Respiratory system – Pathology lung tumours

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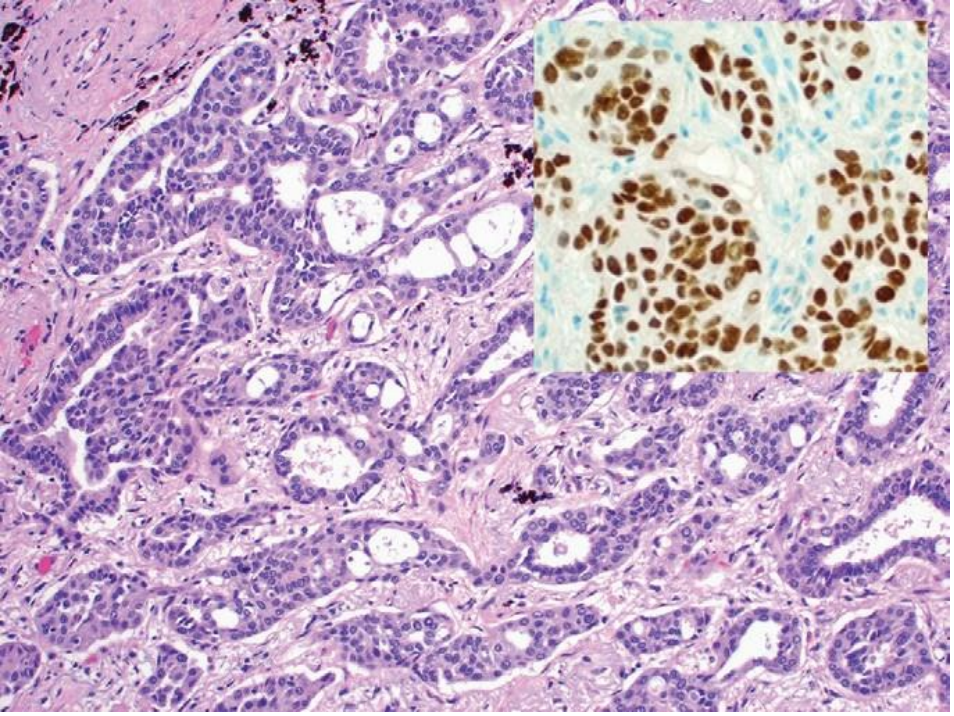
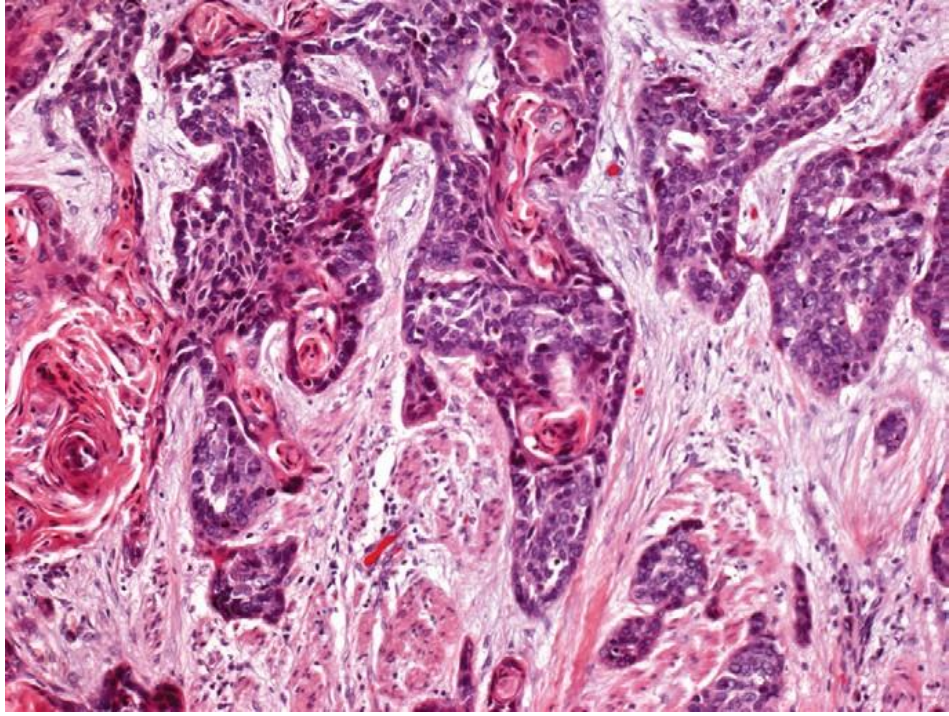
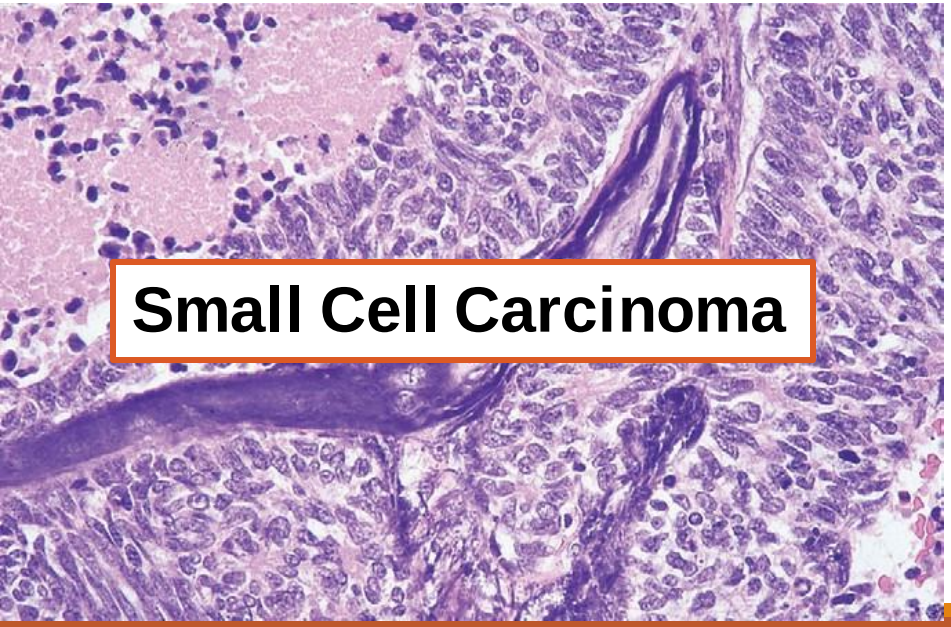
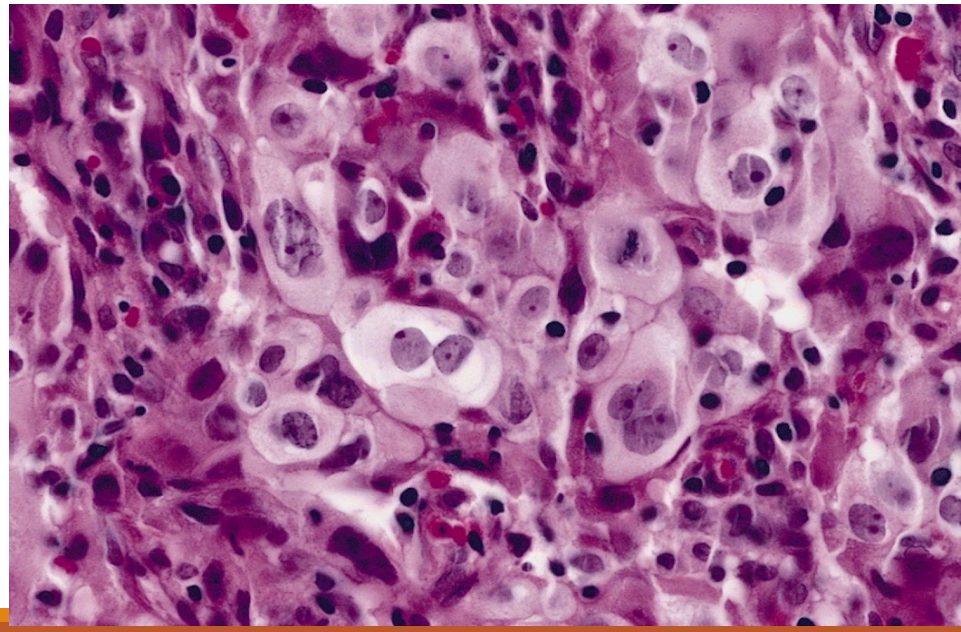






Small Cell Carcinoma



https://www.verywellhealth.com/large-cell-carcinoma-of-the-lungs-2249356

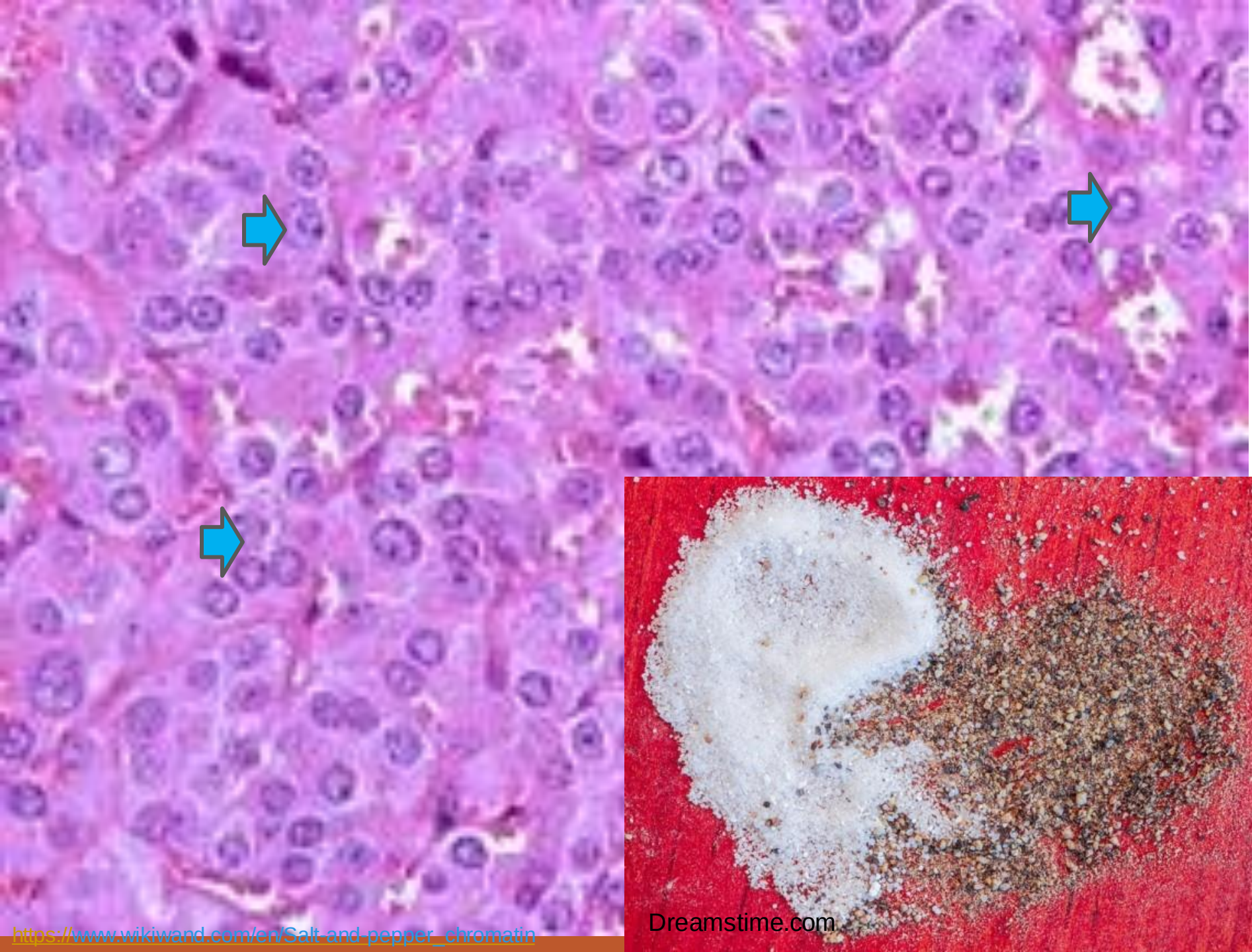
SMALL CELL LUNG CARCINOMAS (SCLC)

- Centrally located with extension into the lung parenchyma
- Early involvement of the hilar and mediastinal nodes.
- By the time of diagnosis, most will have metastasized to hilar and mediastinal lymph nodes.
- In the 2015 WHO Classification, SCLC is grouped together with large cell neuroendocrine carcinoma

MORPHOLOGY:

- Pale grey tumor

- Small tumor cells:
  - Round to fusiform, scant cytoplasm, finely granular
  - chromatin a salt and pepper appearance
  - Cells are twice the size of resting lymphocytes.

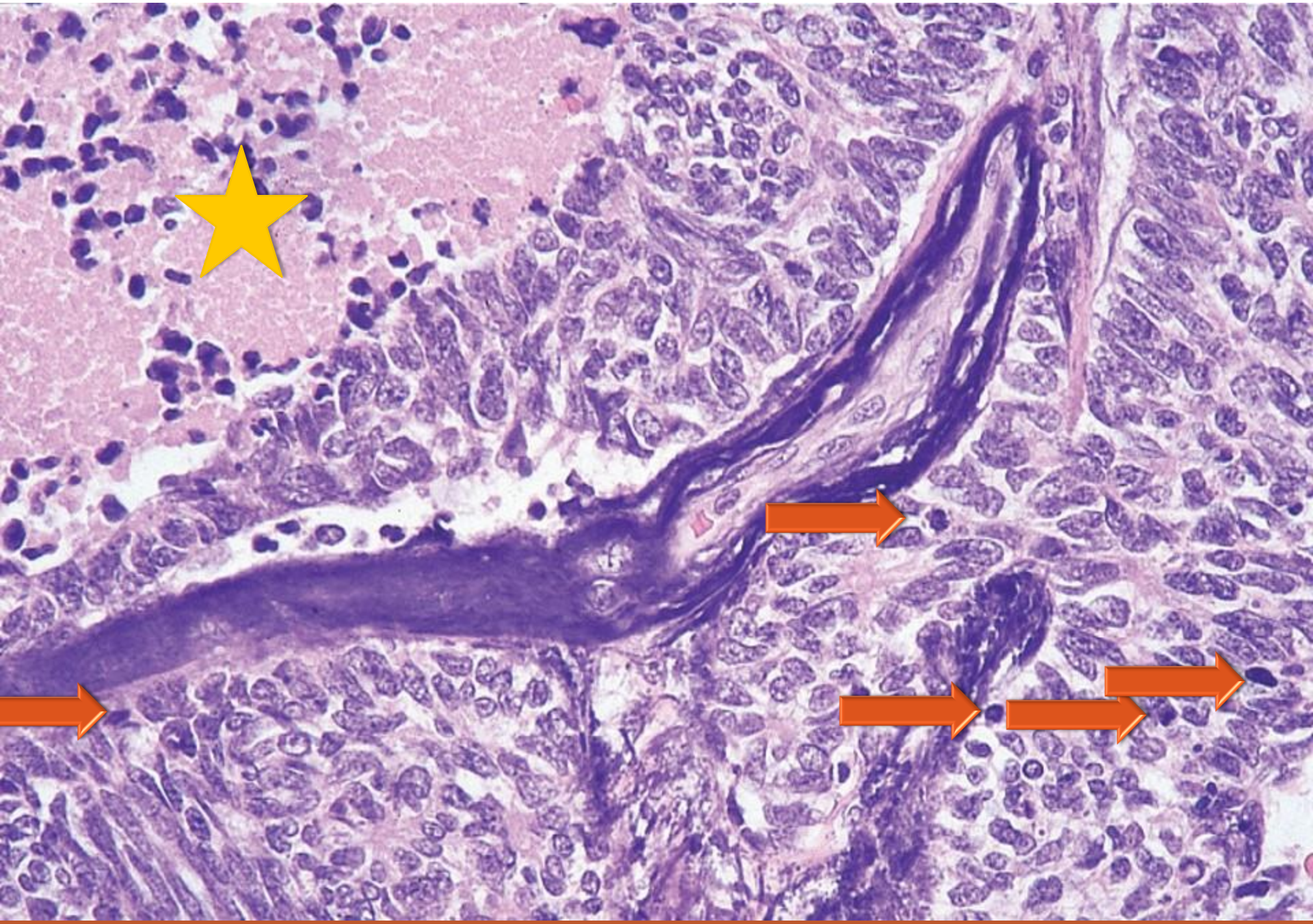


Dreamstime.com

https://www.wikiwand.com/en/Salt-and-pepper_chromatin

MORPHOLOGY:

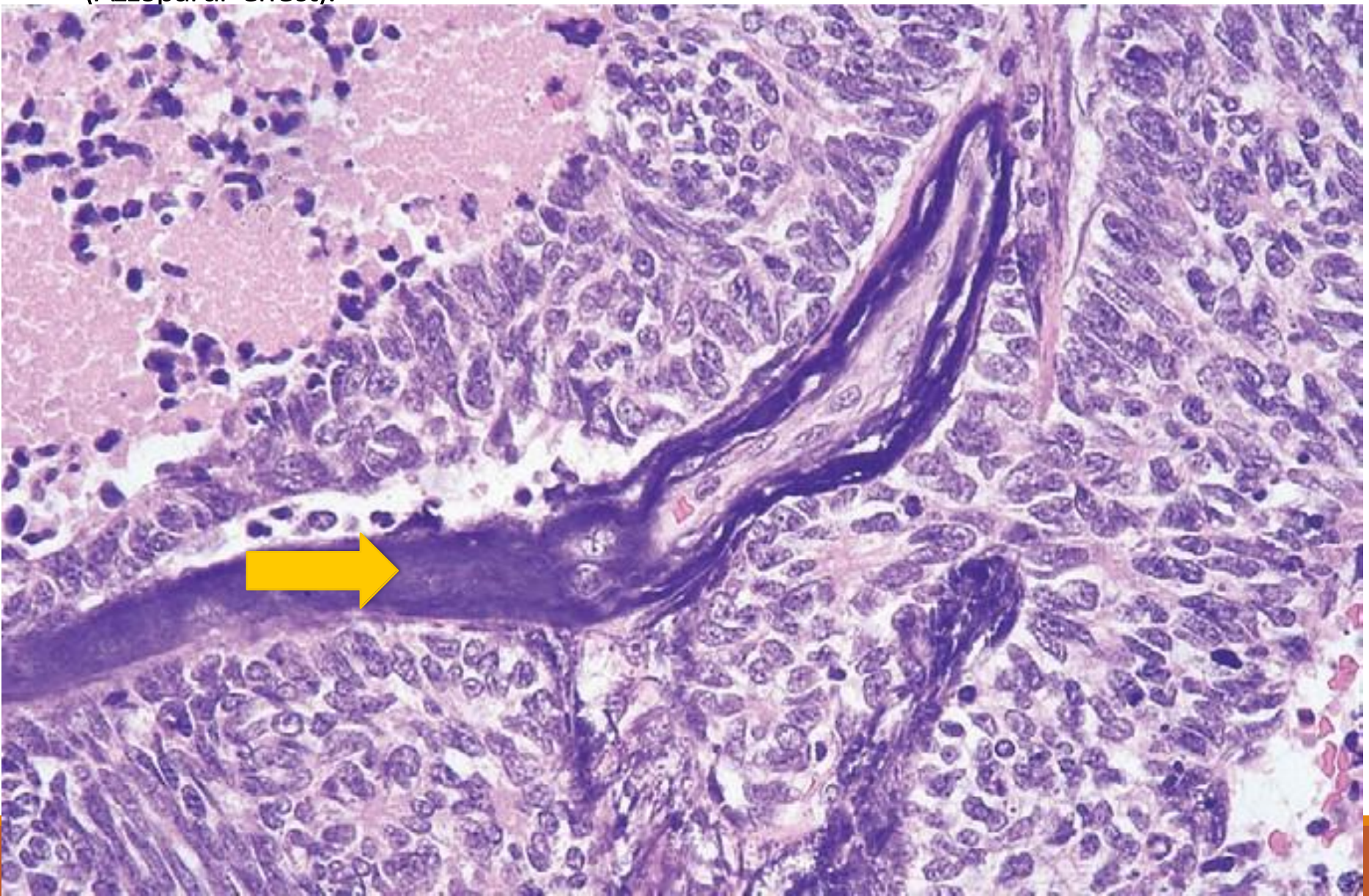
- Frequent mitotic figures
- Necrosis invariably present, can be extensive.

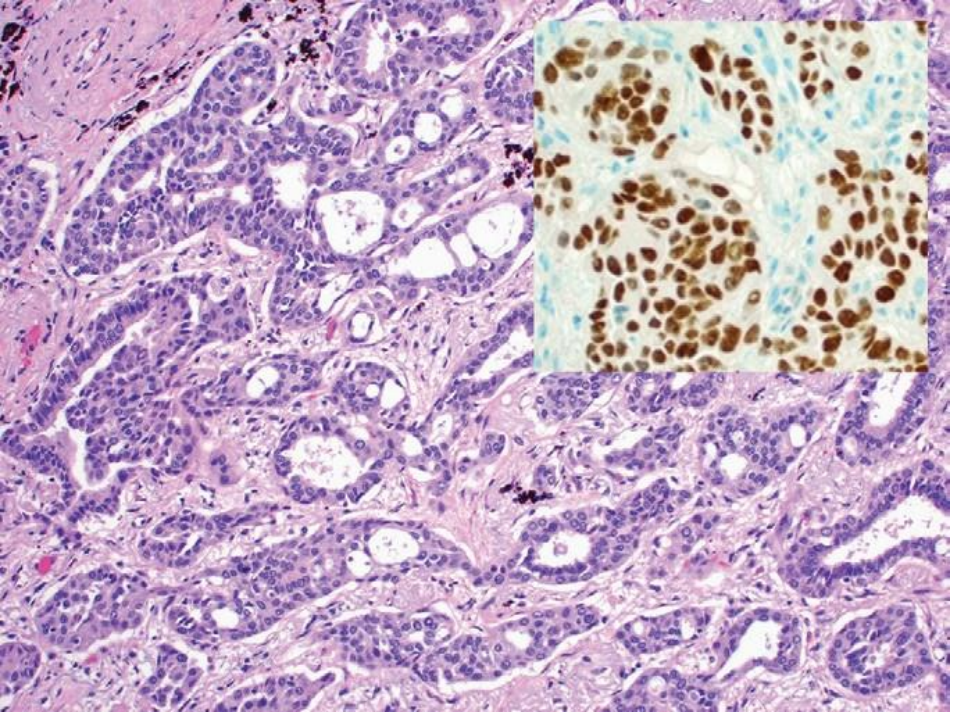


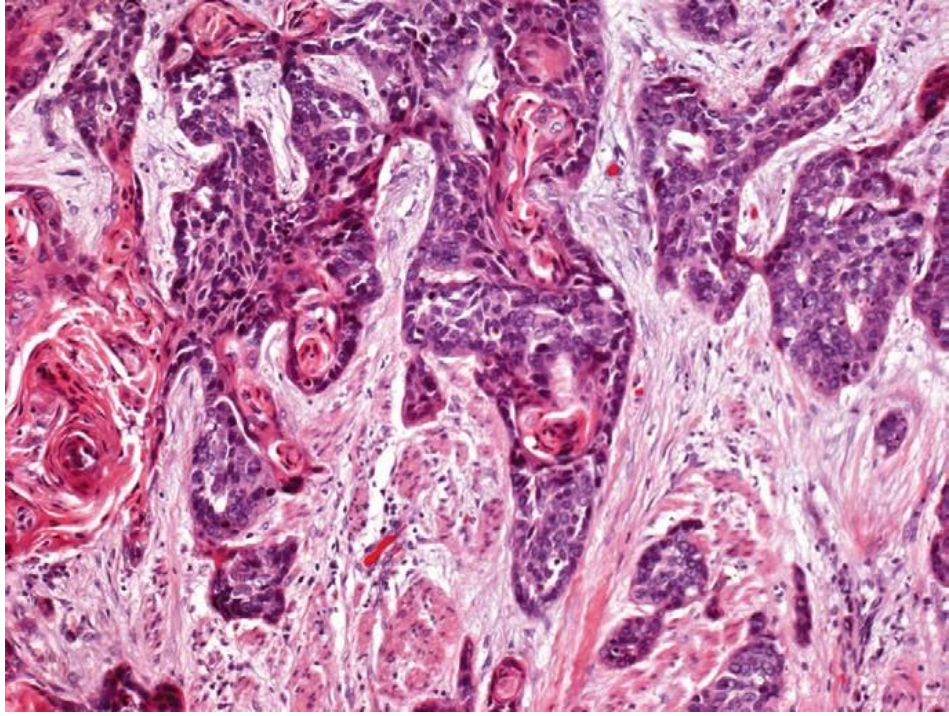
MORPHOLOGY:

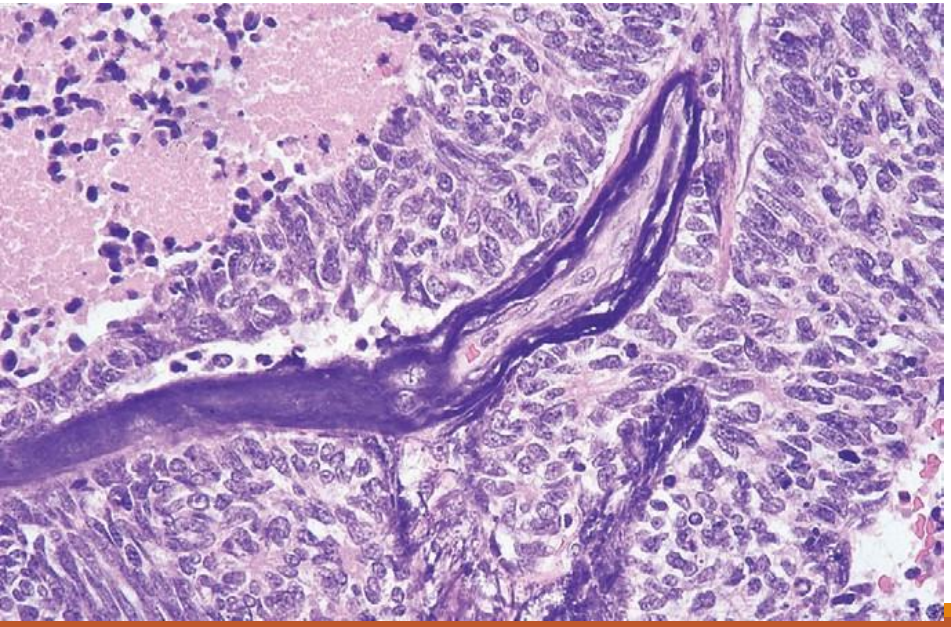
- Fragile tumor cells with “crush artifact” in small biopsy specimens
- Nuclear molding due to close apposition of tumor cells that have scant cytoplasm
- Express neuroendocrine markers
- Secreting hormones paraneoplastic syndromes .

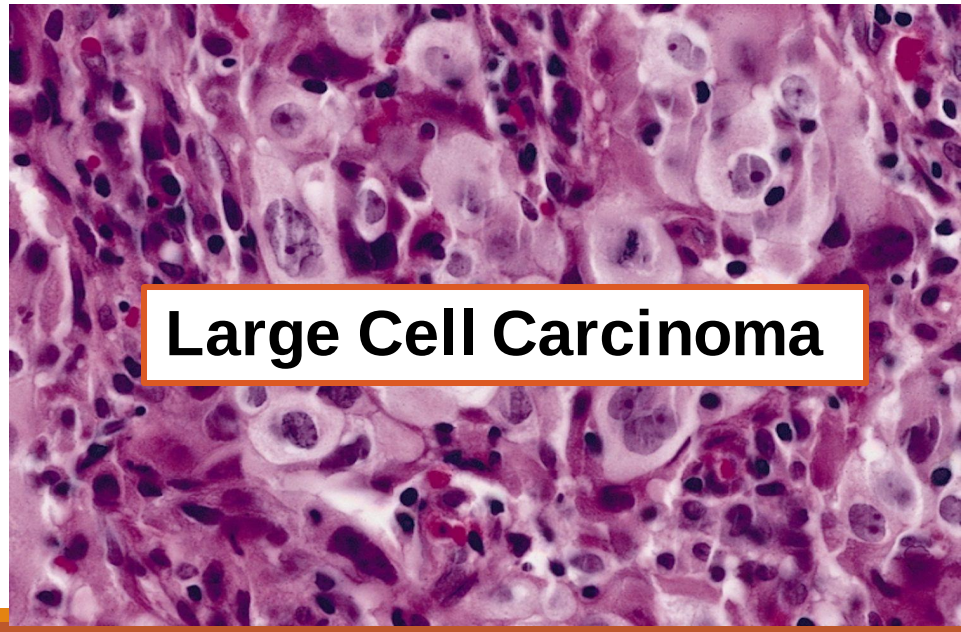
- basophilic staining of vascular walls due to encrustation by and from necrotic tumor cells (Azzopardi effect).











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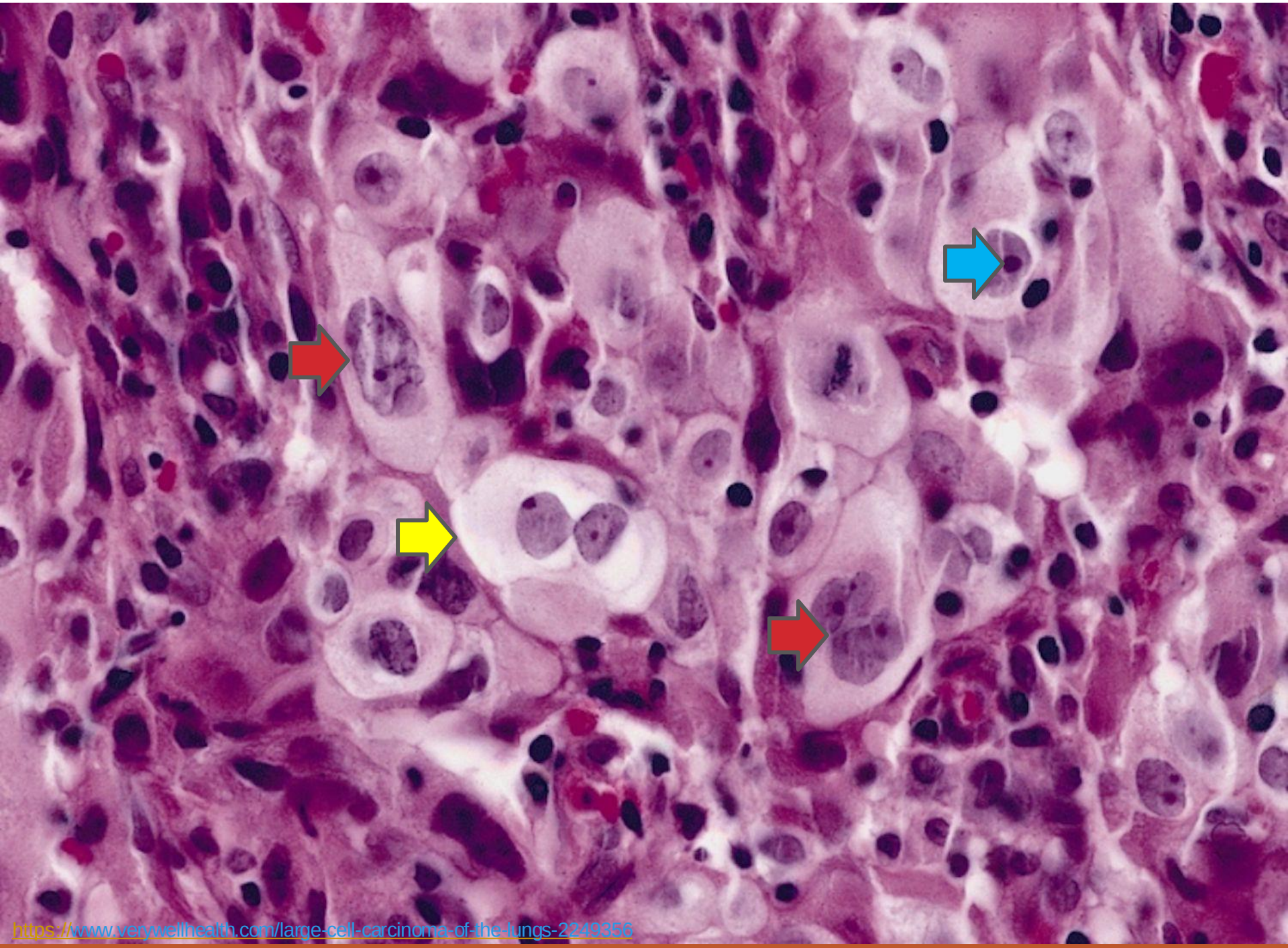
LARGE CELL CARCINOMAS

- Are undifferentiated malignant epithelial tumors.
- Lack cytologic features of small cell carcinoma and have no glandular or squamous differentiation.
- Large nuclei, prominent nucleoli, and a moderate amount of cytoplasm.



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Mixed patterns (e.g., adenosquamous carcinoma, mixed adenocarcinoma, small cell carcinoma) are seen in 10% or less of lung carcinomas.

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 the pleural or pericardial space, leading to inflammation and effusion or may Compress or infiltrate the SVC to cause either venous congestion or the venacaval 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) categories are used to indicate the size and spread of the primary neoplasm.

CLINICAL COURSE

- Mostly Silent, insidious lesions
- Chronic cough and expectoration
- Hoarseness, chest pain, superior vena cava syndrome,
- pericardial or pleural effusion, or persistent segmental atelectasis or pneumonitis
- Symptoms from metastatic spread:
  - Brain (mental or neurologic changes)
  - Liver (hepatomegaly),
  - Bones (pain).

PROGNOSIS, NSCLCS:

- NSCLCs carry a better prognosis than SCLCs.

- If NSCLCs detected before metastasis or local spread,
  cure is possible by lobectomy or pneumonectomy.

PROGNOSIS, 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.
- Very sensitive to chemotherapy but invariably recur.
- Median survival even with treatment is 1 year.

PARANEOPLASTIC SYNDROMES

(1) Hypercalcemia (secretion of a PTH related peptide)

(2) Cushing syndrome (production of ACTH)

(3) Syndrome of inappropriate secretion of ADH

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

PARANEOPLASTIC SYNDROMES

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

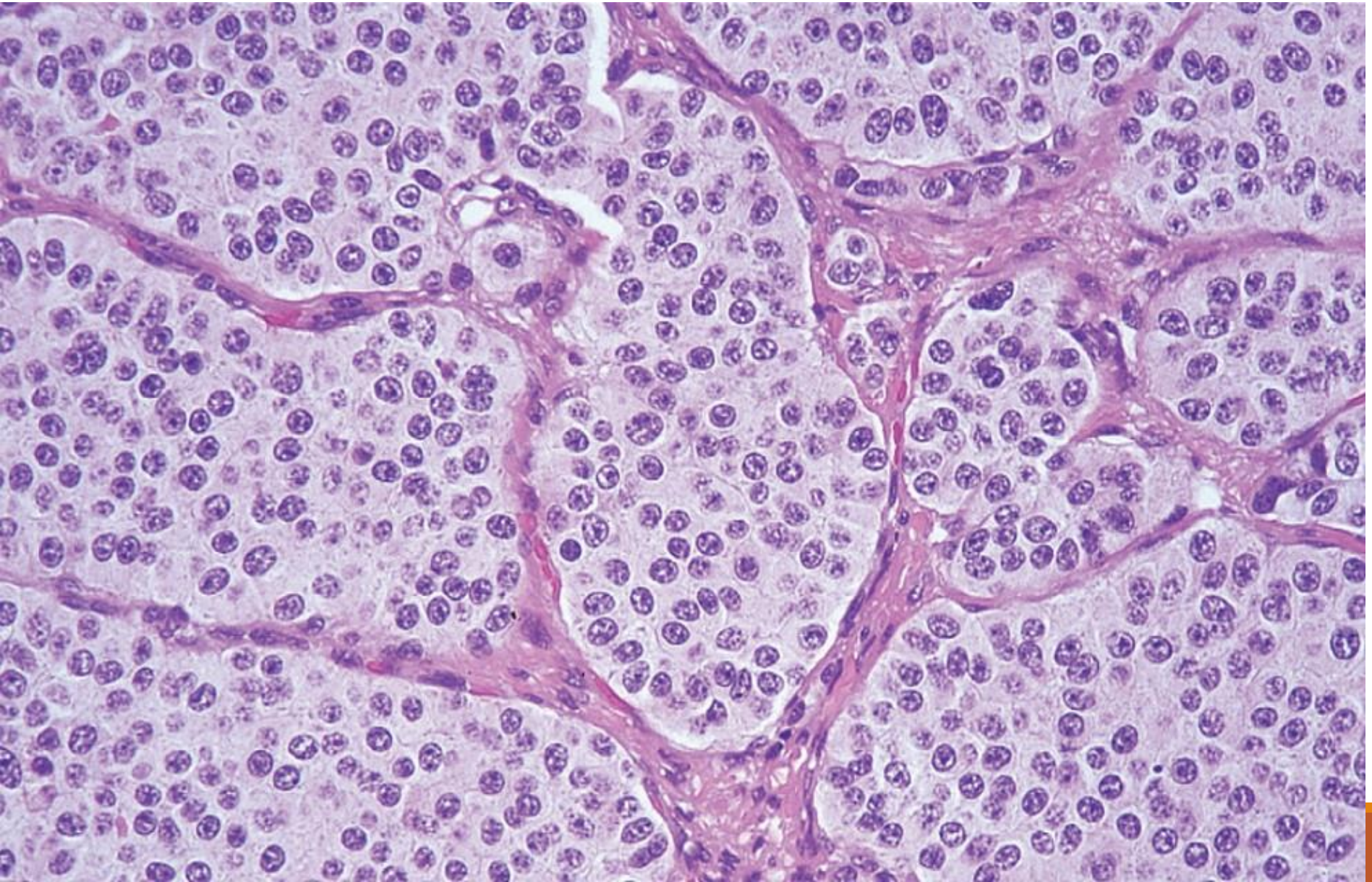
(7) Clubbing of the fingers and hypertrophic pulmonary

(8) osteoarthropathy

(9) Coagulation abnormalities, including migratory thrombophlebitis,

(10) 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)

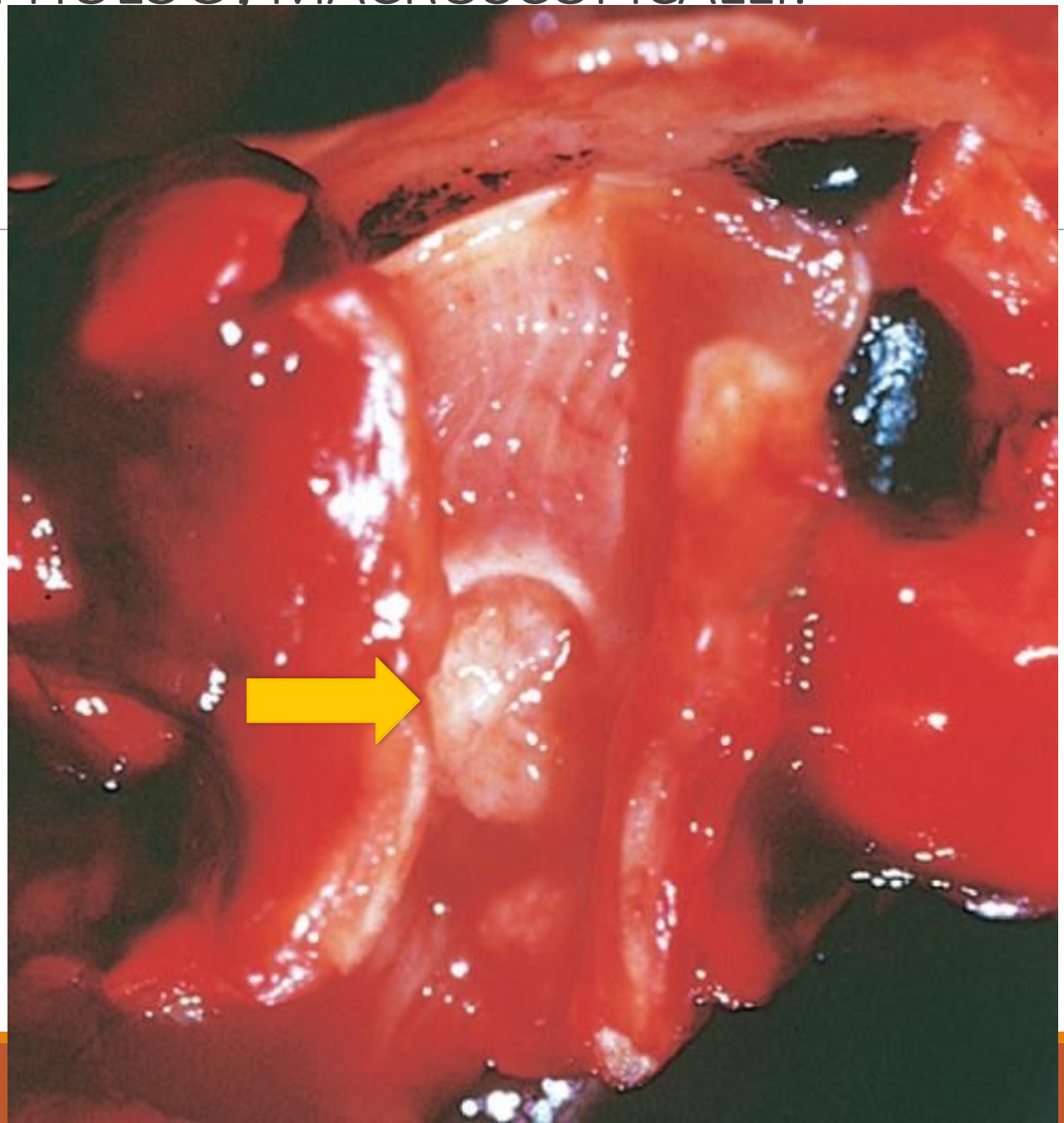
- 5% to15% of carcinoids have metastasized to the hilar nodes at presentation

- distant metastases are rare

MORPHOLOGY, MACROSCOPICALLY:

- originate in main bronchi mostly, Peripheral carcinoids are less common
- well demarcated
- grow in one of two patterns:
  (1) an obstructing polypoid, spherical, intraluminal mass
  (2) a mucosal plaque penetrating the bronchial wall to fan out in
  (3) the peribronchial tissue—the so-called collar-button lesion

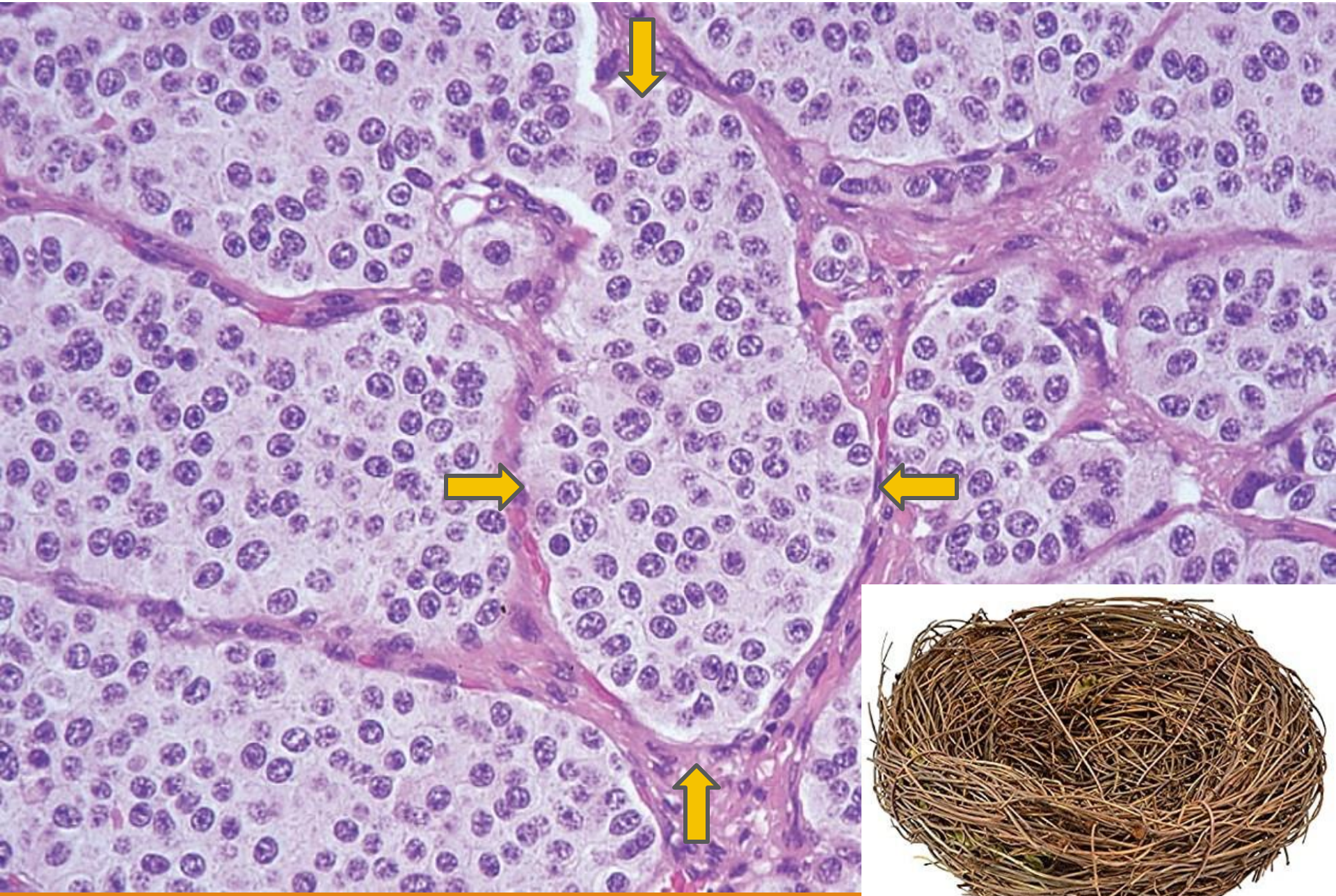
MORPHOLOGY MACROSCOPICALLY:



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. These tumors 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.

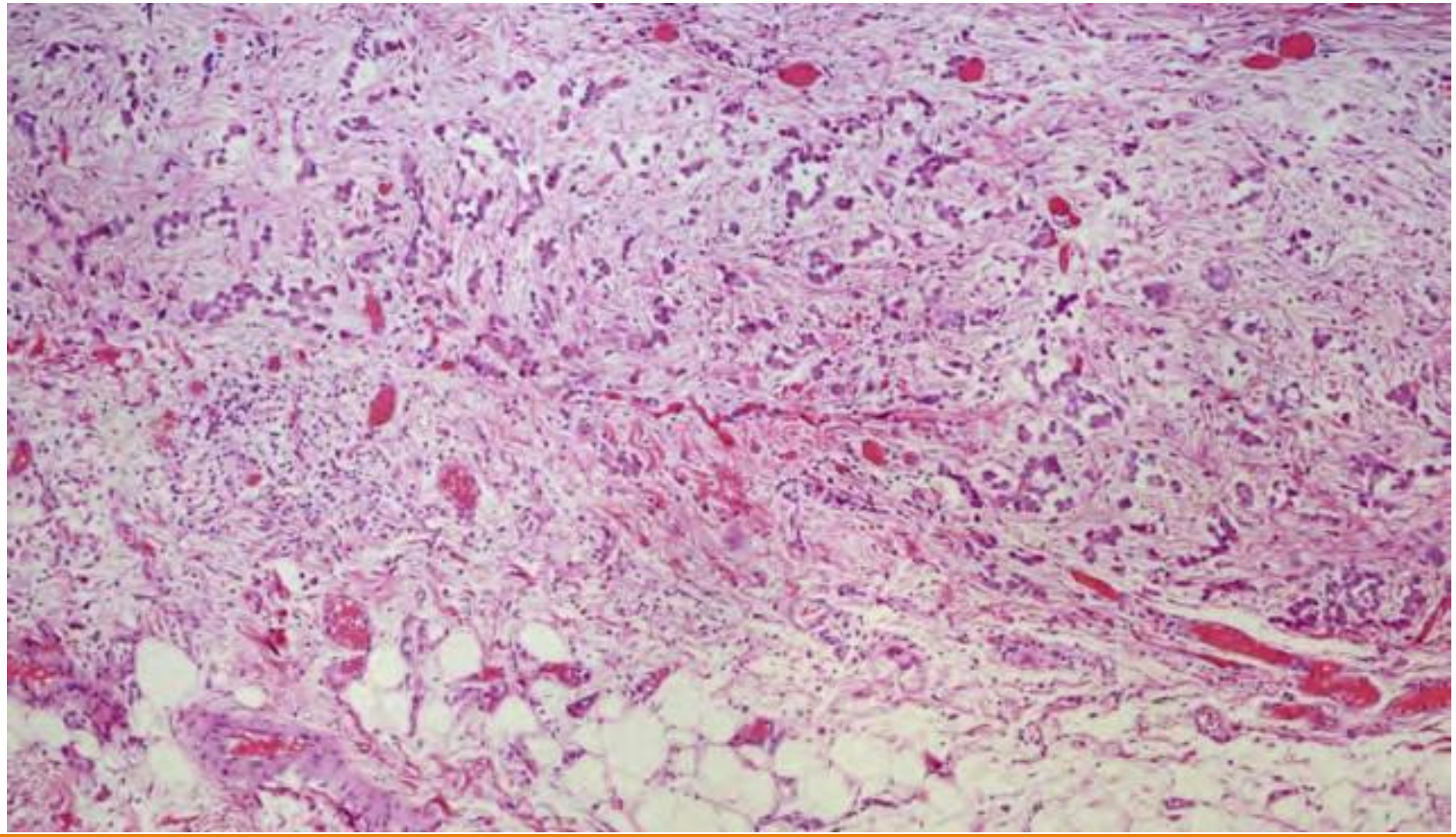
- Peripheral tumors are often asymptomatic and discovered incidentally.

- 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

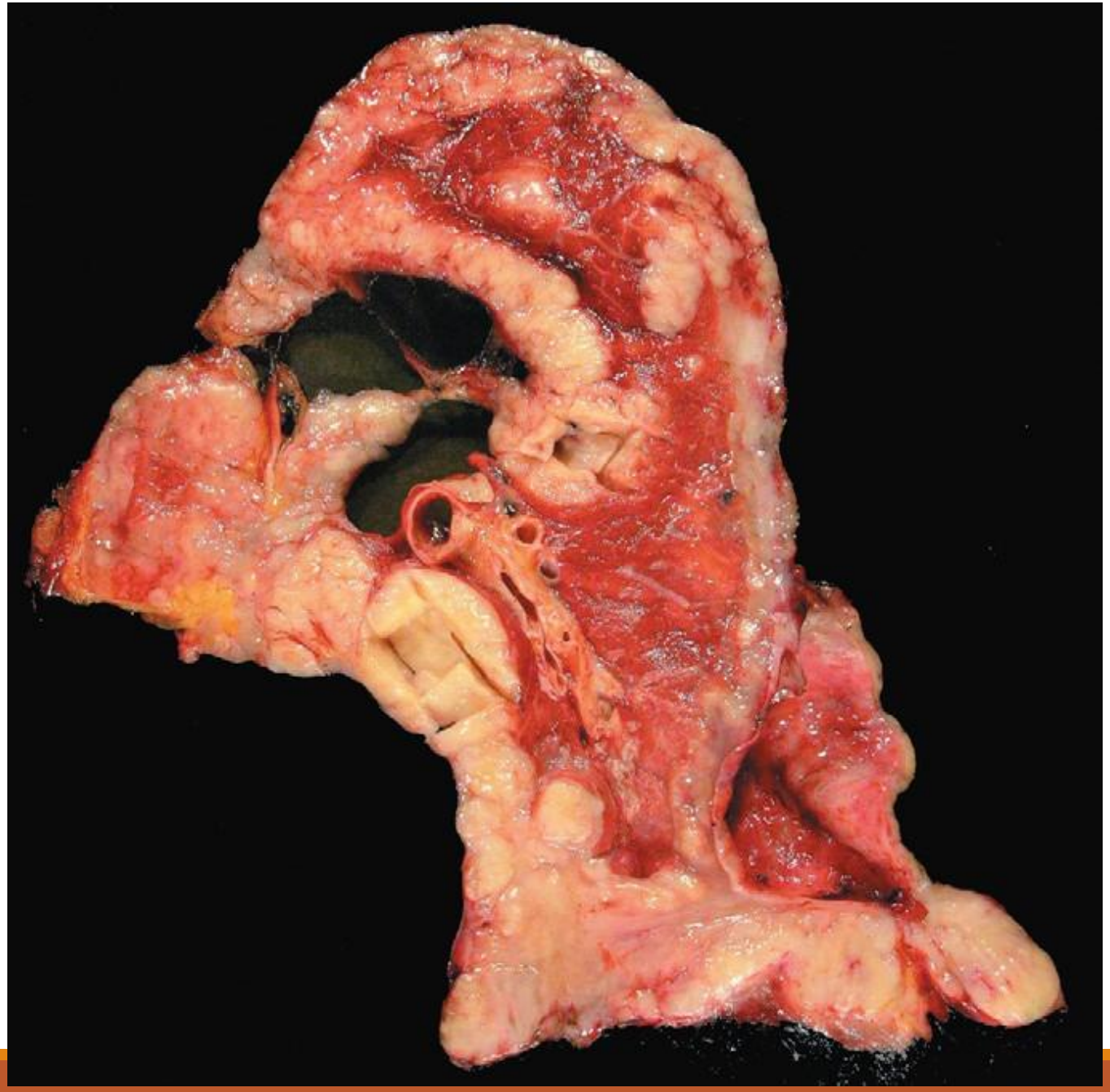
- Once inhaled, asbestos fibers remain in the body for life.

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

MORPHOLOGY, MACROSCOPIC:

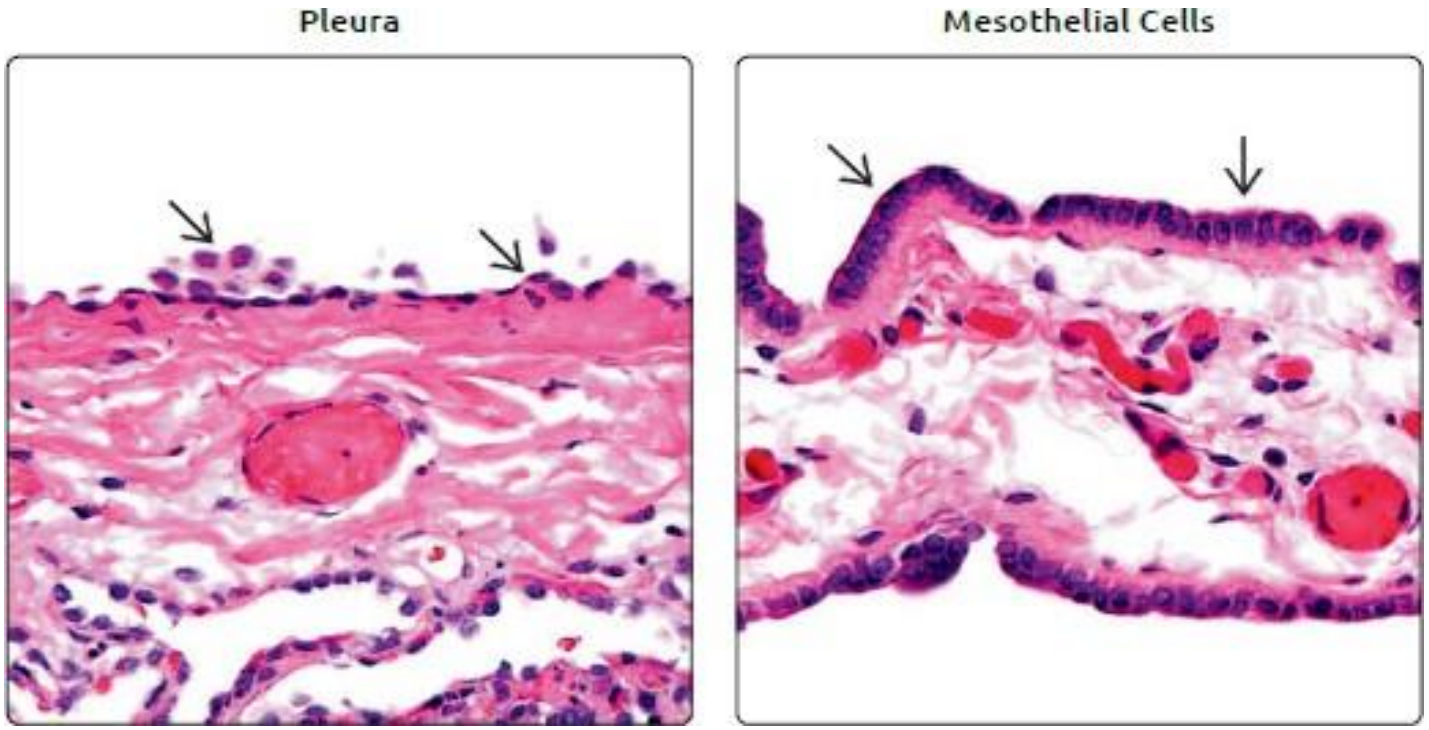
- Preceded by extensive pleural fibrosis and plaque
- begin in a localized area and spread widely, either by contiguous growth or by diffusely seeding the pleural surfaces.
- Distant metastases are rare.

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:

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



Diagnostic pathology, normal histology text book

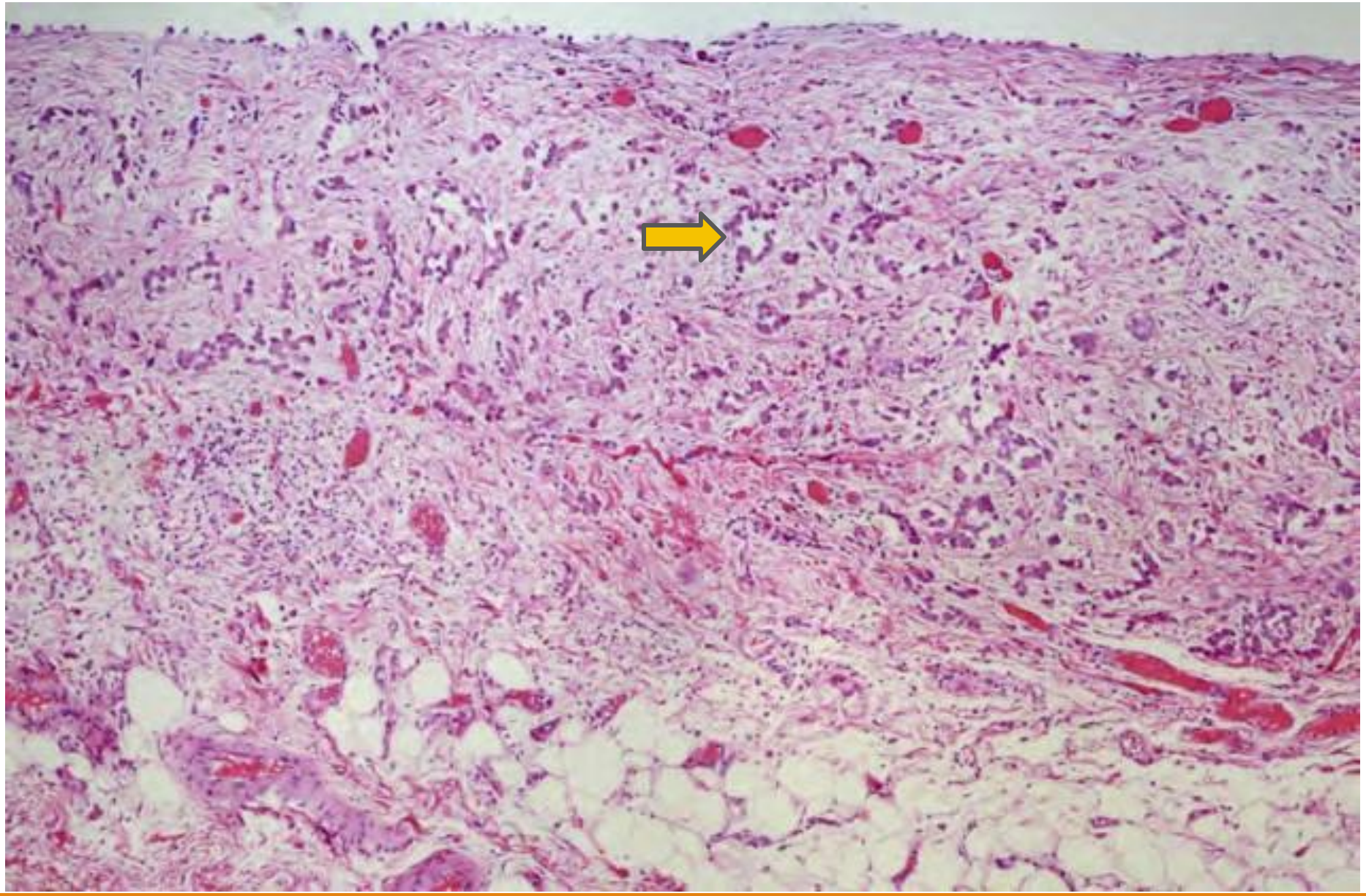
MORPHOLOGY, MICROSCOPIC:

- 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



THANK YOU!