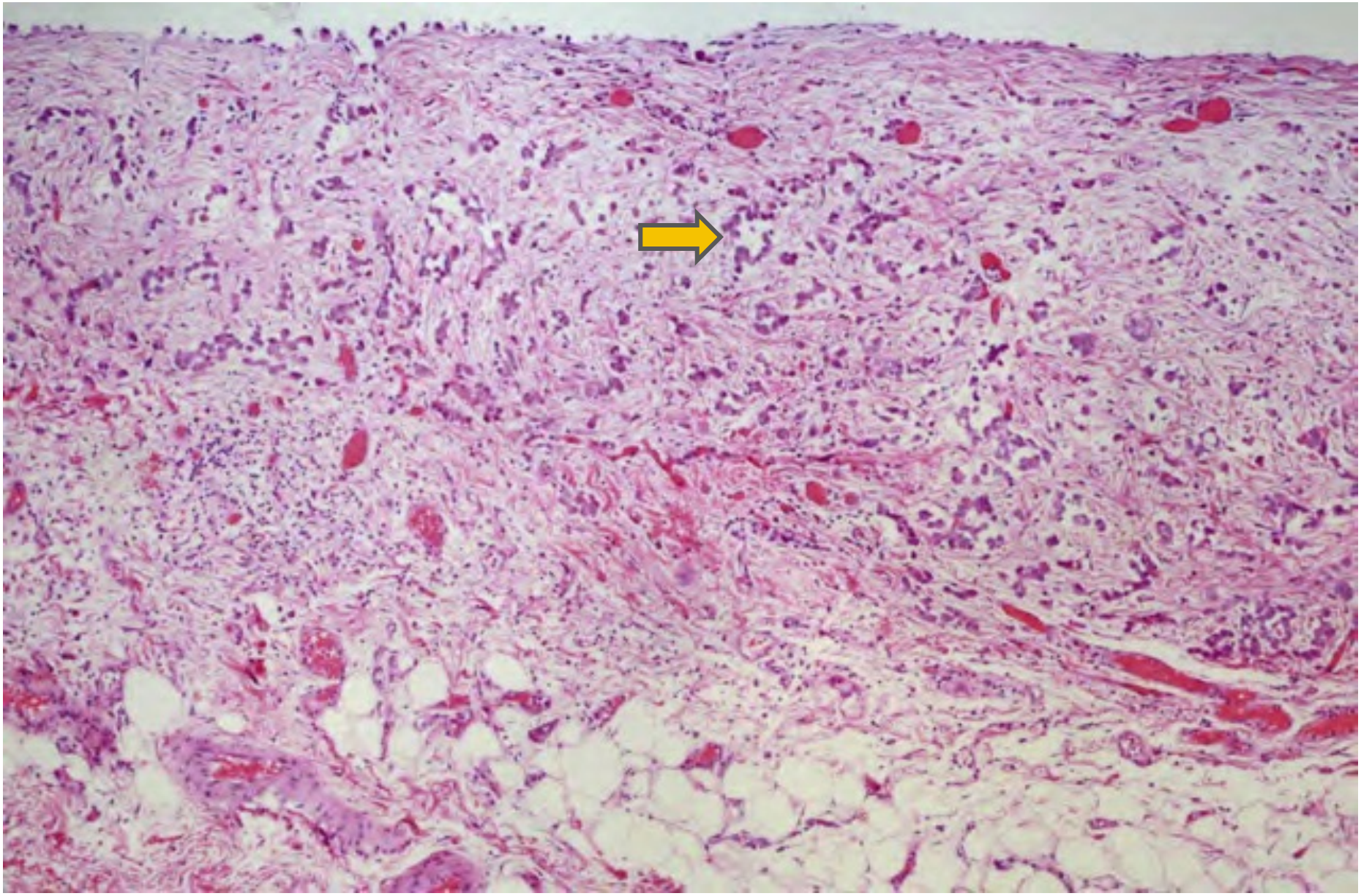
- **one of three** morphologic appearances:

(1) **Epithelial:** cuboidal cells with small papillary buds line tubular and microcystic spaces

  - the most common & confused with a pulmonary adenocarcinoma

(2) **sarcomatous:** spindled cells grow in sheets

(3) **biphasic**: both sarcomatous and epithelial areas



MALIGNANT MESOTHELIOMA

- Rare cancer of **mesothelial cells** lining parietal or visceral pleura

- Less commonly in the peritoneum and pericardium

- highly related to **exposure to airborne asbestos (80% to 90%** of cases):
    - Not only limit to people working with asbestos but also only exposure was living in proximity to an asbestos factory or being a relative of an asbestos worker.

- **Long latent period: 25 to 40 years** after initial asbestos exposure

- The combination of cigarette smoking and asbestos exposure **DOES NOT** increase the risk of developing malignant mesothelioma **BUT INCREASES** the risk for developing lung carcinoma

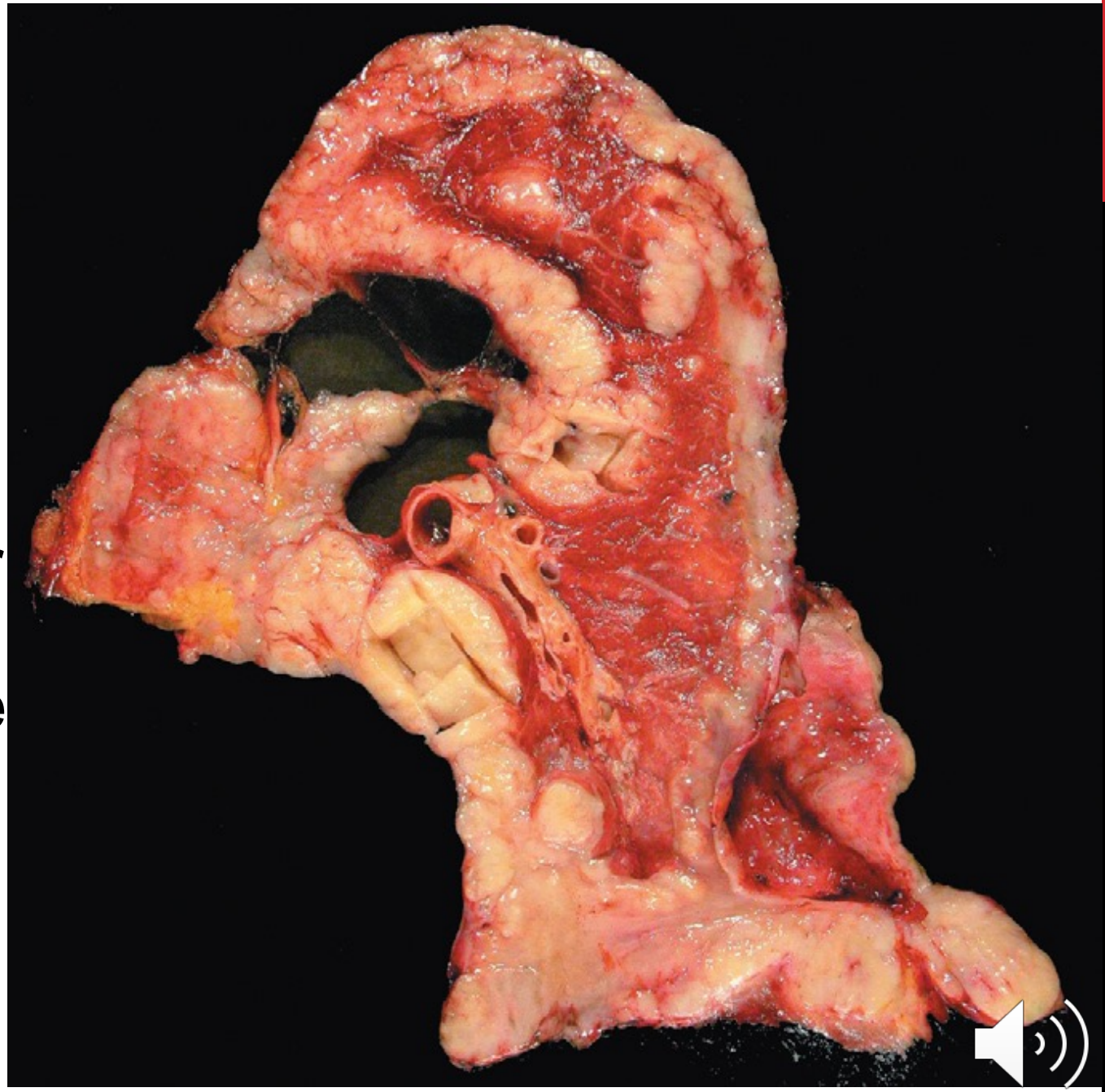
- Once inhaled, **asbestos fibers remain in the body for life**.

- the lifetime risk after exposure **DOES NOT** diminish over time (unlike with smoking, in which the risk decreases after cessation).

MORPHOLOGY, MACROSCOPIC:

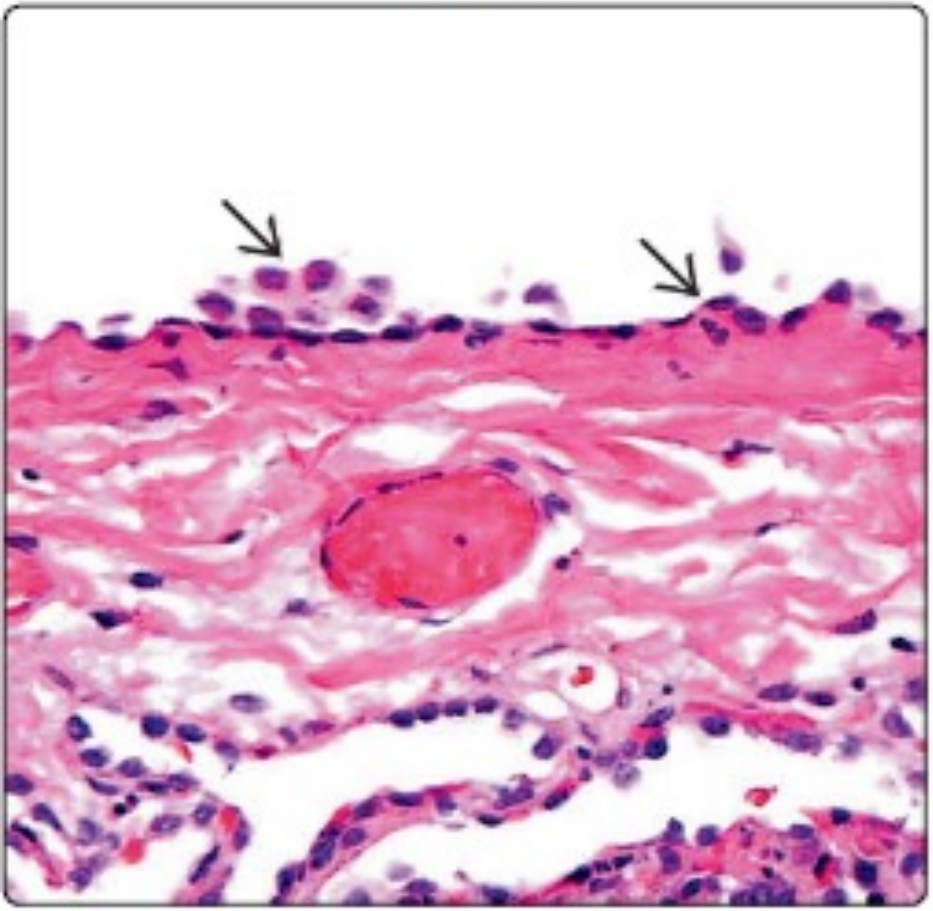
- Preceded **by extensive pleural fibrosis and plaque**
- begin in a localized area and spread widely, either by contiguous growth or by diffusely seeding the pleural surfaces.
- **Distant metastases are rare.**

At autopsy, the affected lung typically is **ensheathed by a layer of yellow-white, firm, variably gelatinous tumor that obliterates the pleural space**

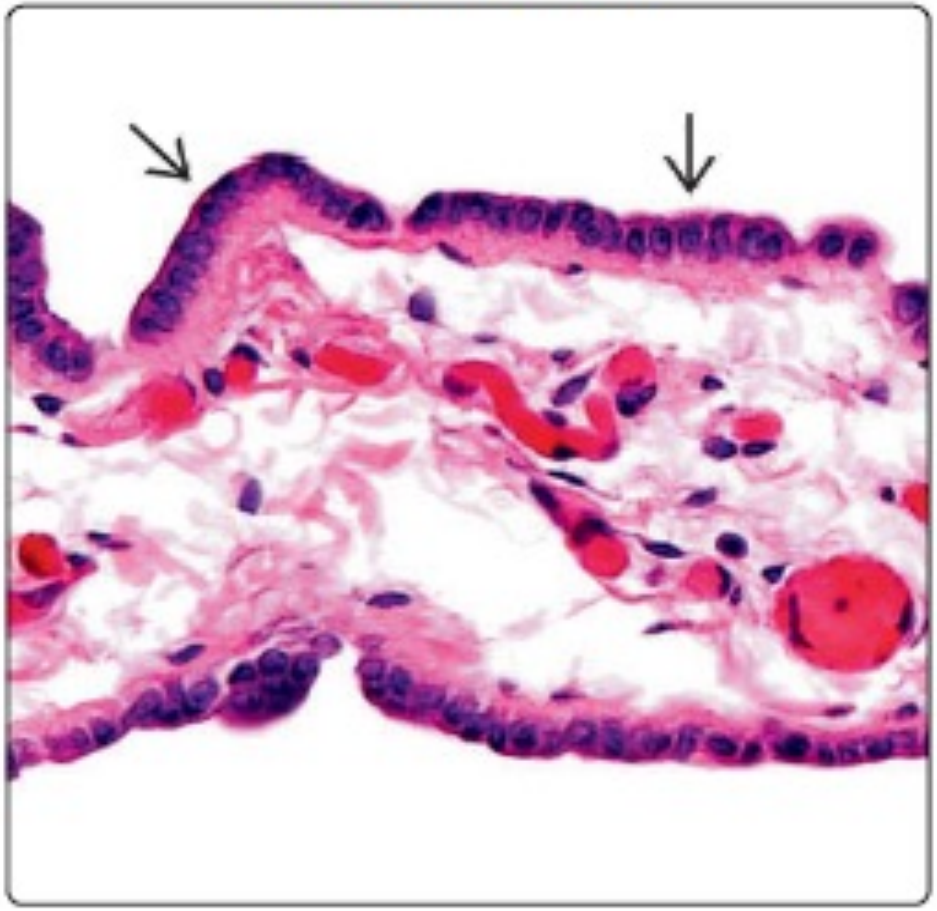


NORMAL HISTOLOGY:

Pleura



Mesothelial Cells



Diagnostic pathology, normal histology text book

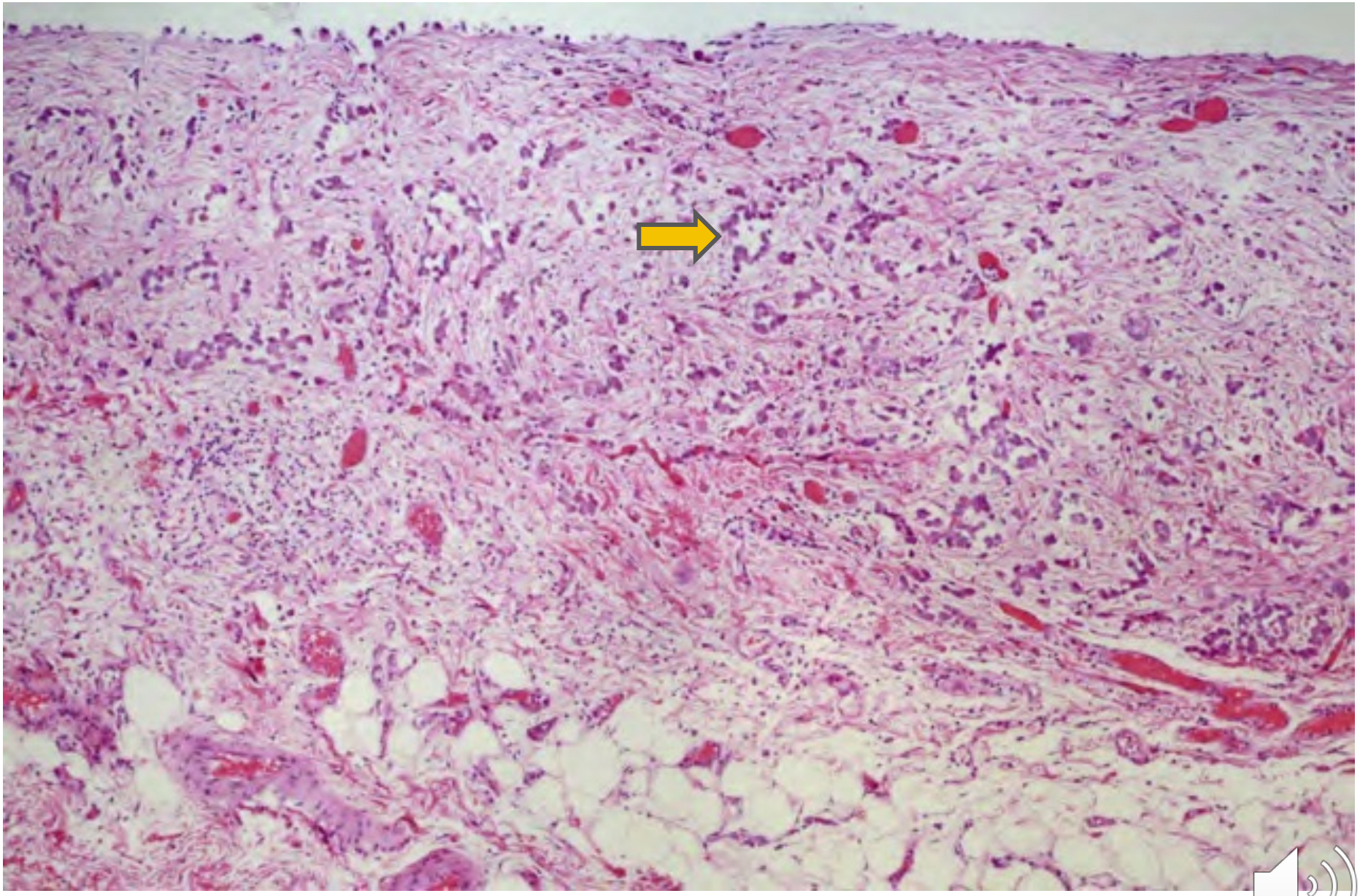
MORPHOLOGY, MICROSCOPIC:

- **one of three** morphologic appearances:

(1) **Epithelial:** cuboidal cells with small papillary buds line tubular and microcystic spaces (the most common & confused with a pulmonary adenocarcinoma)

(2) **sarcomatous:** spindled cells grow in sheets

(3) **biphasic**: both sarcomatous and epithelial areas



THANK YOU!