

# INTRAOPERATIVE CYTOLOGY OF C.N.S. TUMOURS

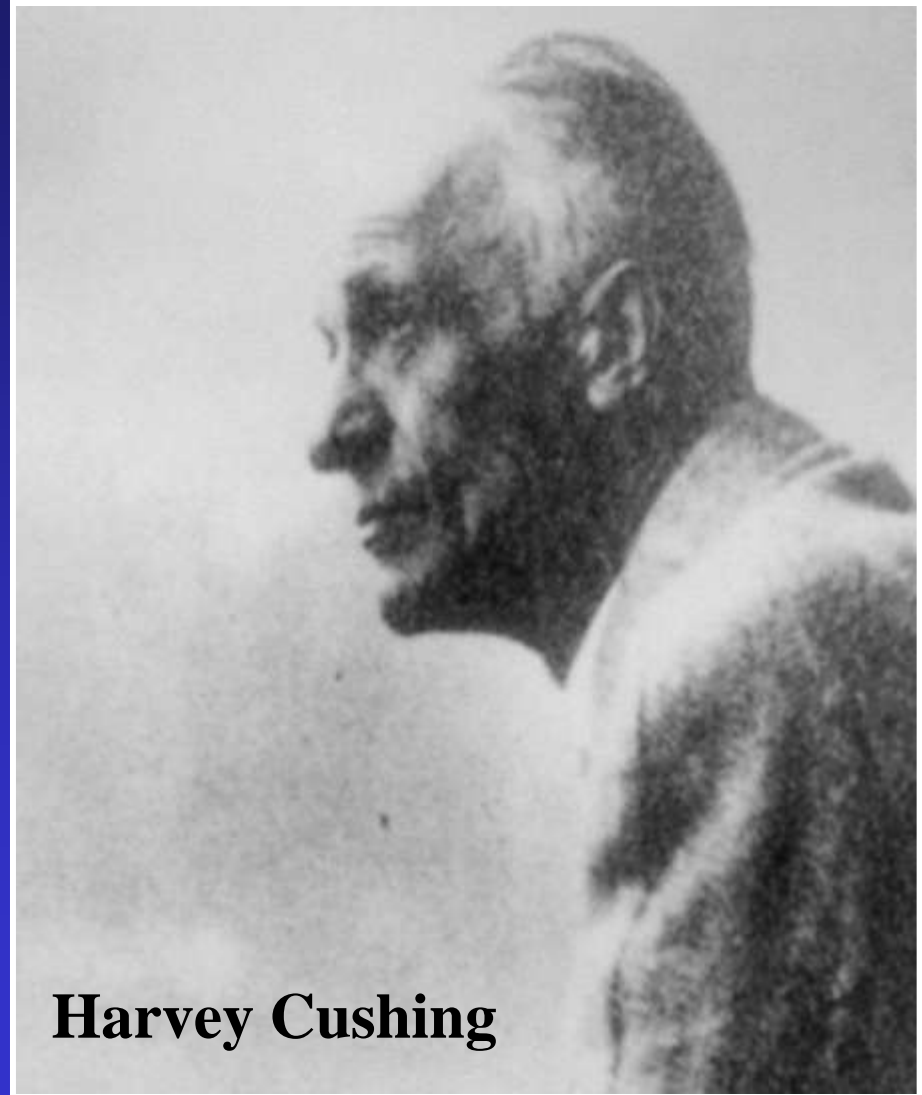


César Lacruz, MD, PhD, FIAC.  
Universidad Complutense  
MADRID

**Eisenhardt L., Cushing H. *Diagnosis of intracranial Tumors by supravital technique.* Am J Path 1930** ←



**Louise Eisenhardt**

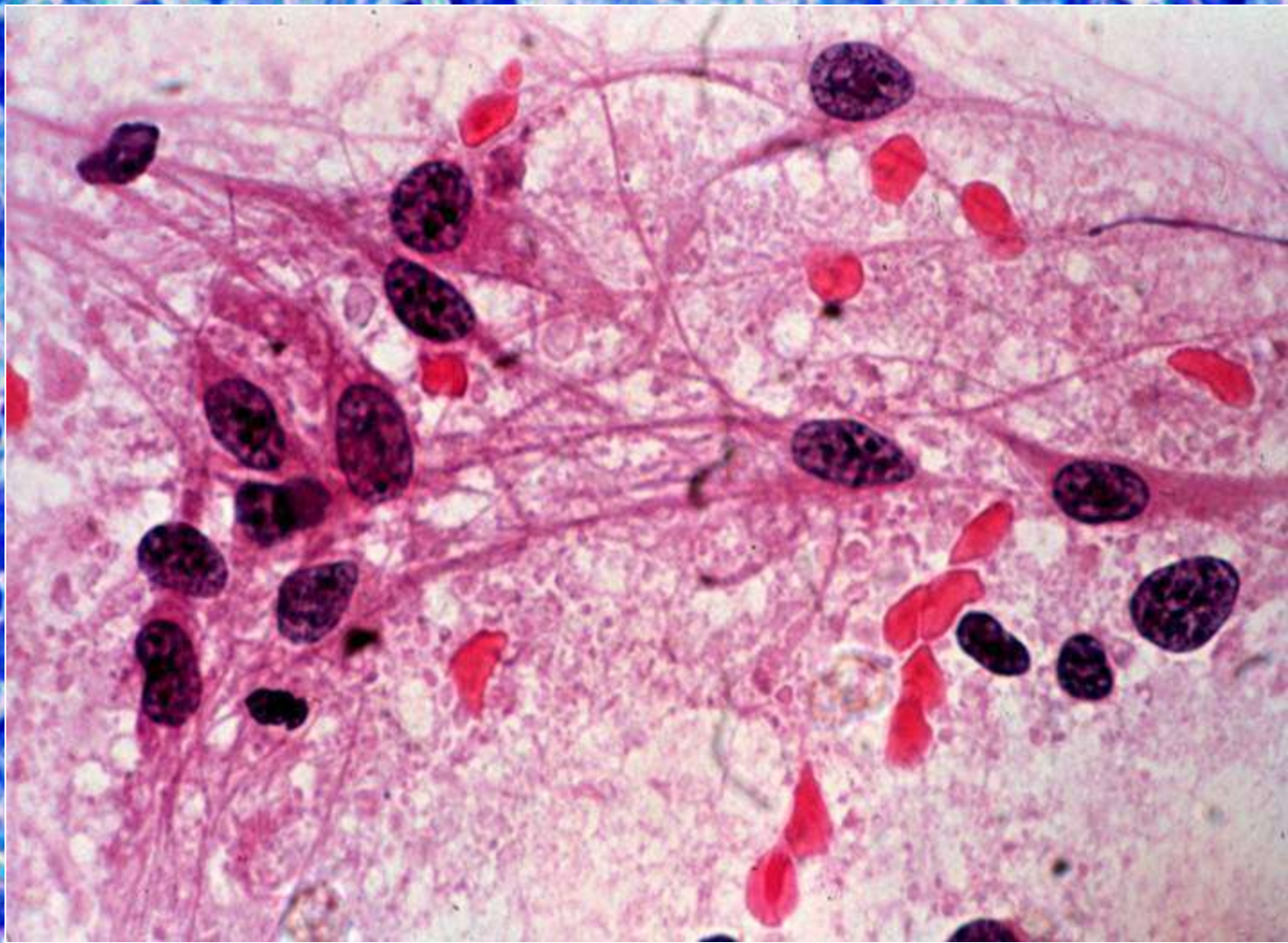


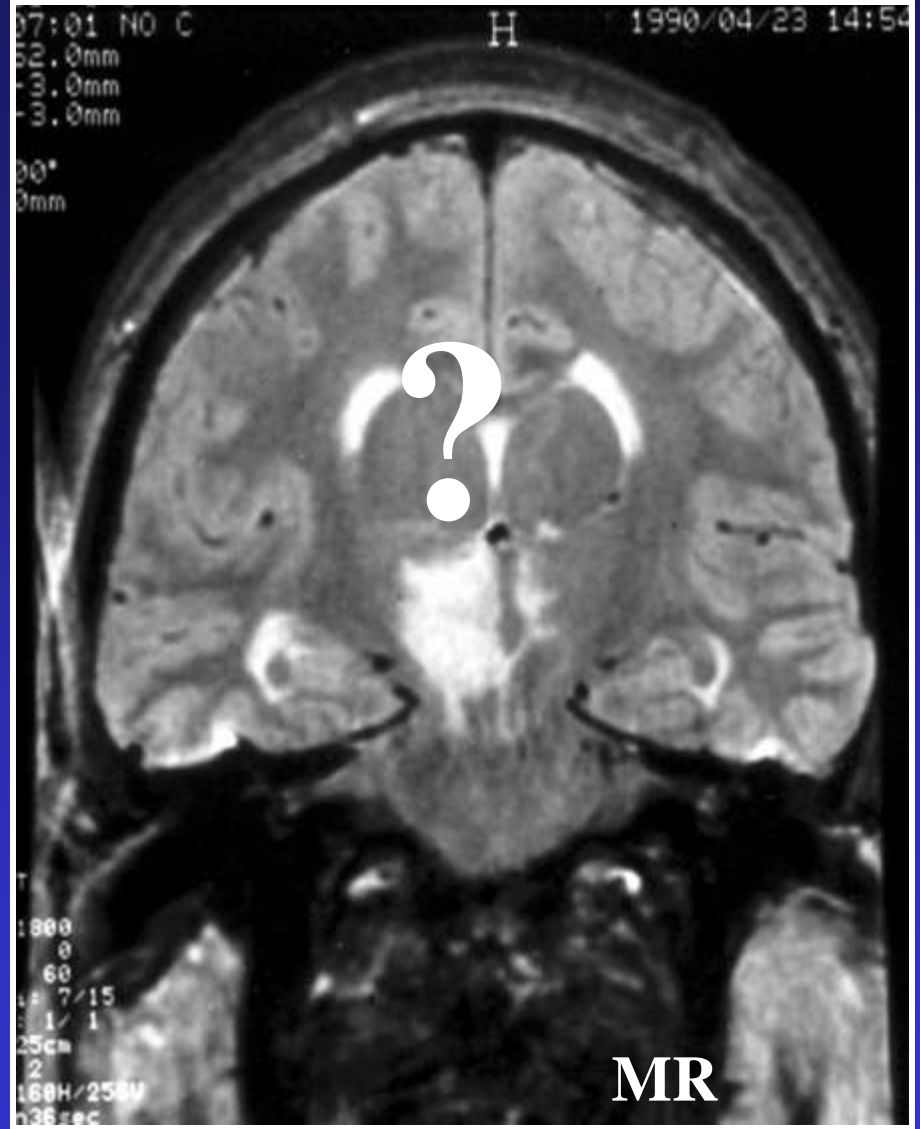
**Harvey Cushing**

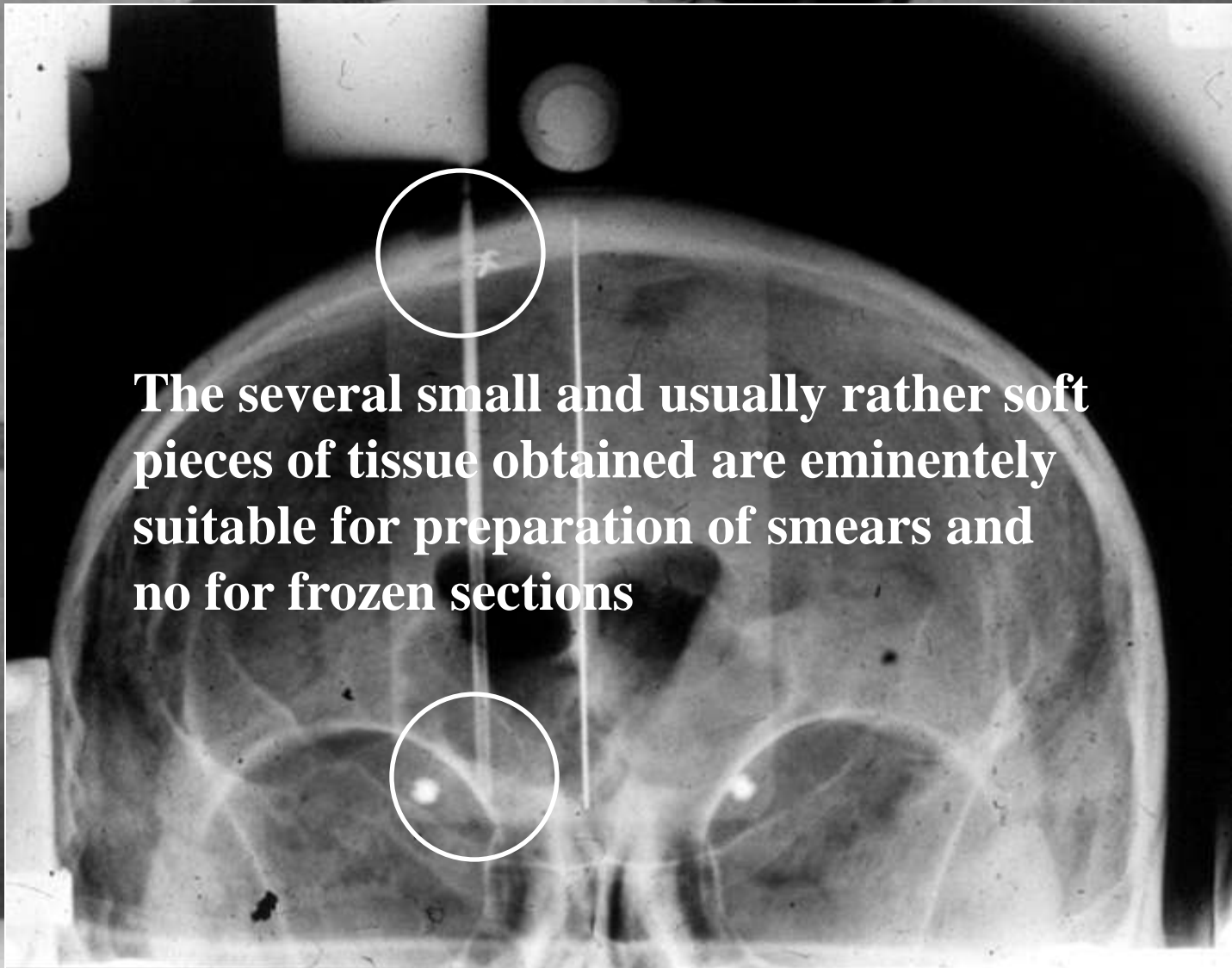
**Russell DS, Krayenbuhl H,  
Cairns H. *The wet film  
technique in the histological  
diagnosis of intracranial  
tumors: a rapid method.* J  
Path Bact 1937 ; 45:501-5**



**Dorothy Russell**







**The several small and usually rather soft pieces of tissue obtained are eminently suitable for preparation of smears and no for frozen sections**

# **INTRAOPERATIVE CITOTOLOGY OF CNS (ADVANTAGES)**

- **It's fast.**
- **It's cheap.**
- **It uses smaller amounts of tissue.**
- **Yields beautiful cellular detail.**
- **No freezing artefact.**
- **Biopsy can be screened much more widely.**

# **INTRAOPERATIVE CITOLOGY OF CNS (DRAWBACKS)**

- Architectural details are lost.**
- Some lesions just don't smear well.**



# **INTRAOPERATIVE CITOTOLOGY OF CENTRAL NERVOUS SYSTEM**

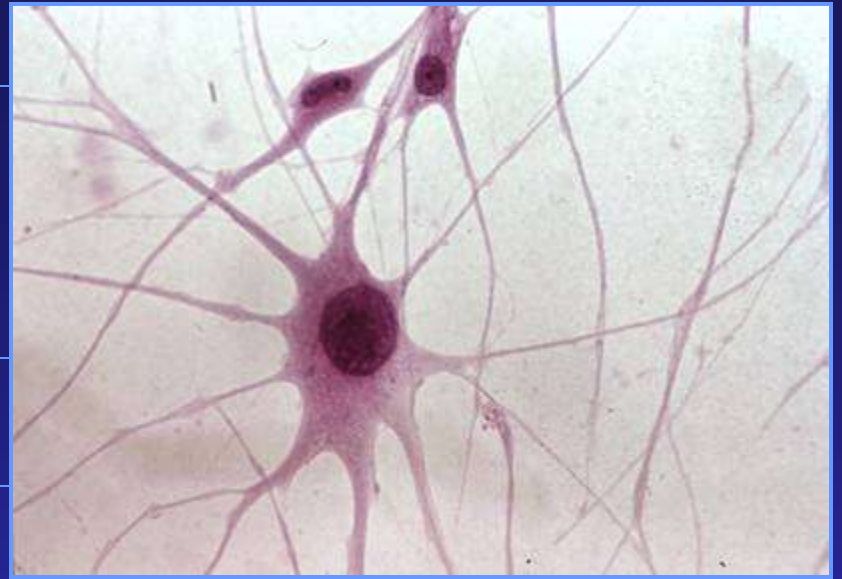
- **Permits definitive diagnosis in many cases.**
- **Is helpful in complementing the cryostat sections in most cases.**
- **Is not helpful in only few instances.**



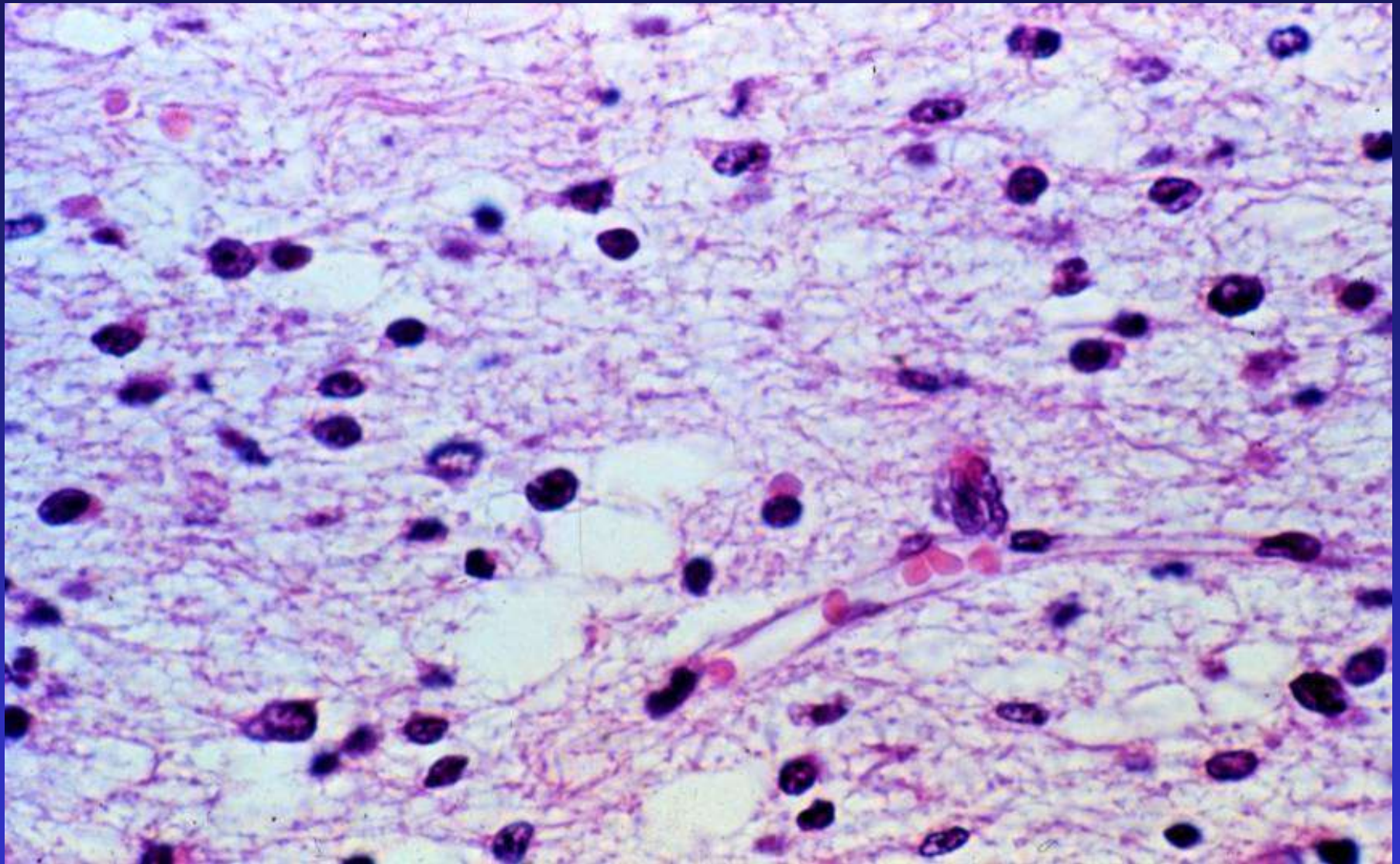
# BRAIN TUMORS

- **Gliomas**
- **Meningiomas**
- **Neurinomas**
- **Embrional tumours**
- **Metastatic tumours**

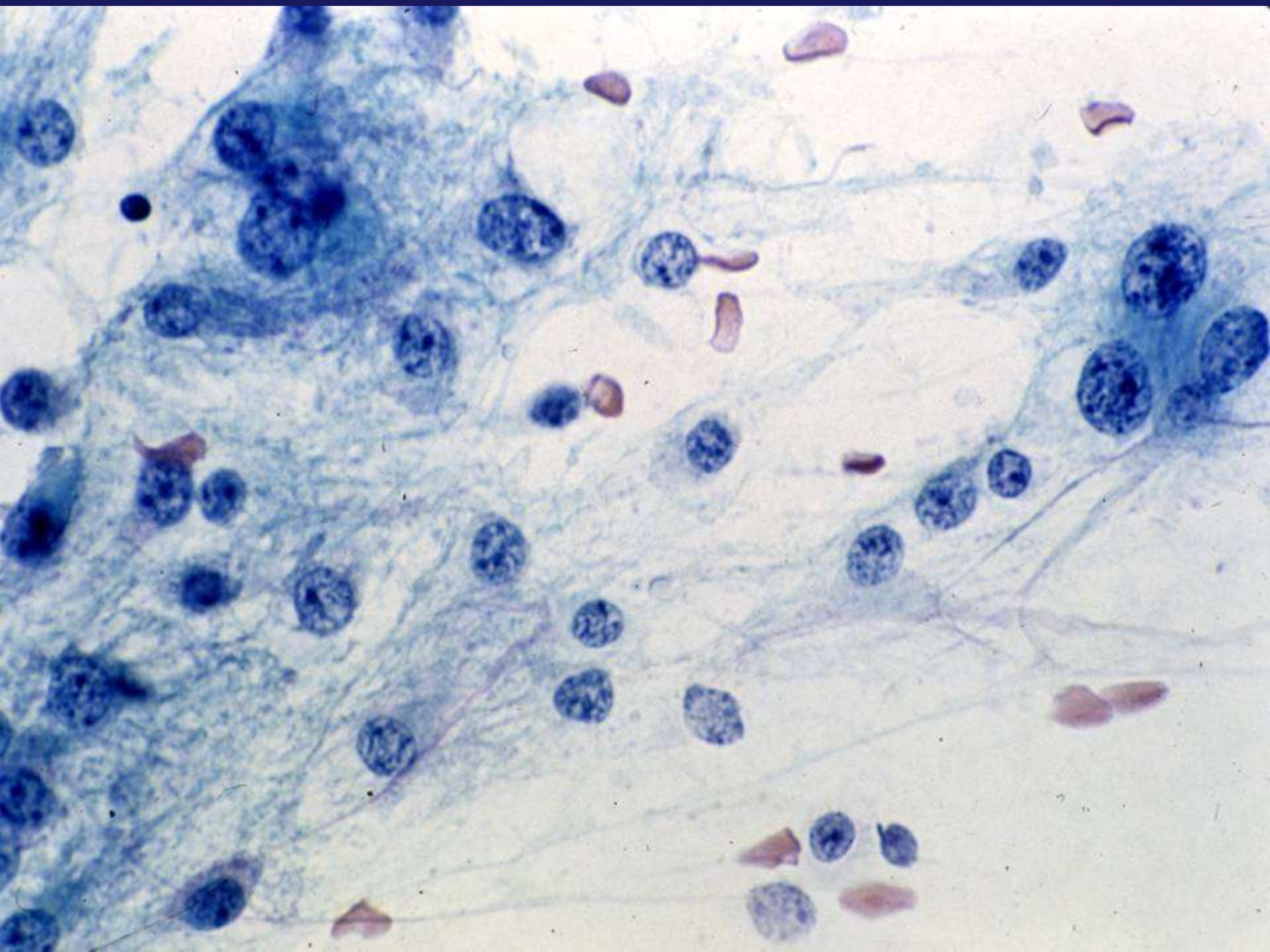
# ASTROCYTIC TUMORS

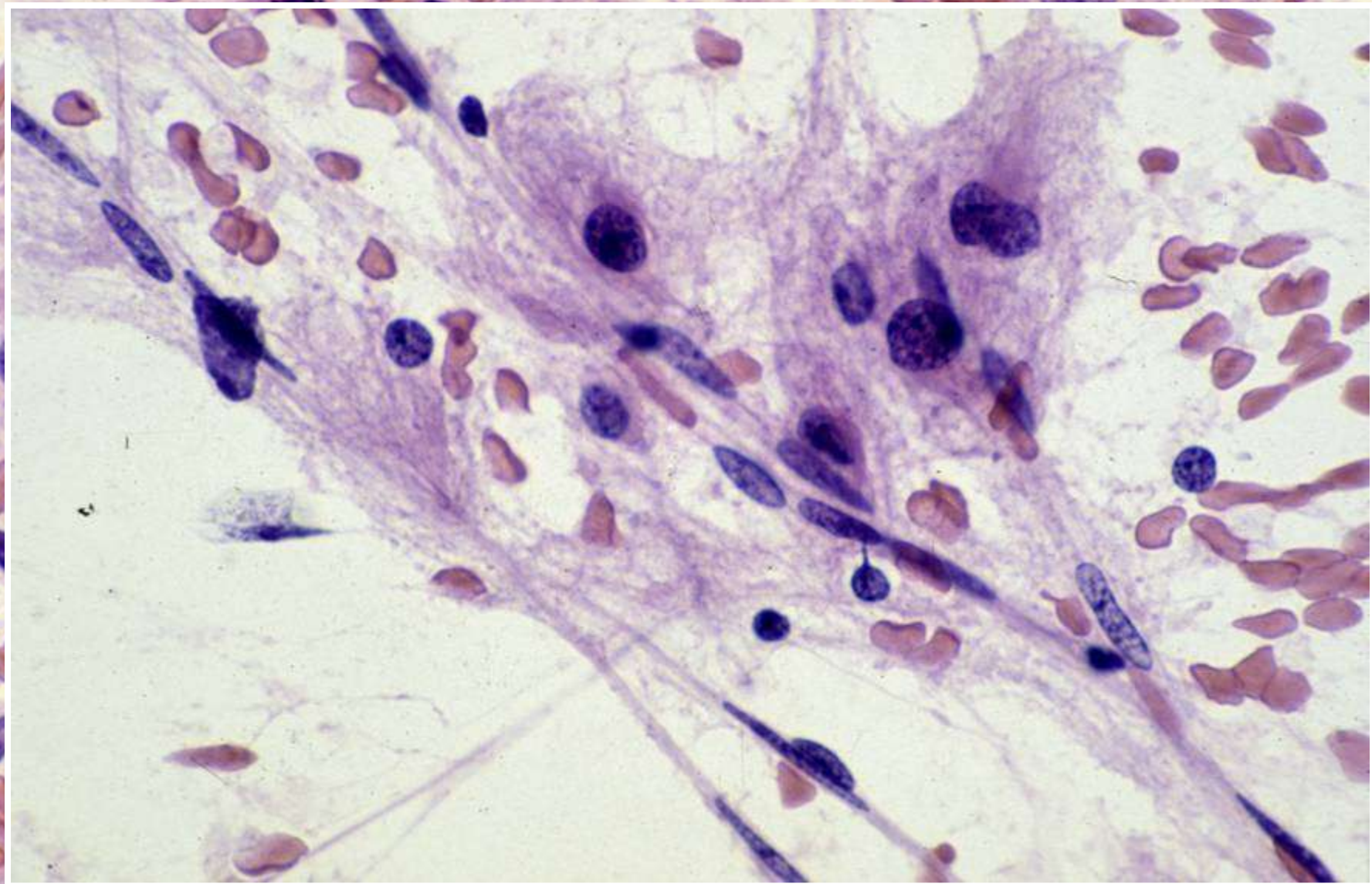


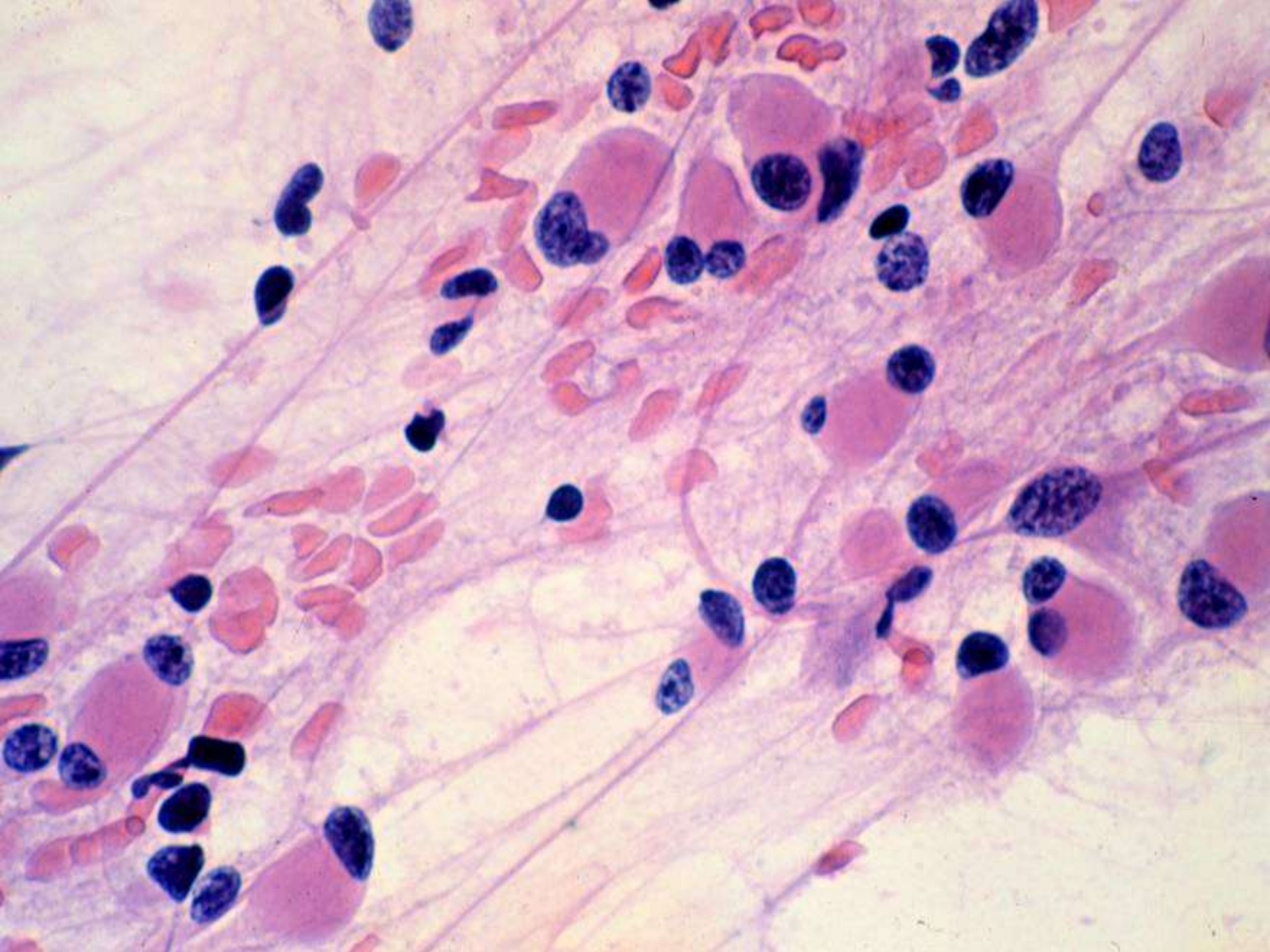
- **Astrocytoma**
- **Anaplastic Astrocytoma**
- **Glioblastoma**



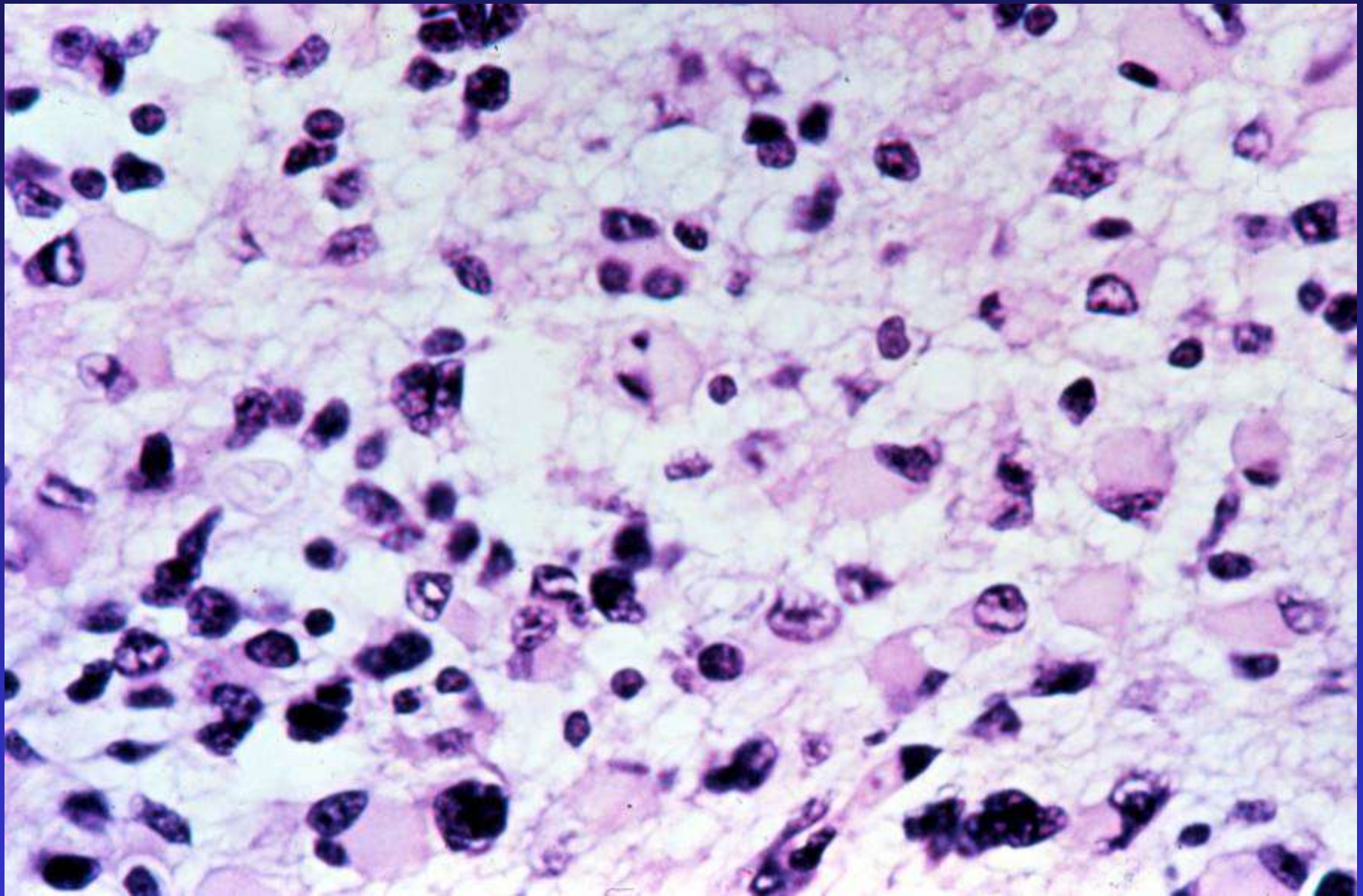
**ASTROCYTOMA**



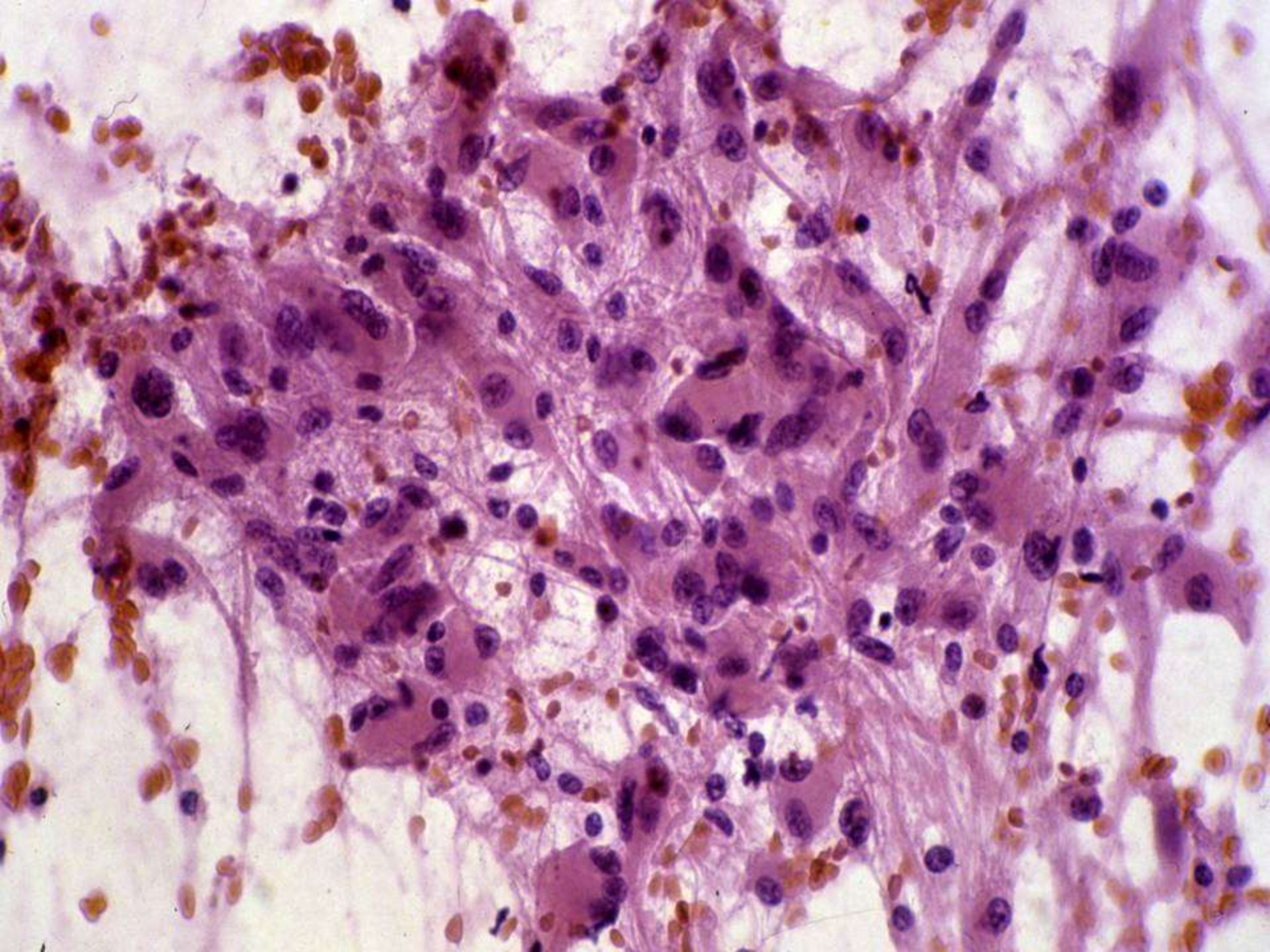


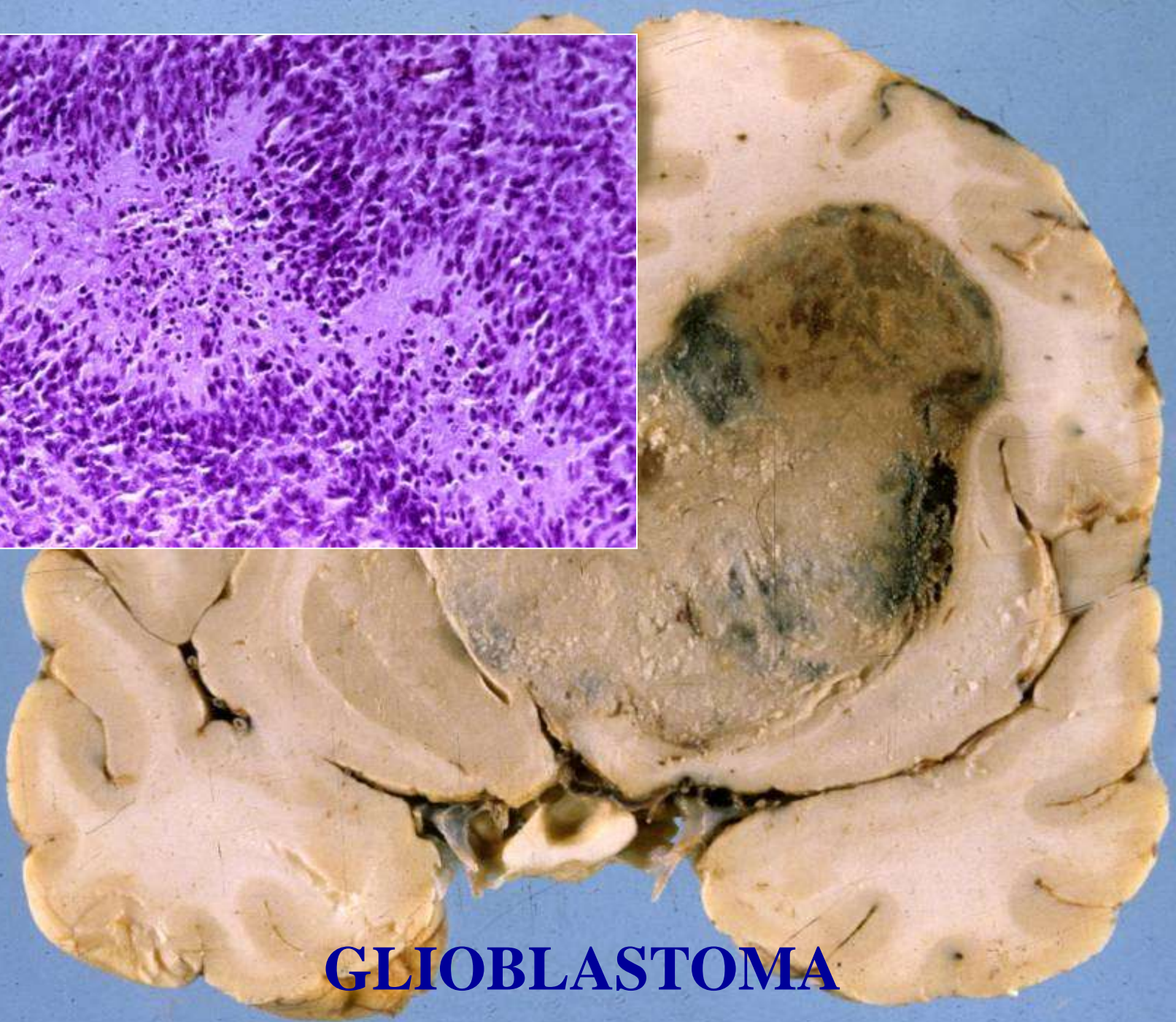
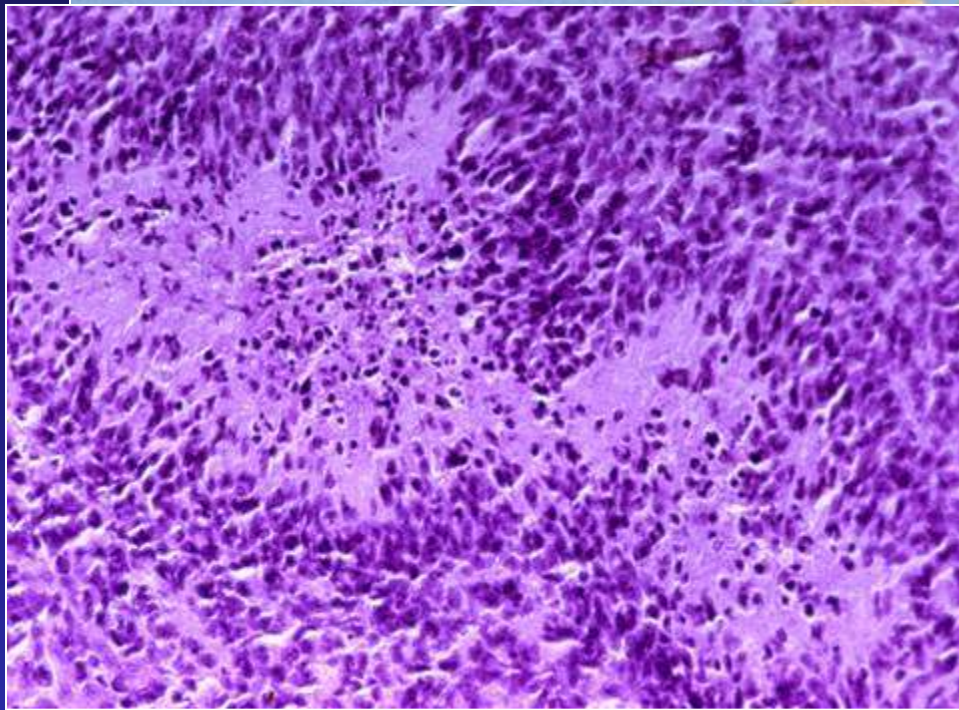




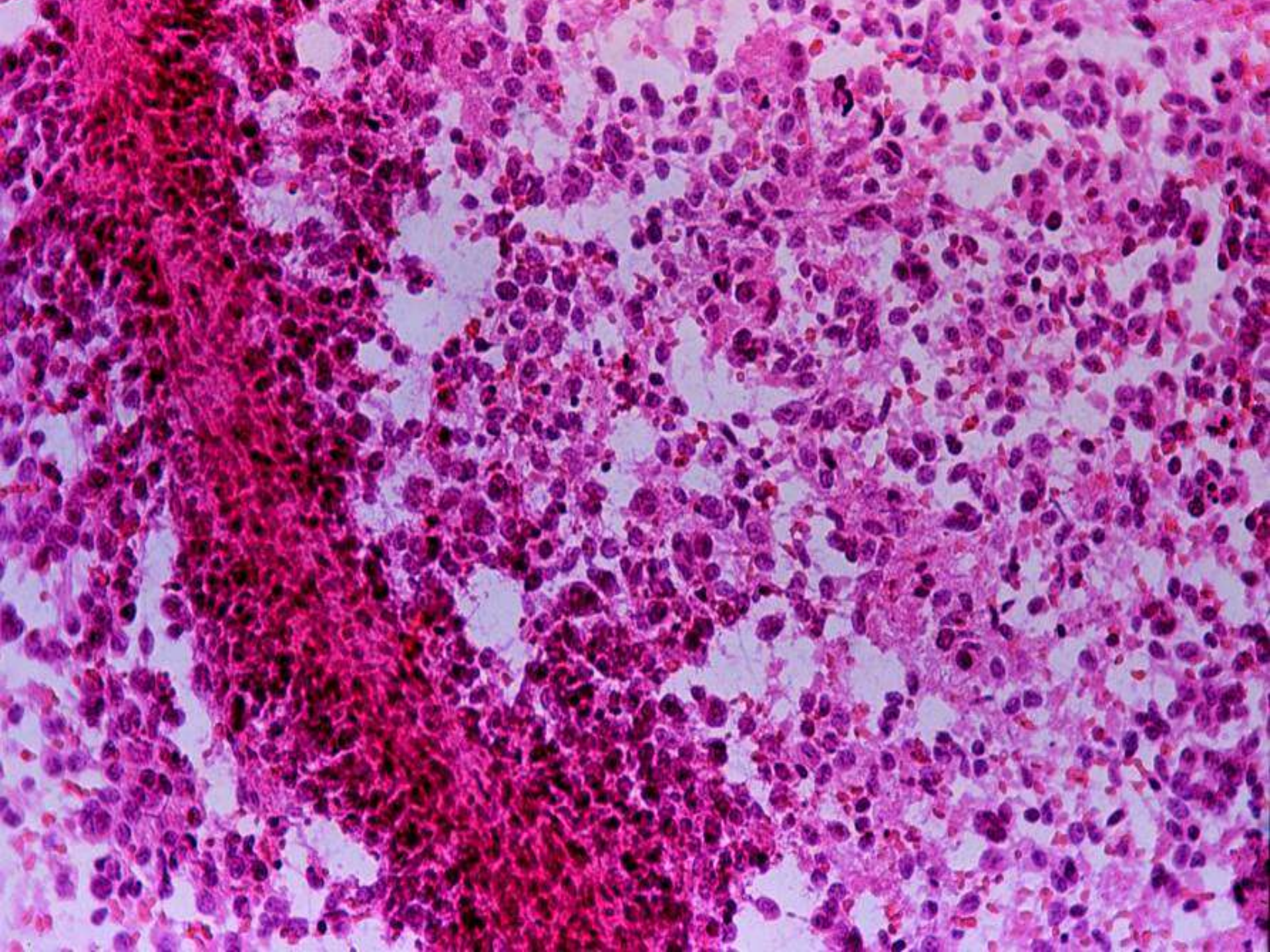


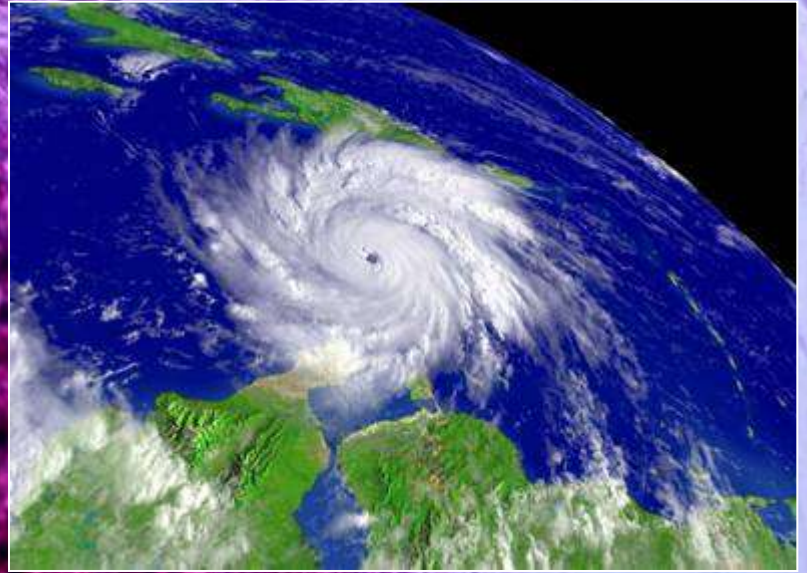
**ANAPLASTIC ASTROCYTOMA**



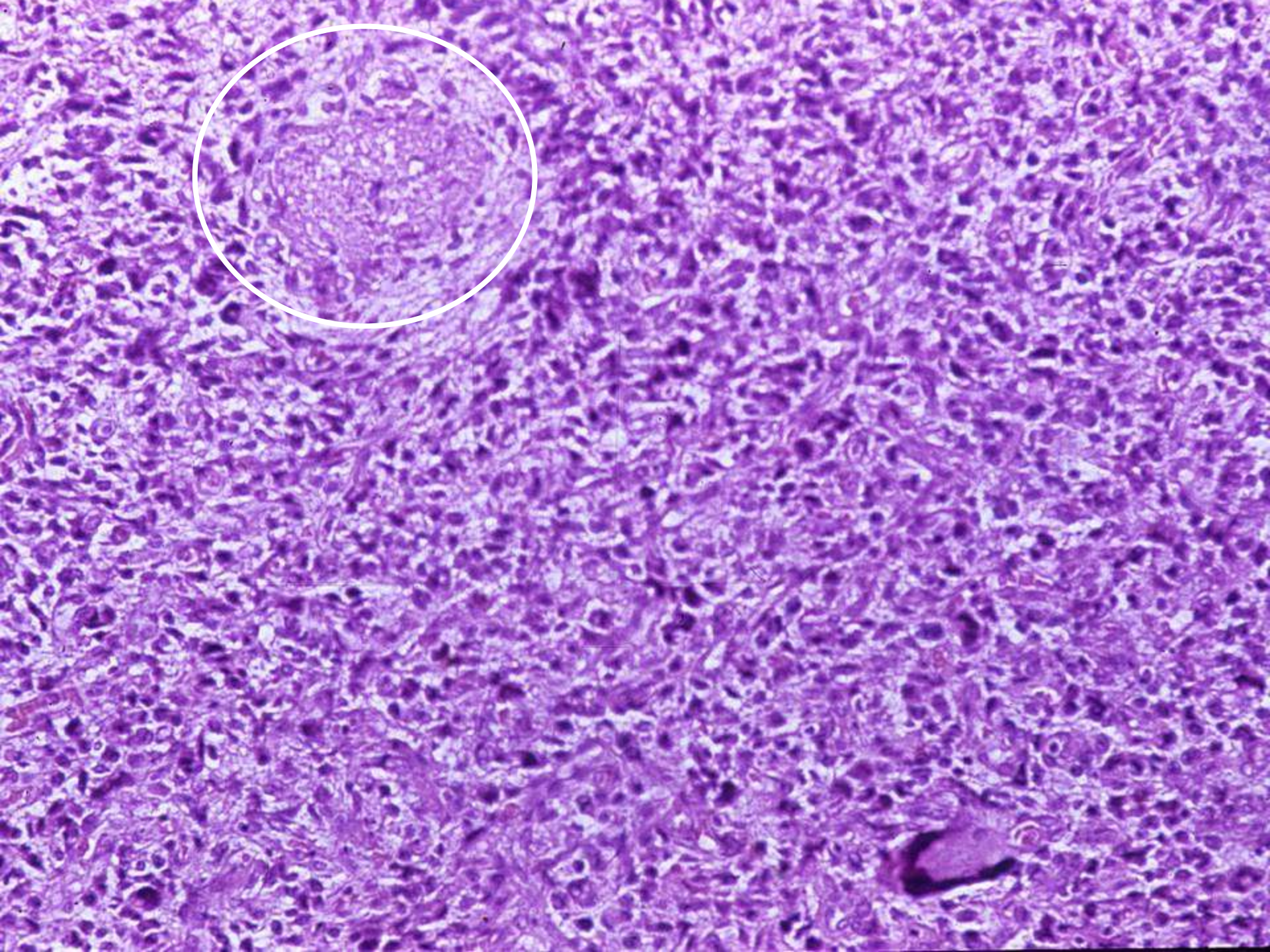


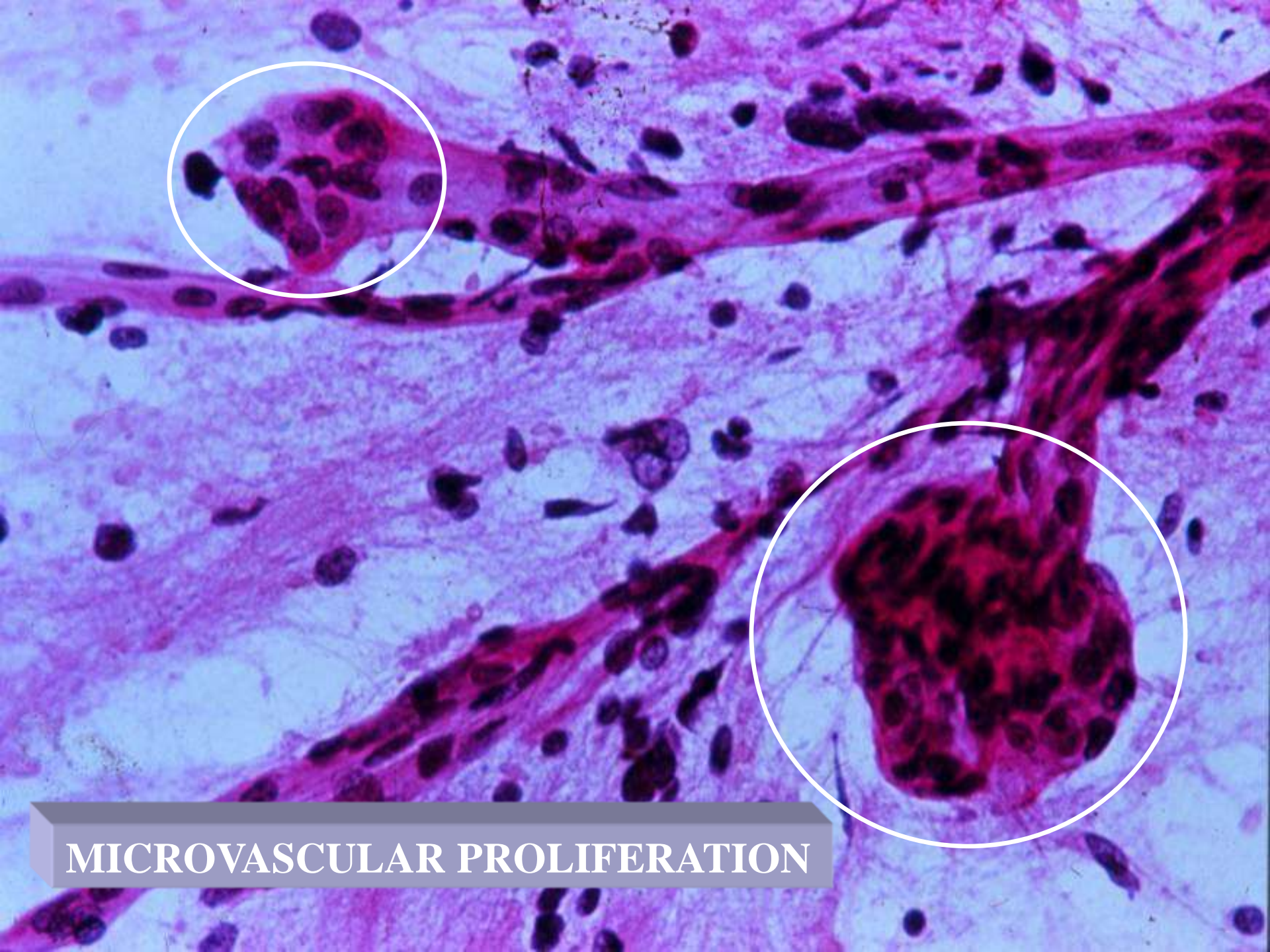
**GLIOBLASTOMA**



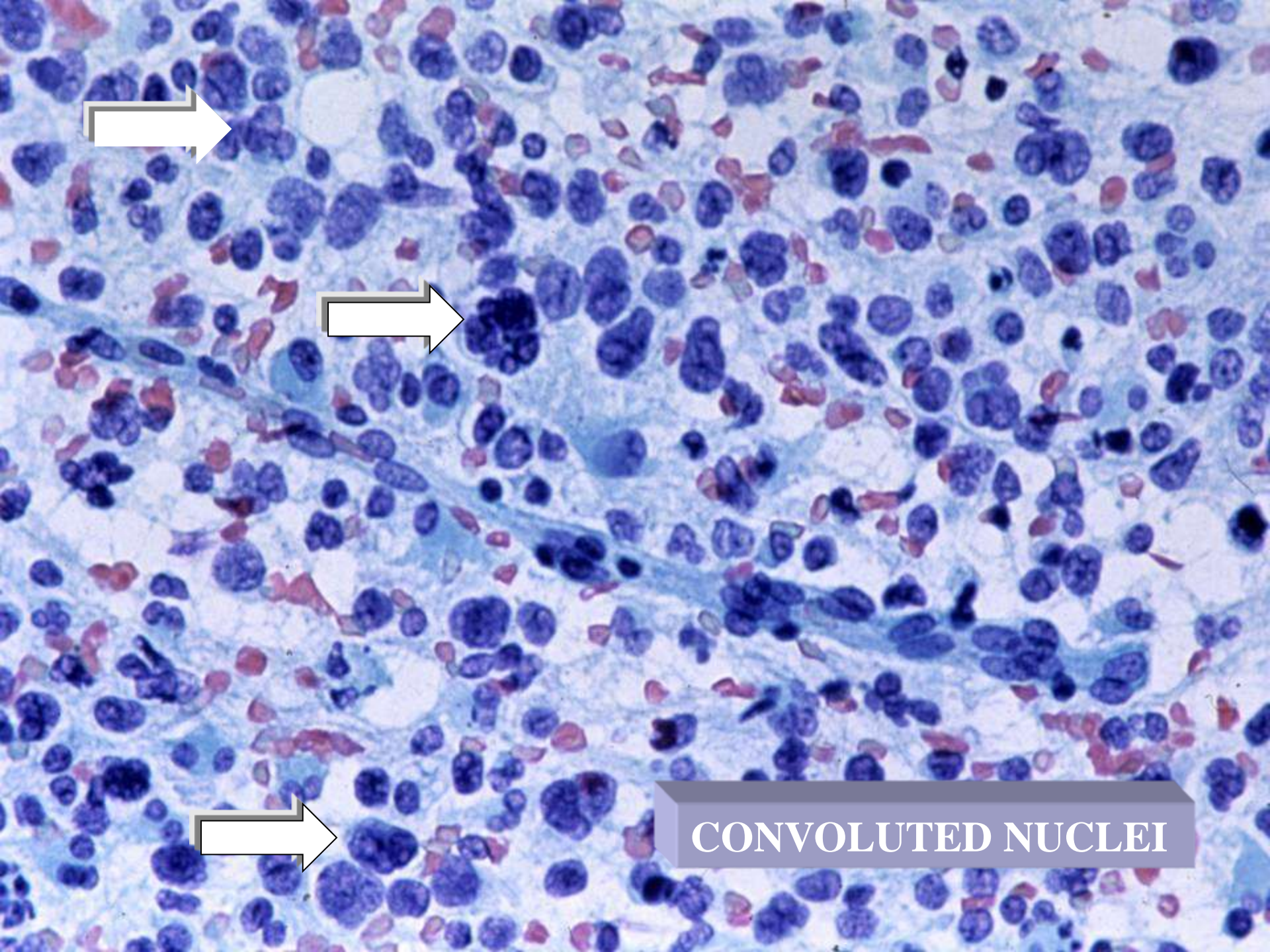


**INITIAL NECROSIS**



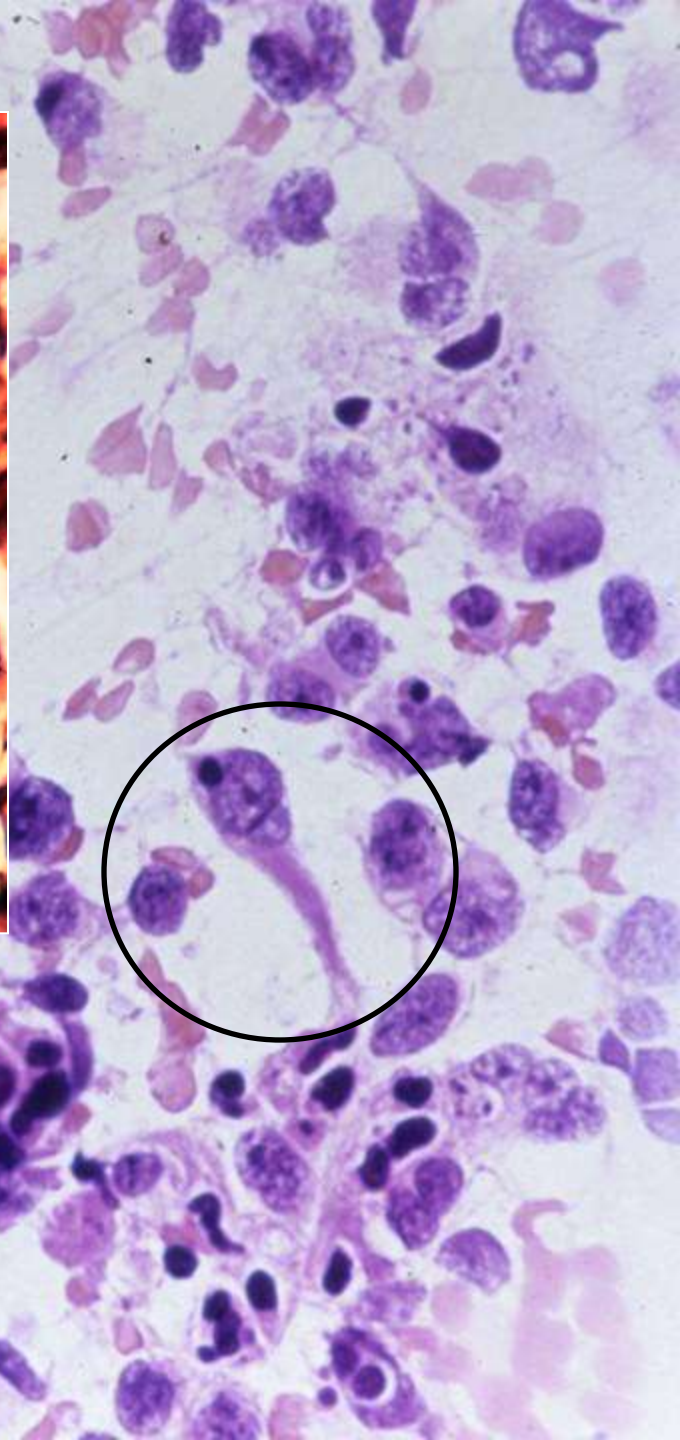
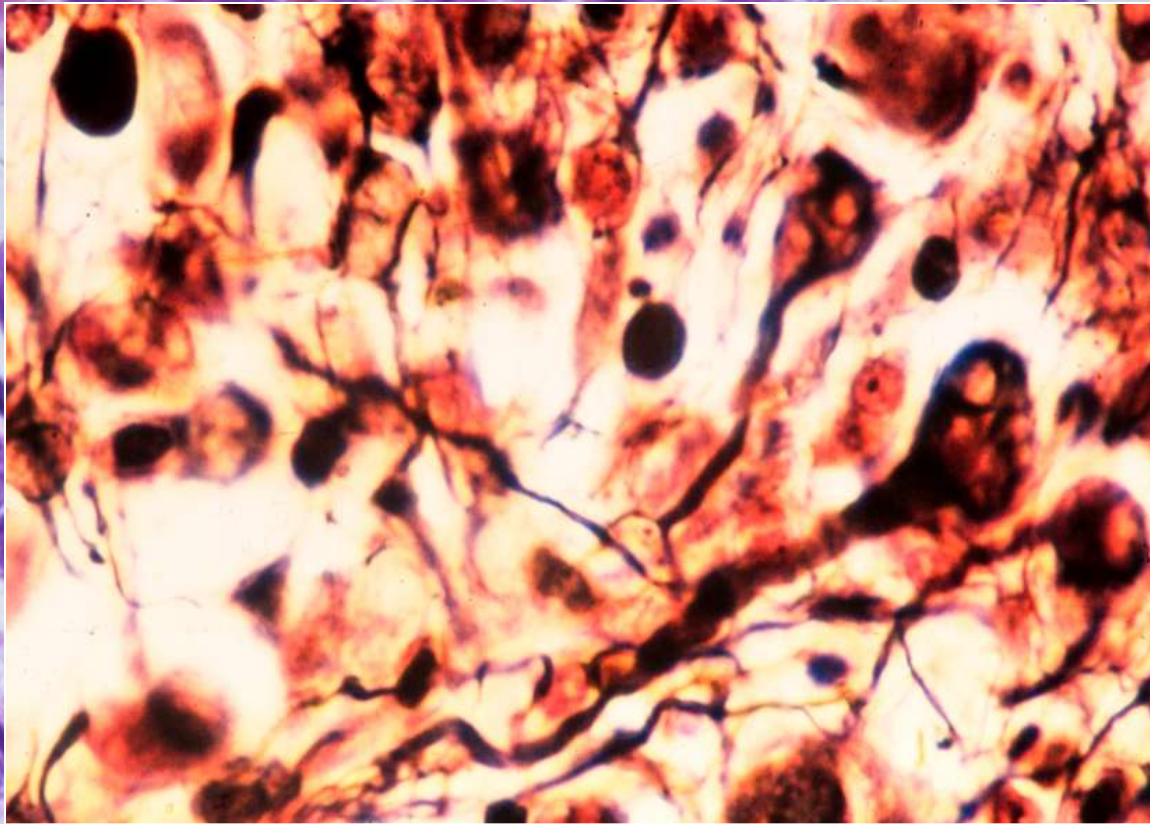


**MICROVASCULAR PROLIFERATION**



CONVOLUTED NUCLEI

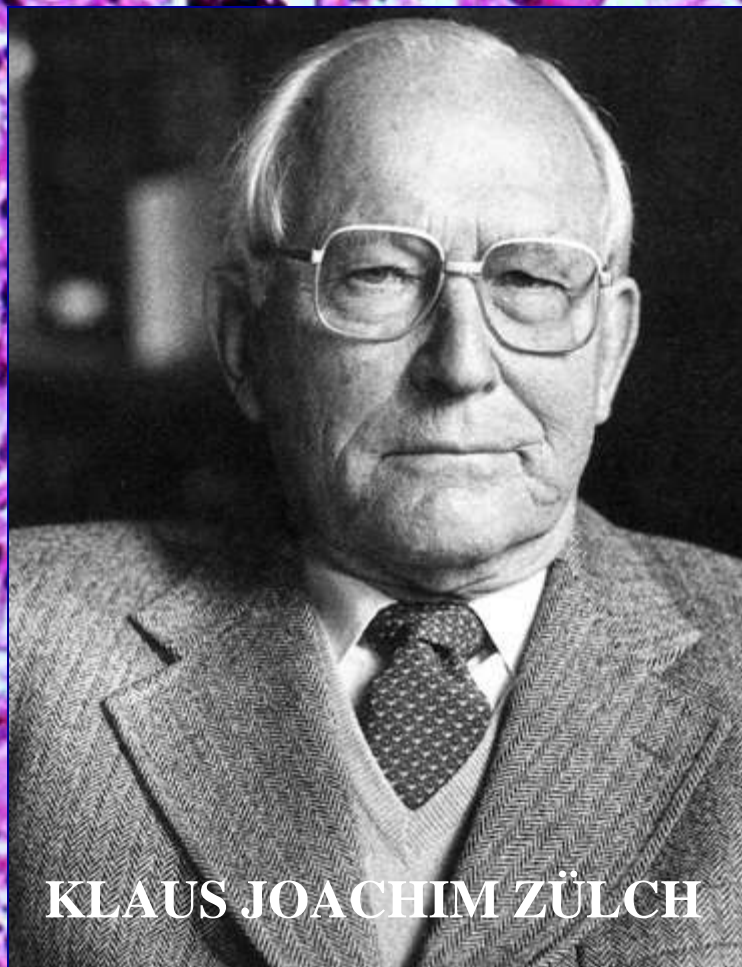




**MONOPOLAR CELLS**

# **Glioblastoma: Cytology**

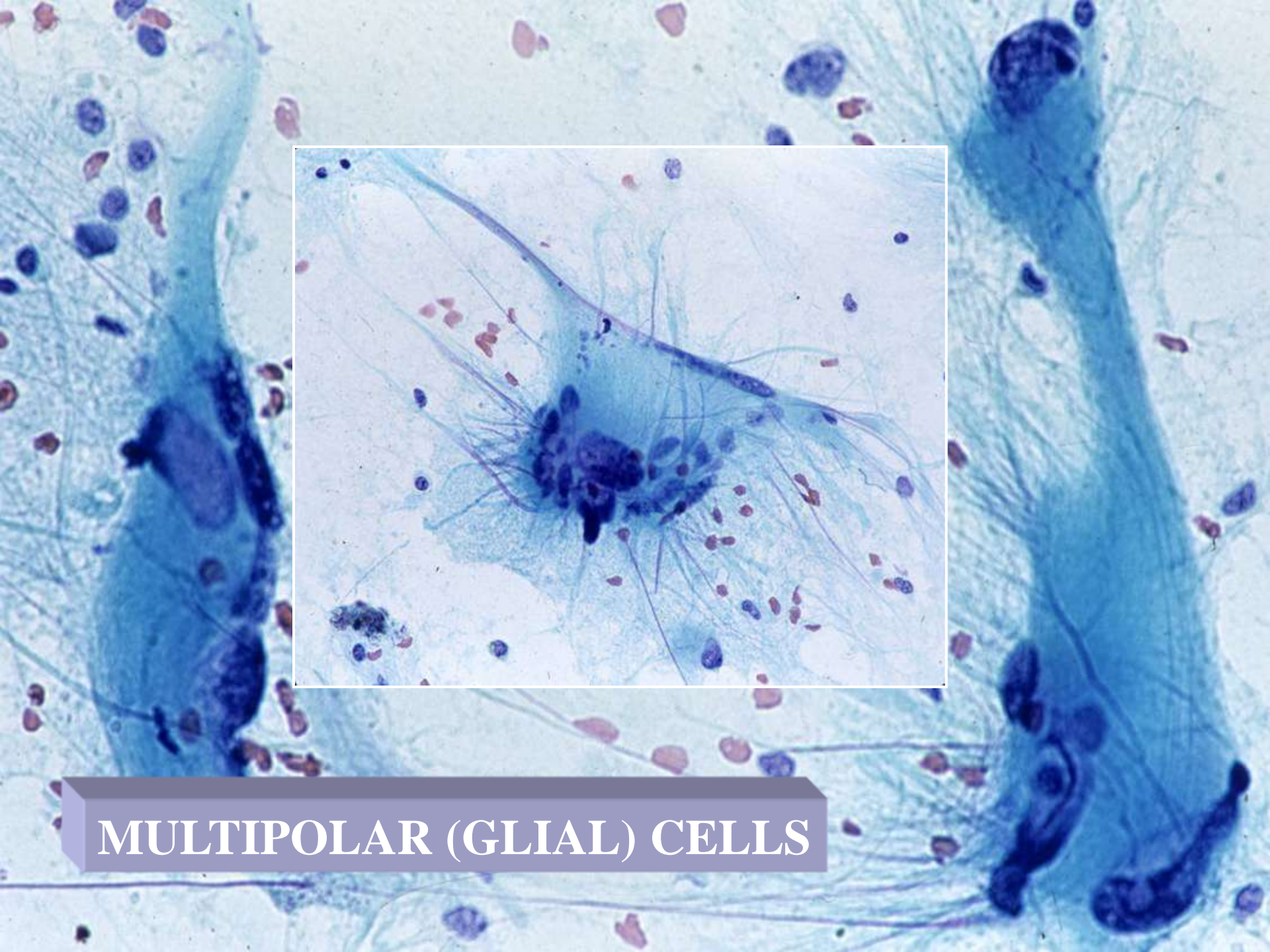
- **Highly cellular smears**
- **Necrosis**
- **Microvascular proliferation**
- **Convolutated nuclei**
- **Monopolar cells**



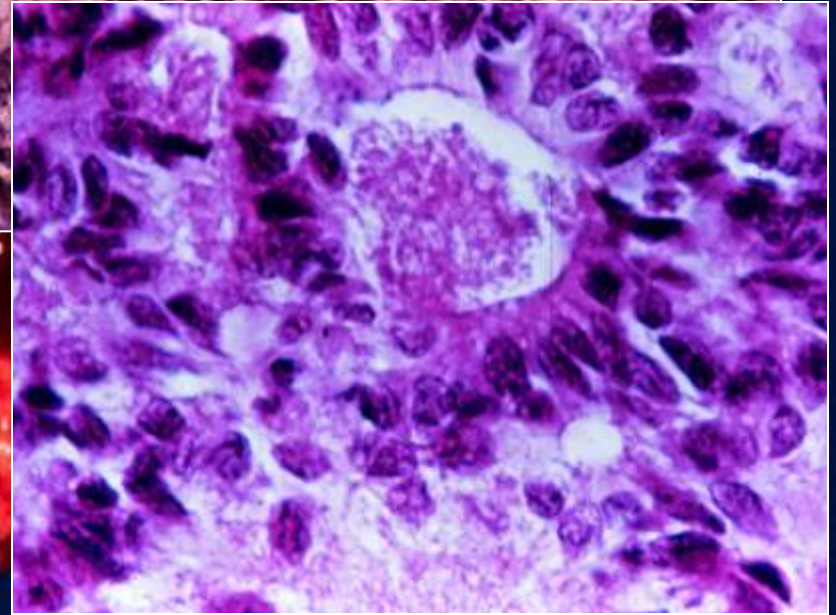
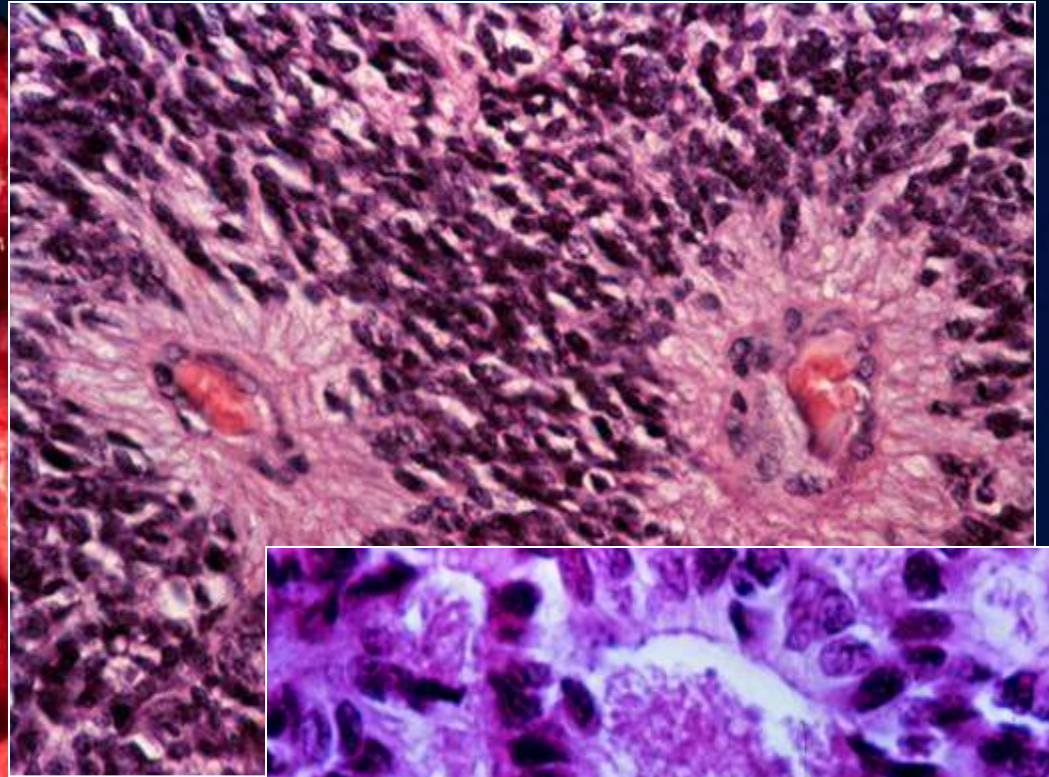
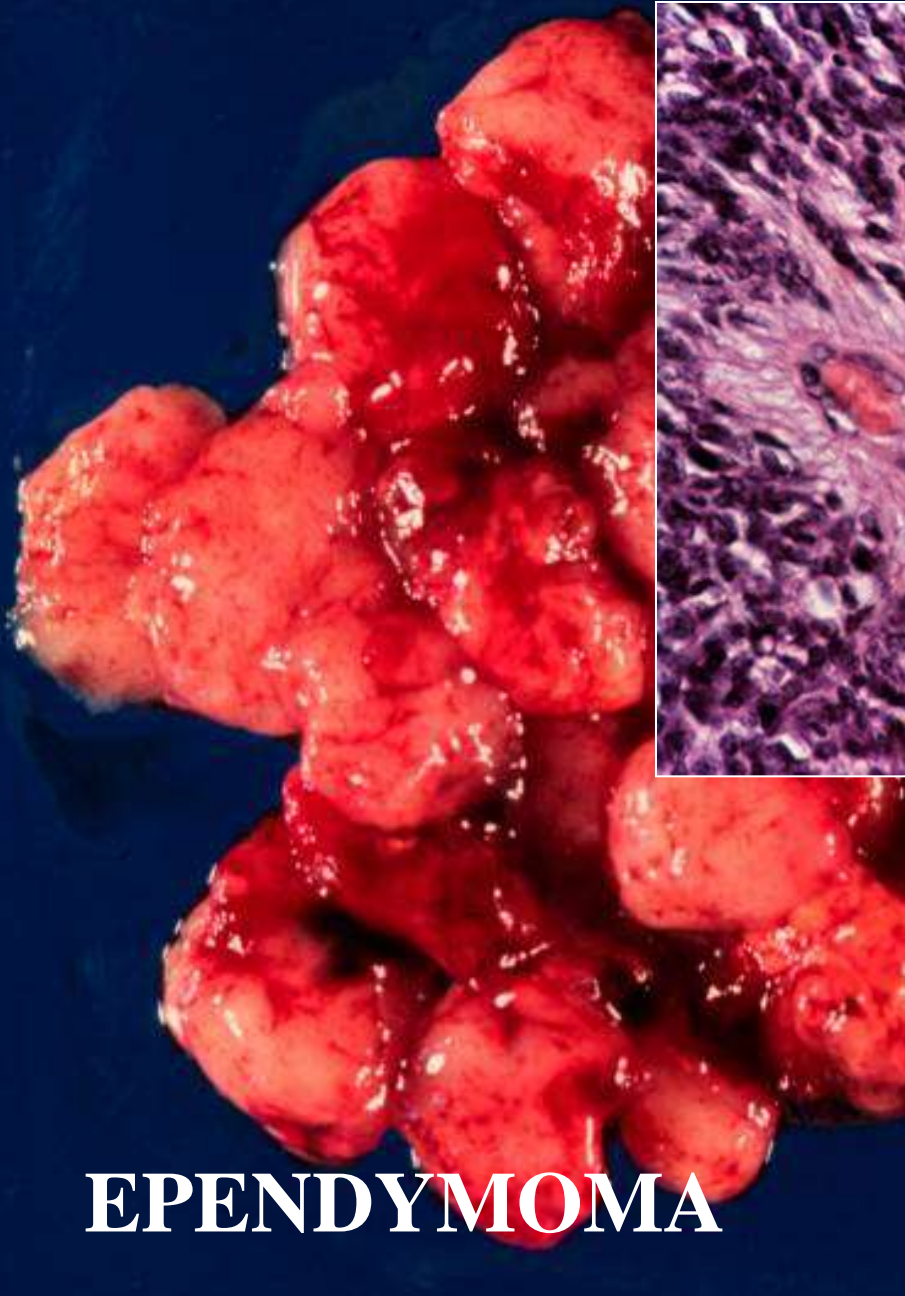
**KLAUS JOACHIM ZÜLCH**

**“MONSTRUOCELLULAR  
SARCOMA”**

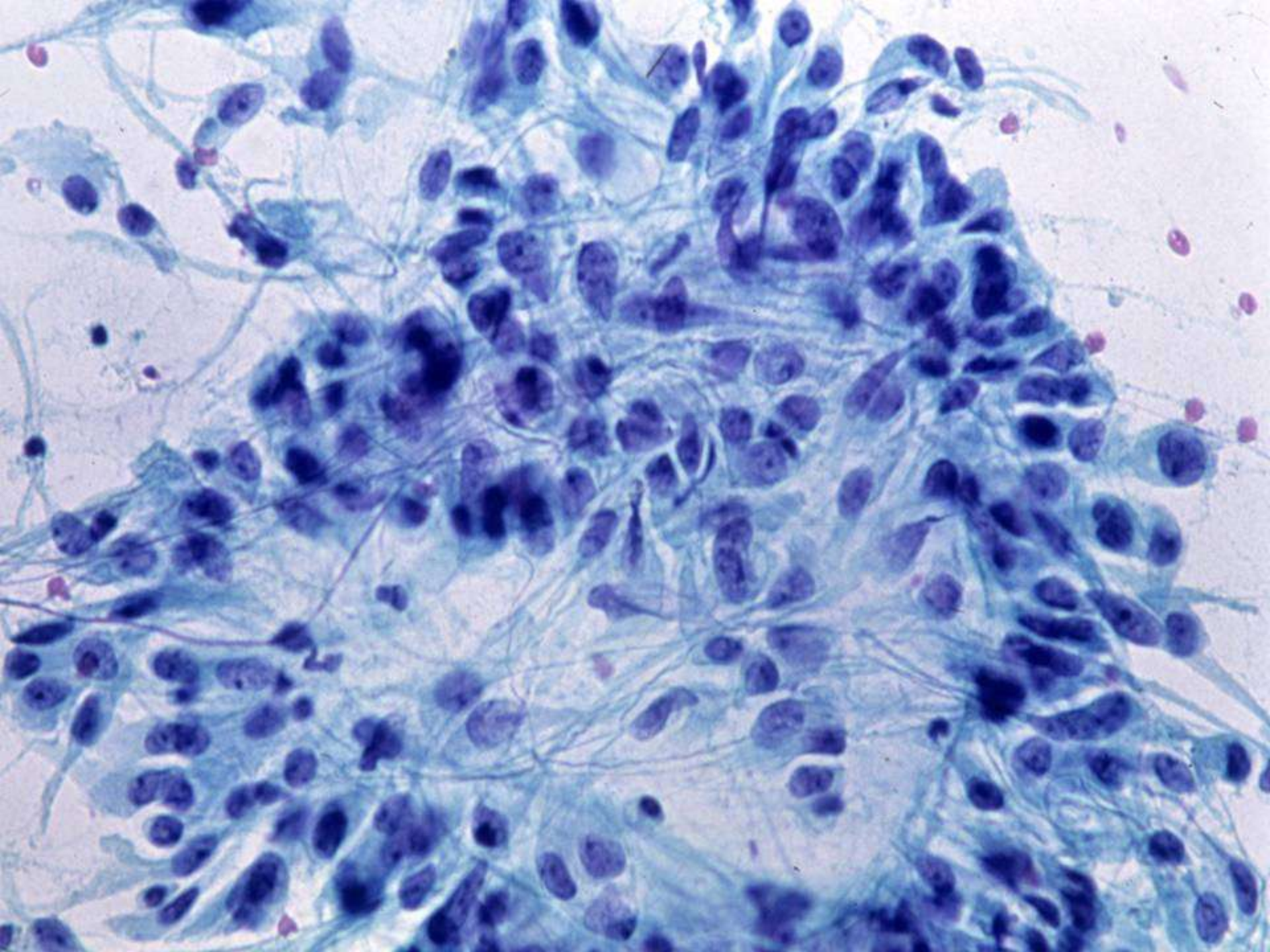
**GIANT CELL GLIOBLASTOMA**

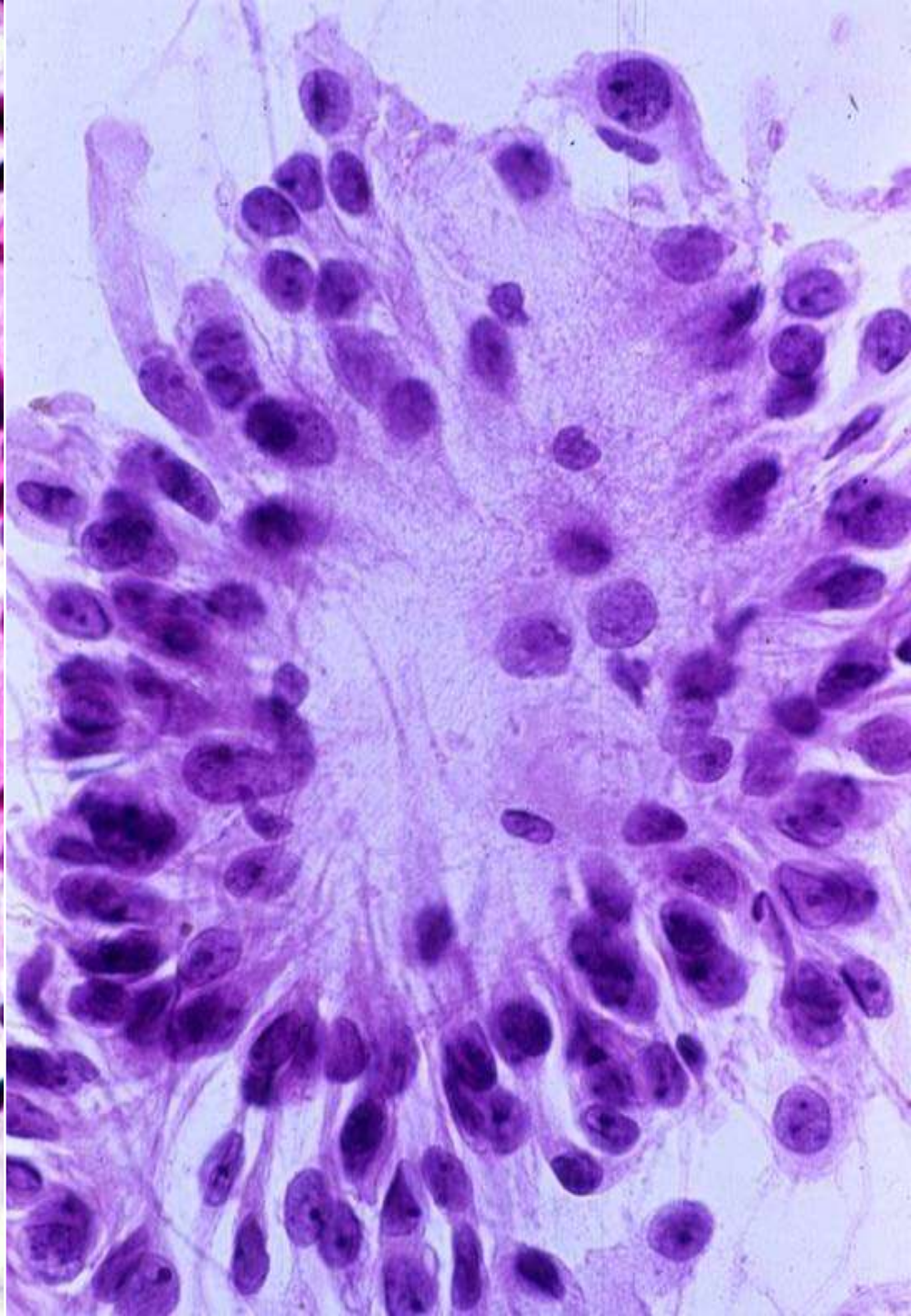
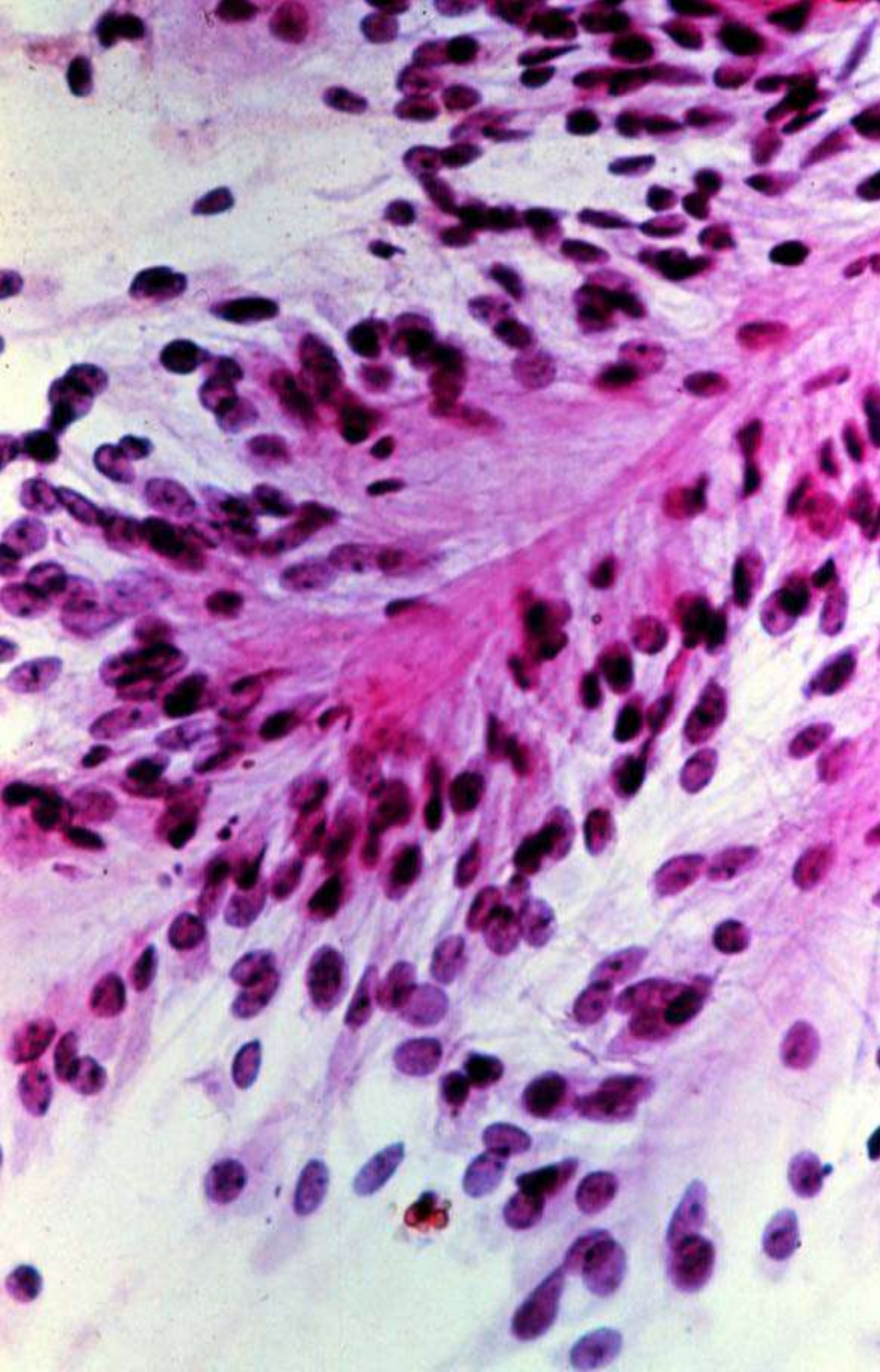


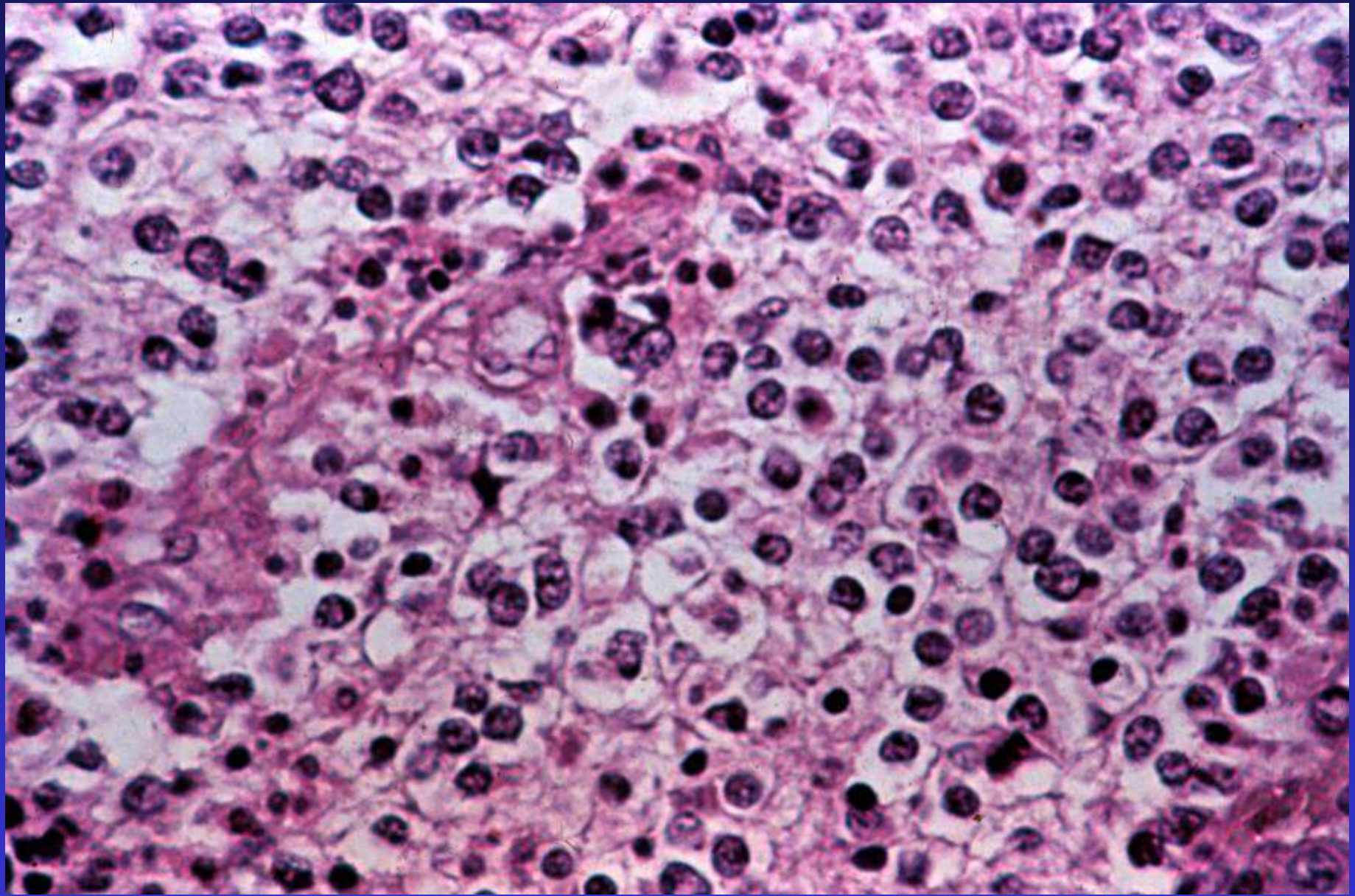
**MULTIPOLAR (GLIAL) CELLS**



**EPENDYMOMA**

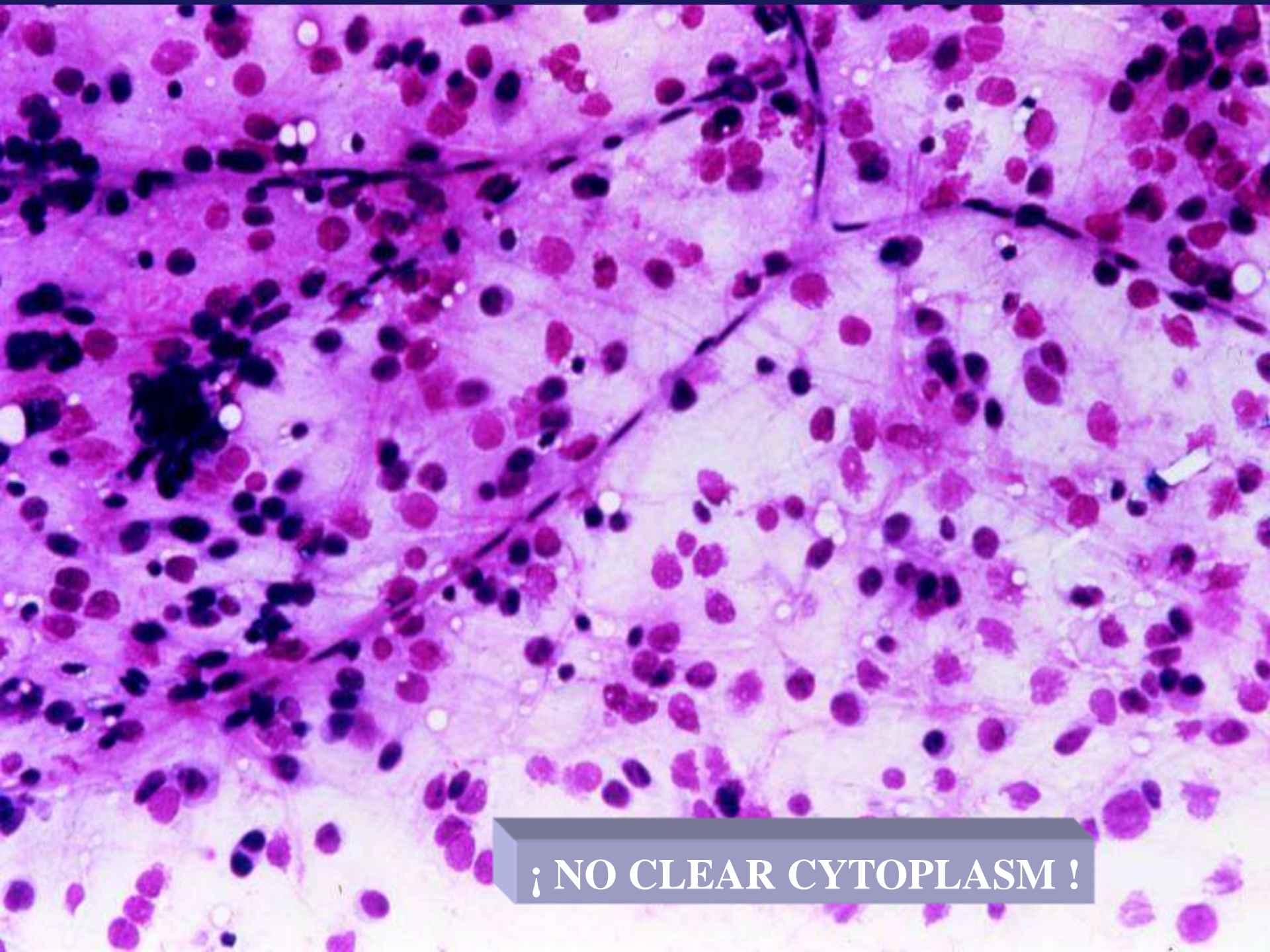




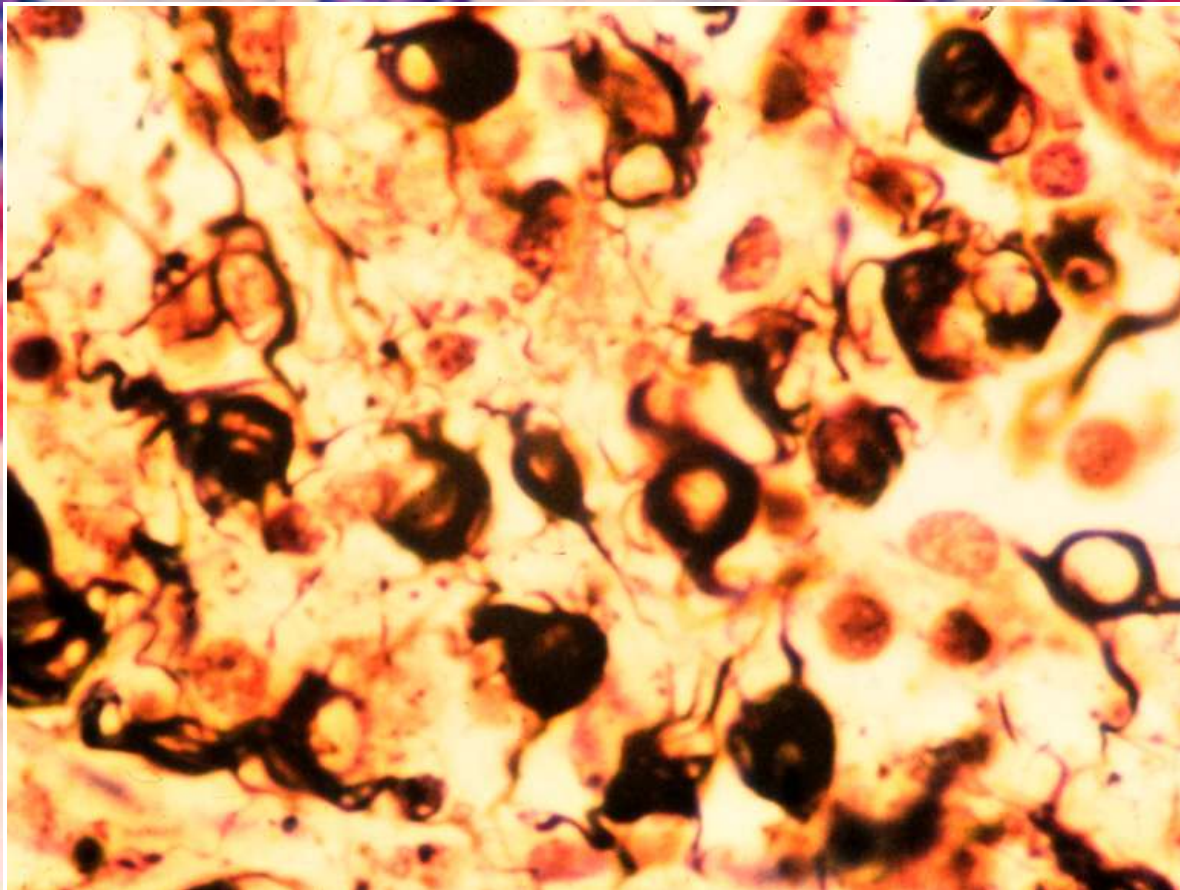


**OLIGODENDROGLIOMA**





¡ NO CLEAR CYTOPLASM !

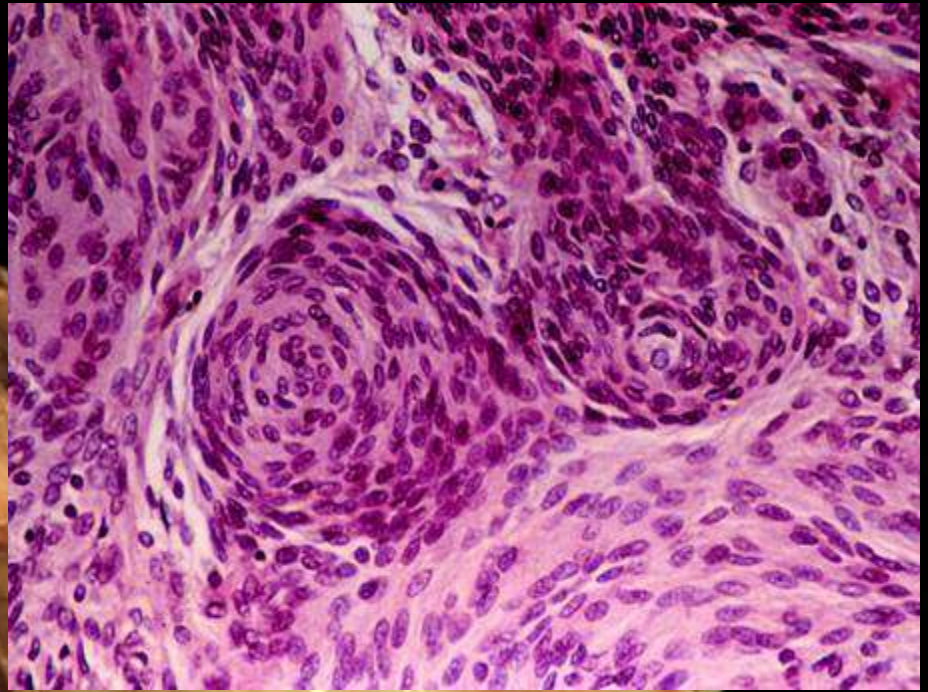
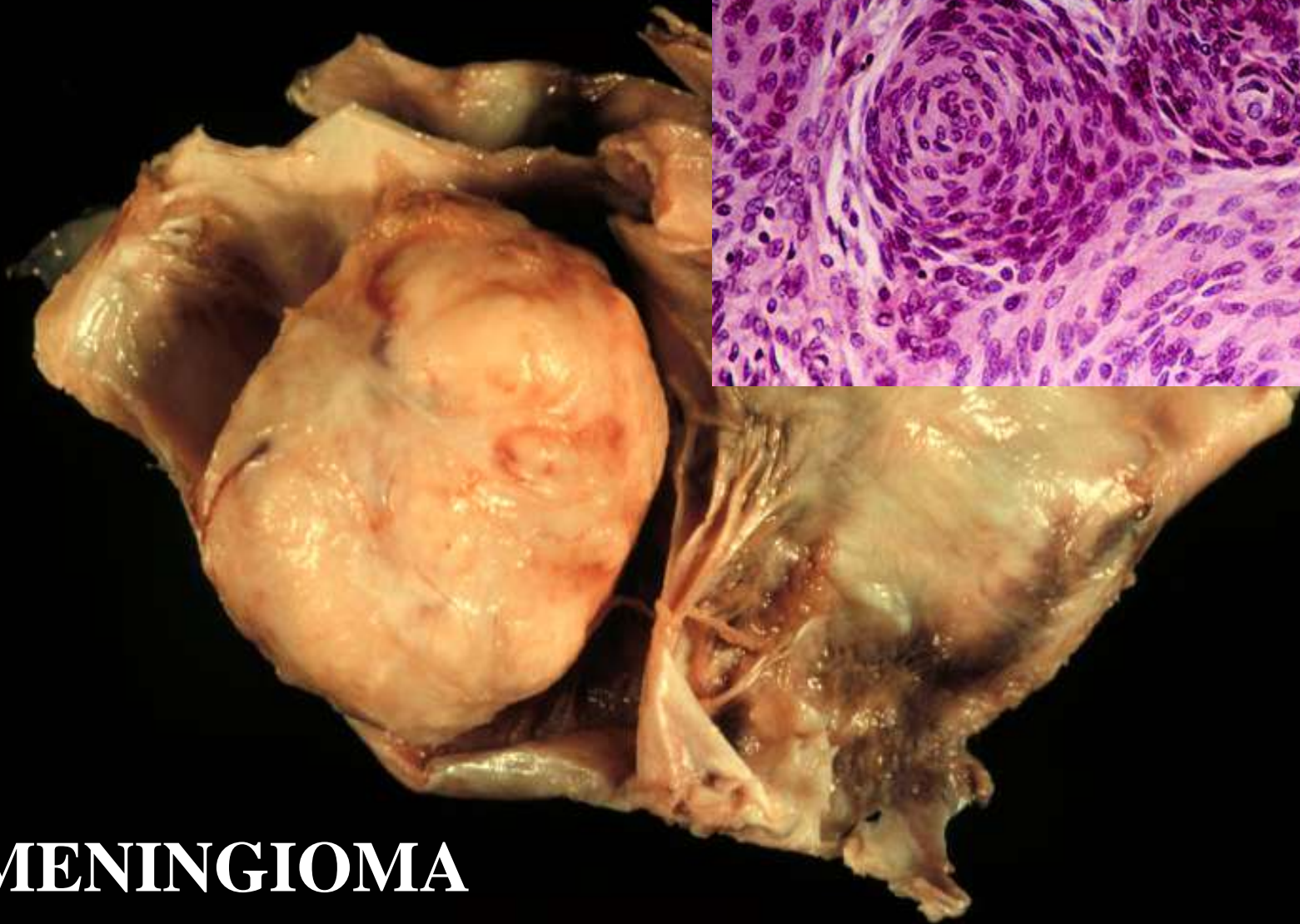


**NO FIBRILAR BACKGROUND**

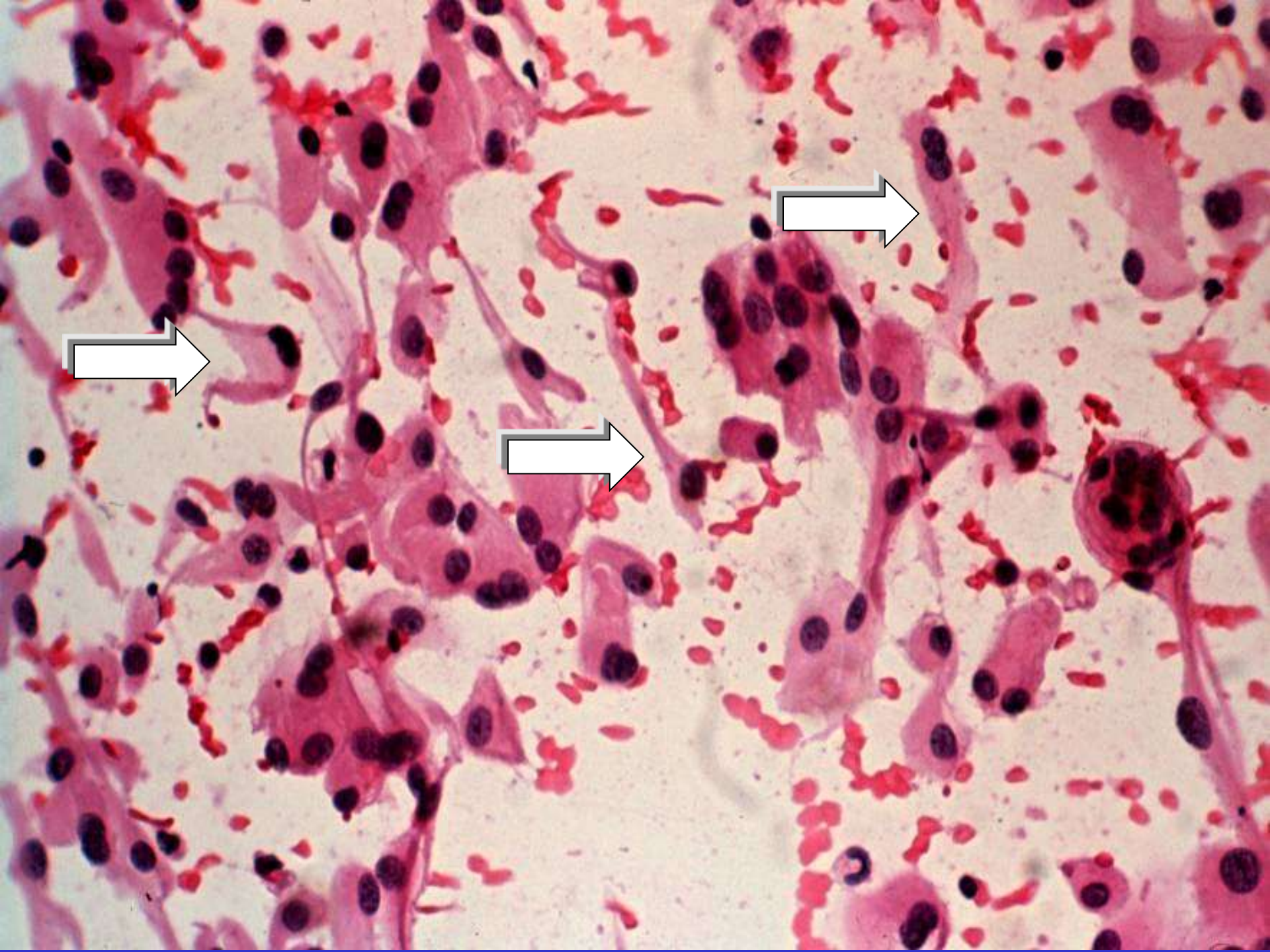


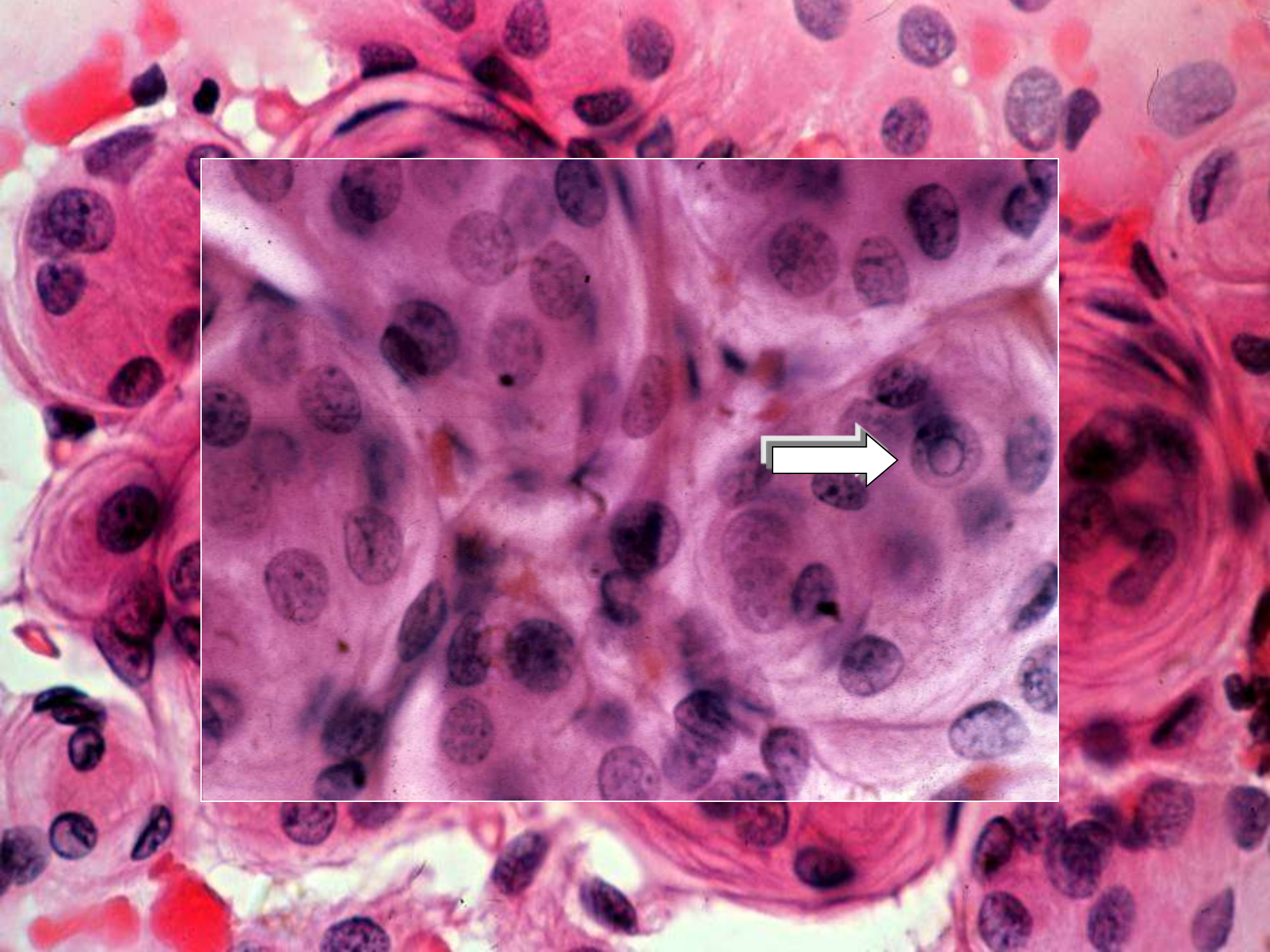
**OLIGO-DENDRO-CITO:  
“Cell with short and scanty  
processes”**

**RIO ORTEGA**



**MENINGIOMA**

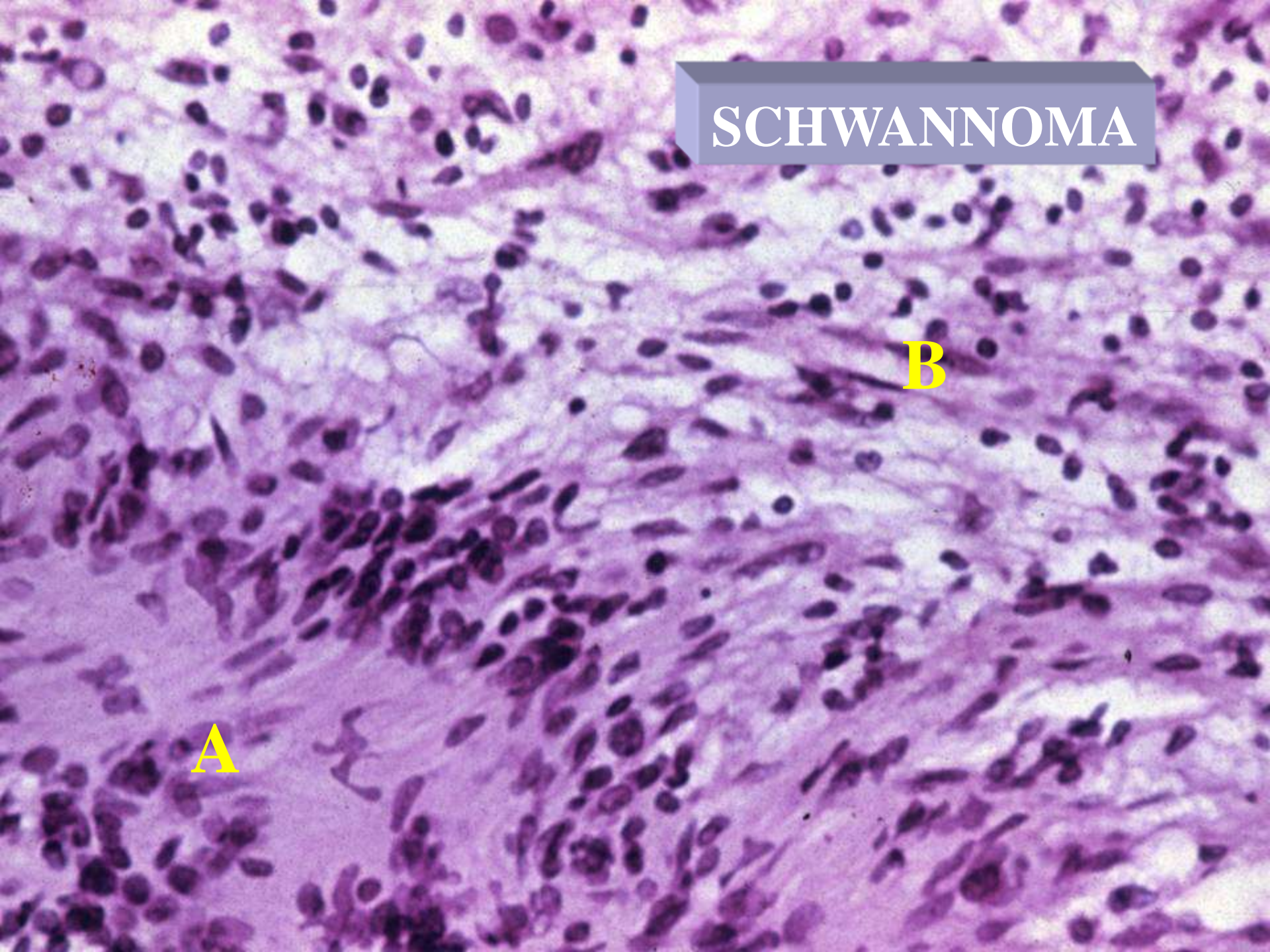


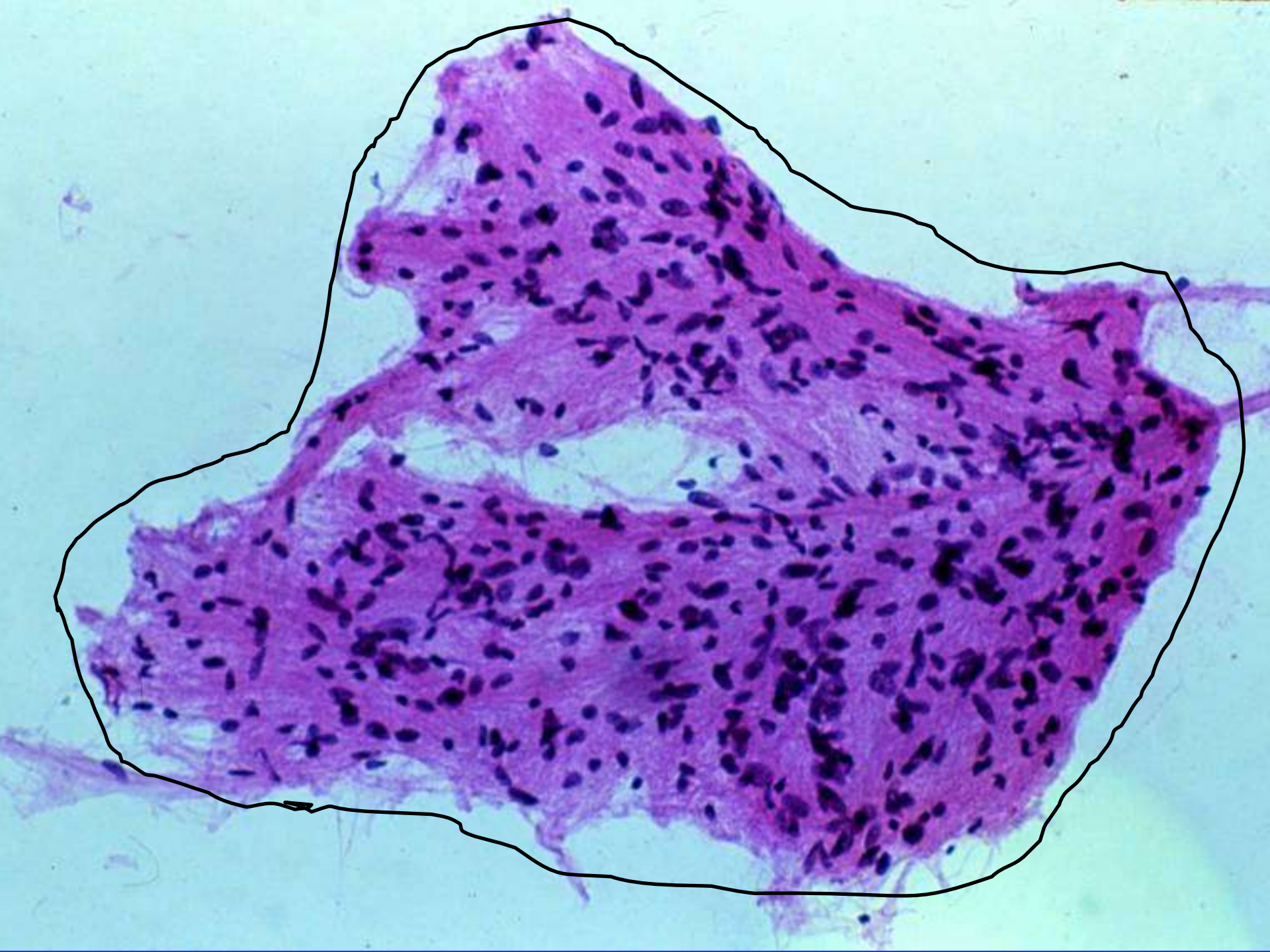


# SCHWANNOMA

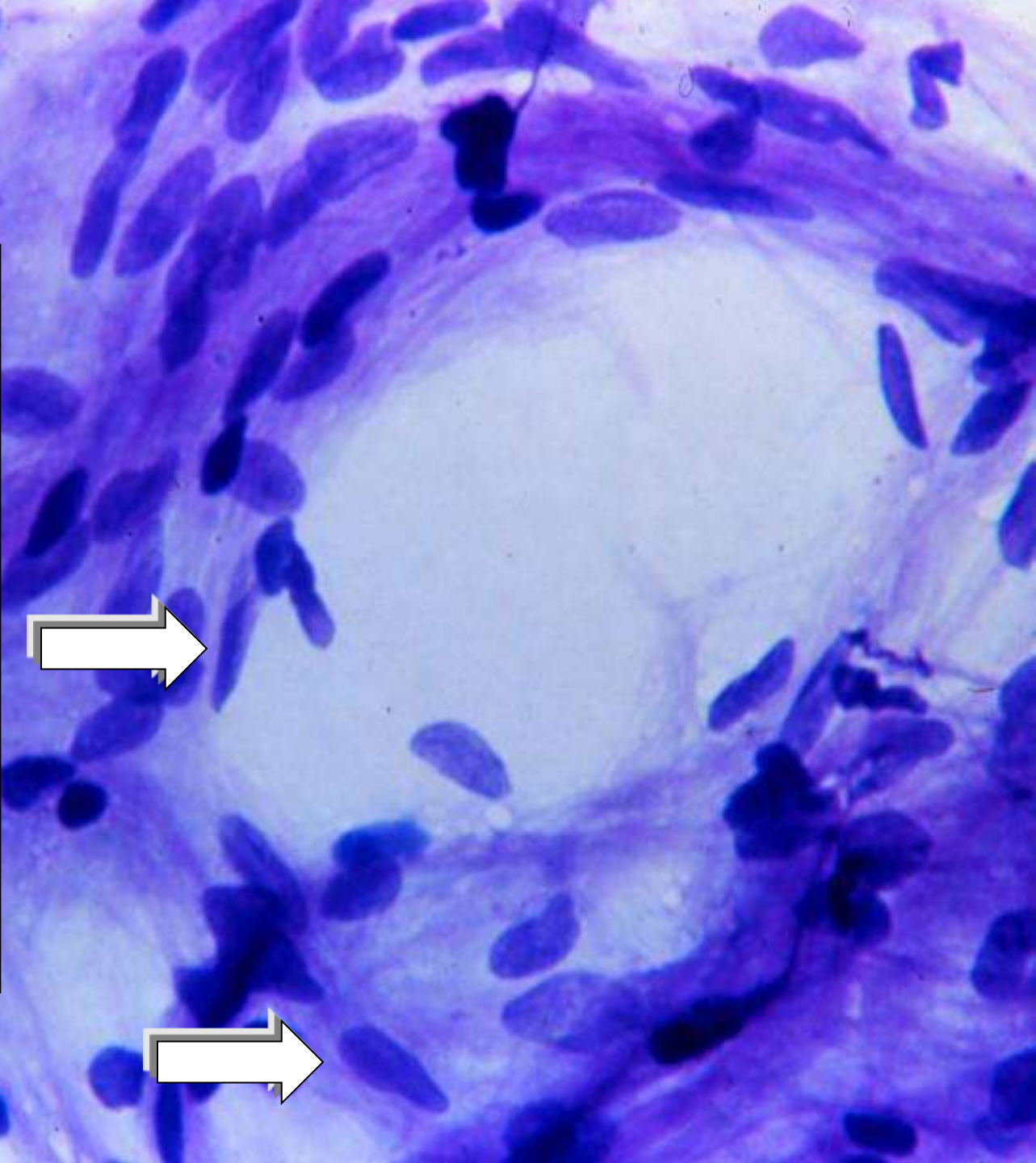
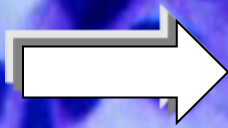
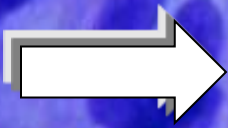
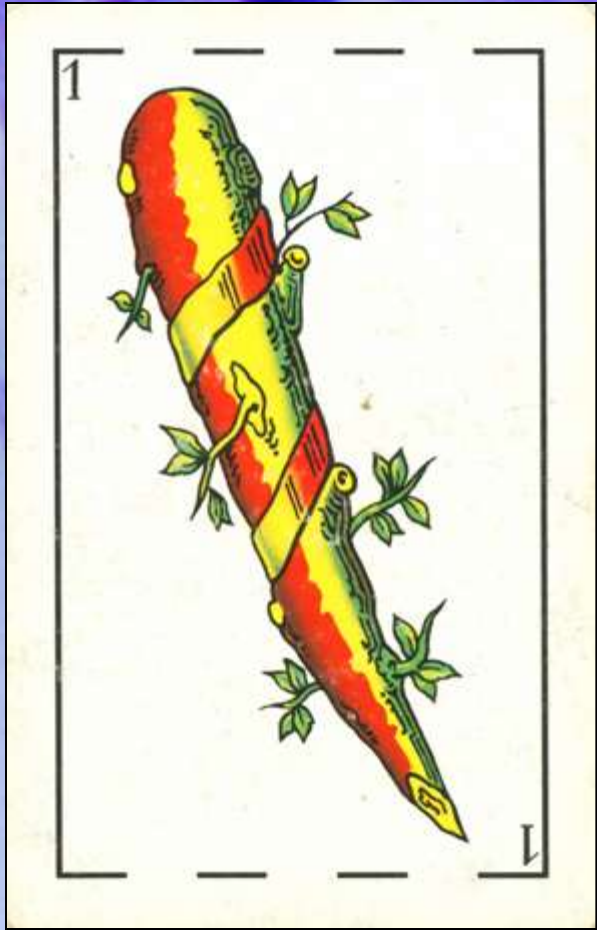
**B**

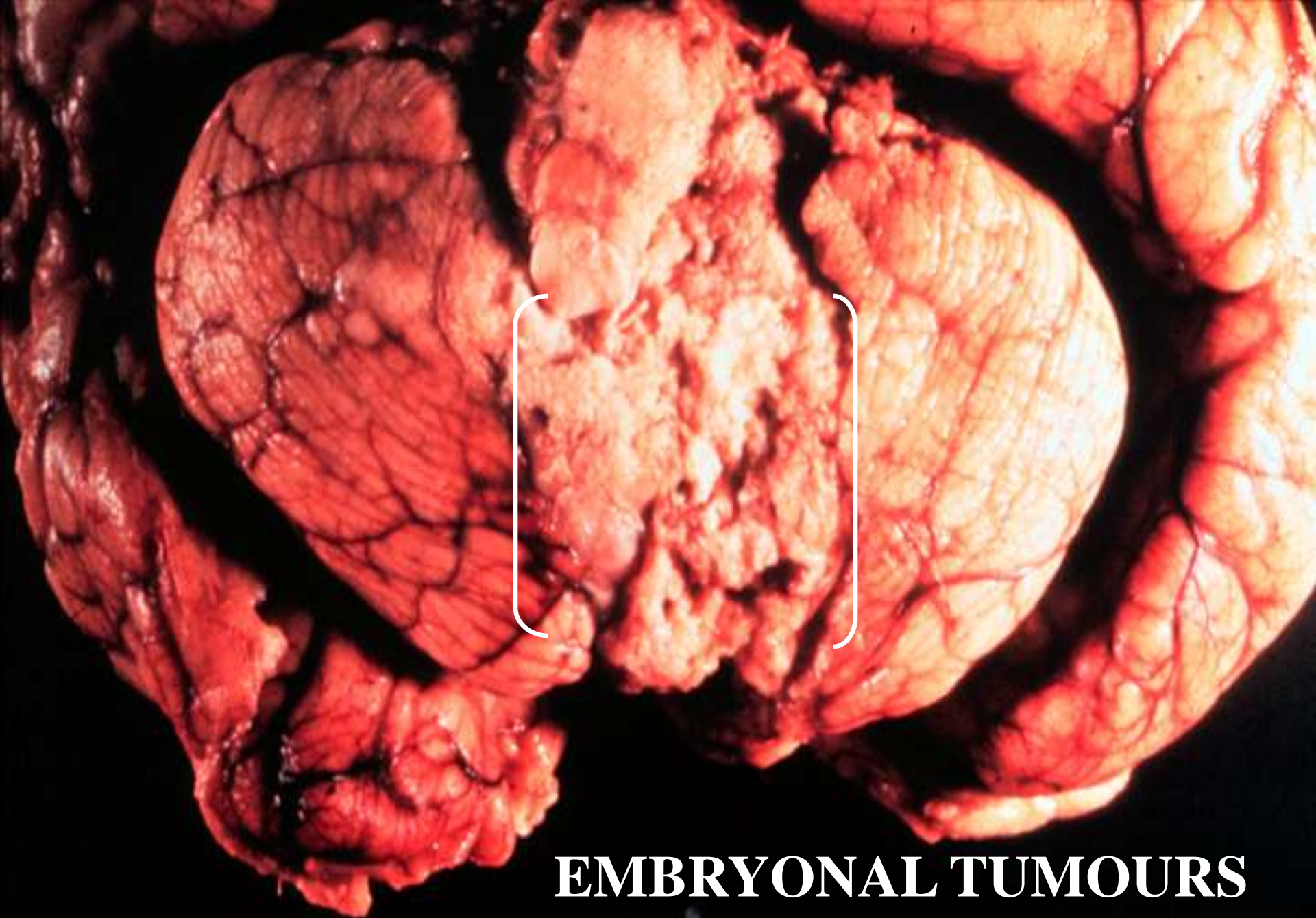
**A**



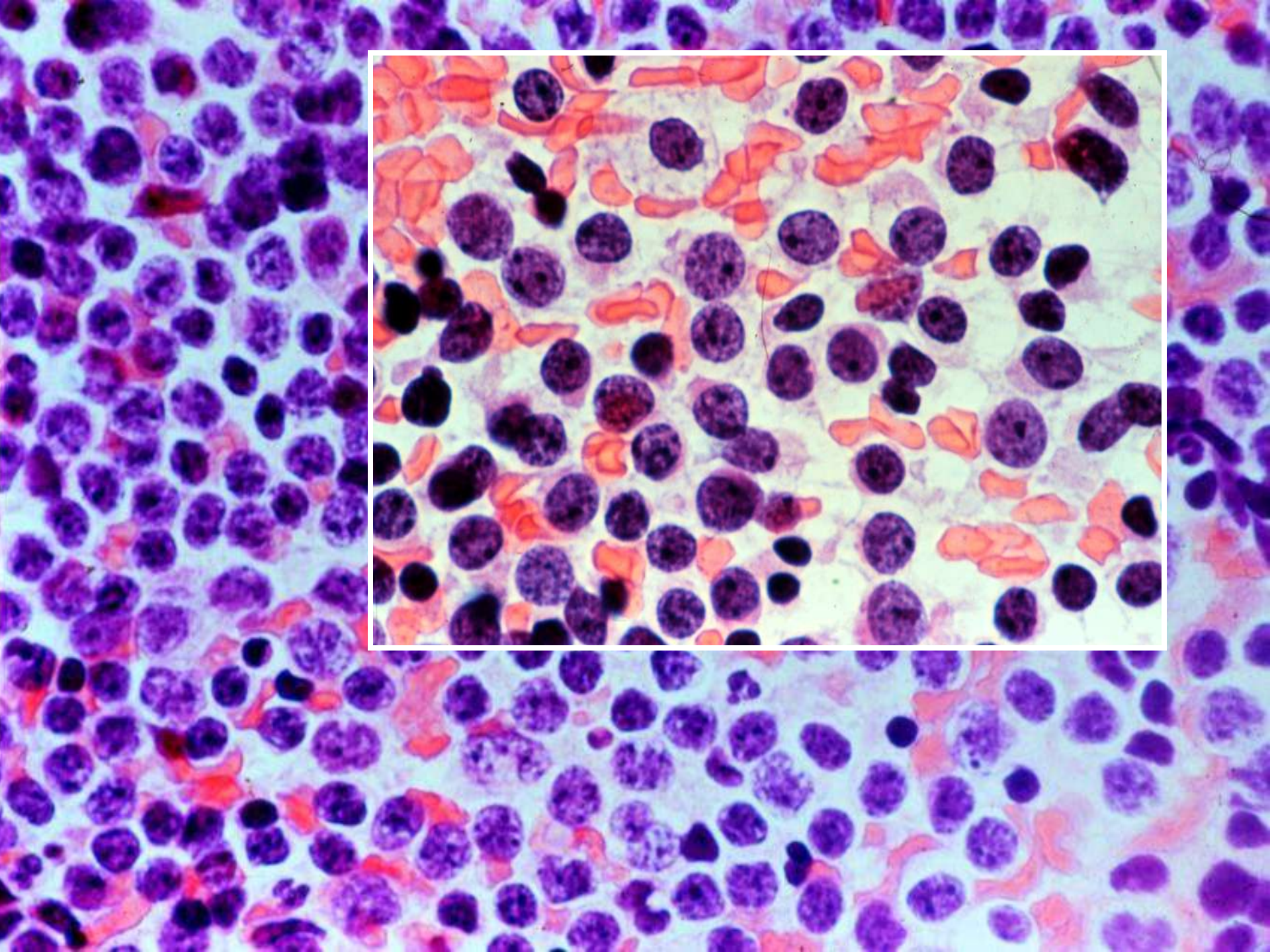




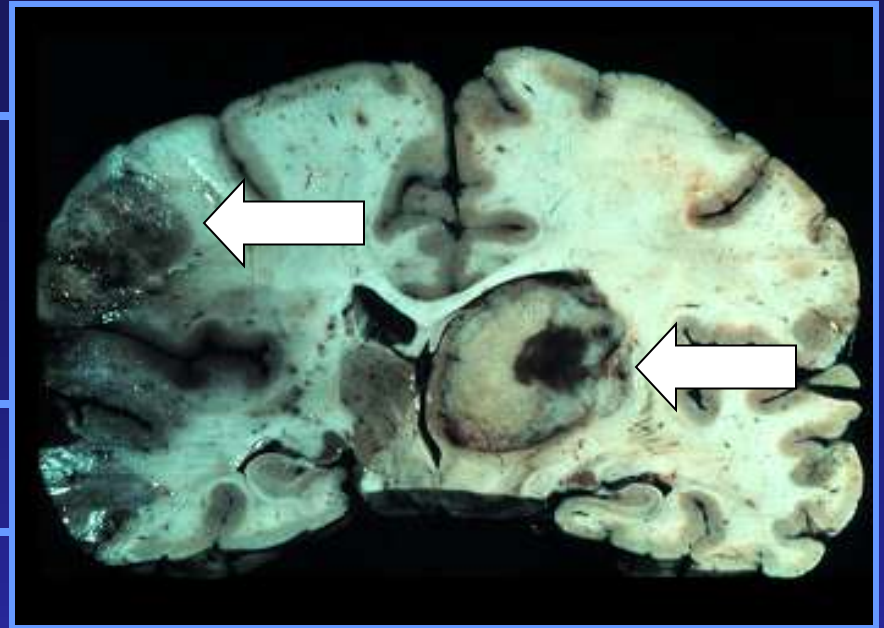




**EMBRYONAL TUMOURS  
(P.N.E.T.)**

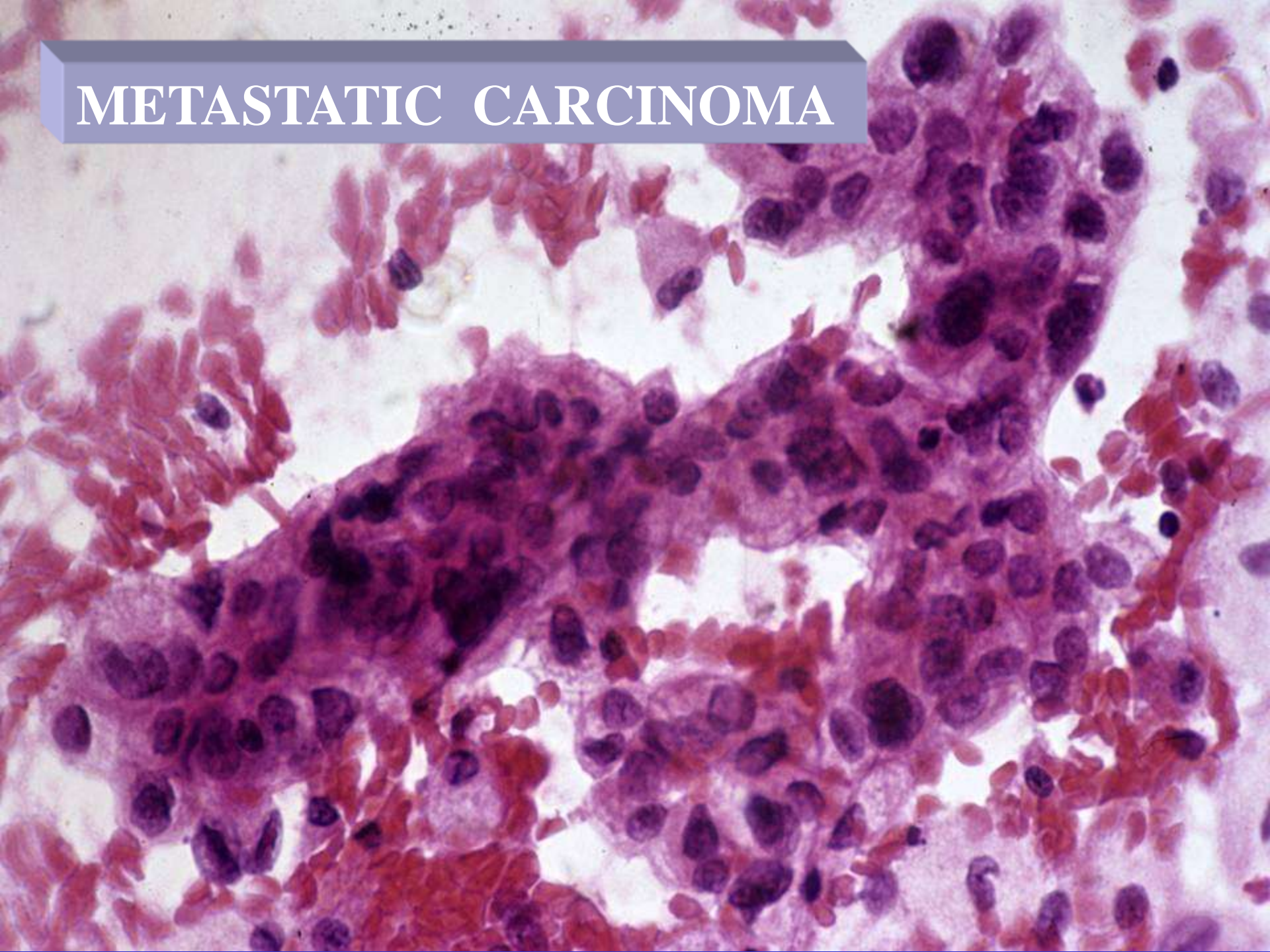


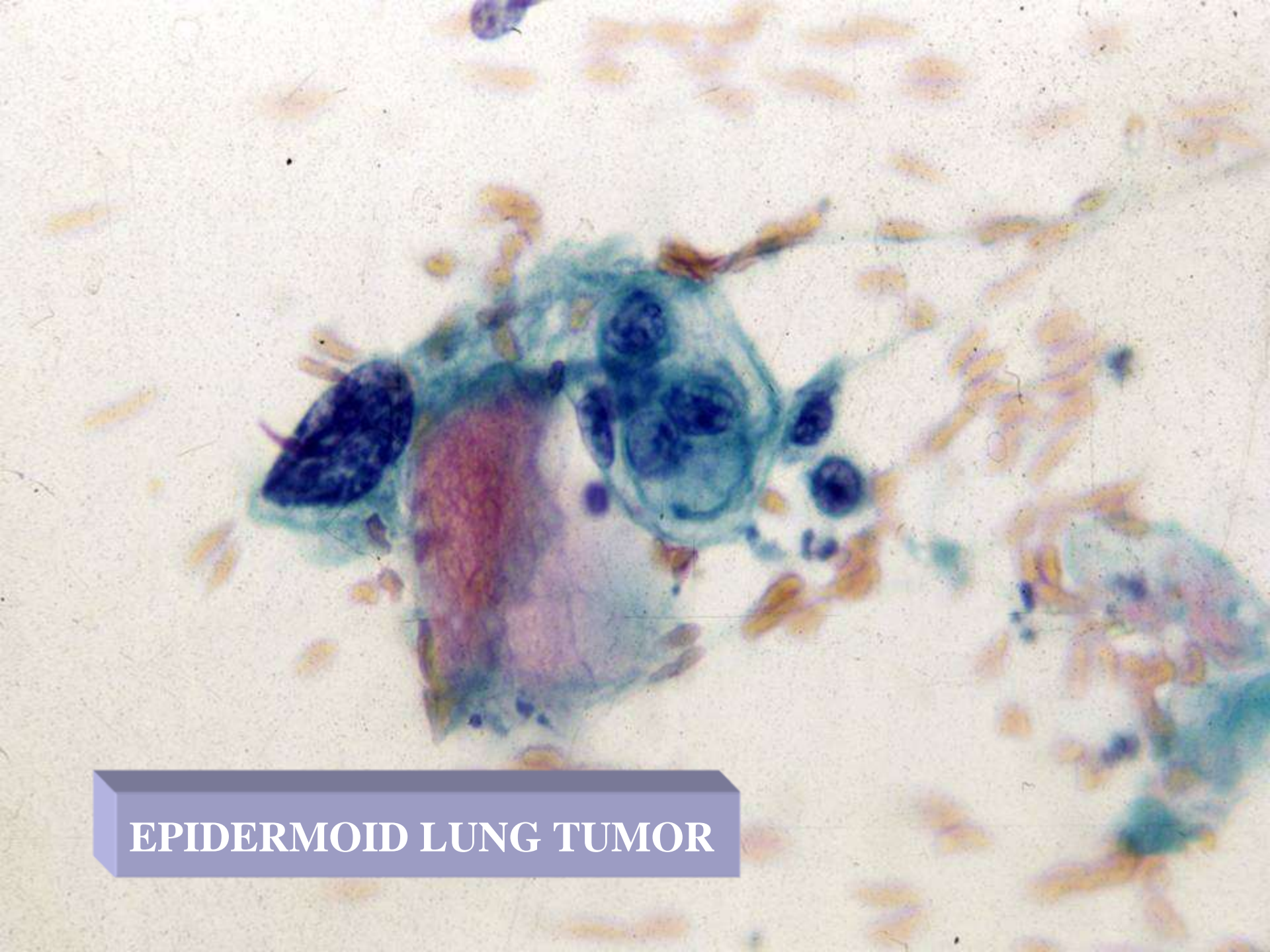
# BRAIN METASTASES



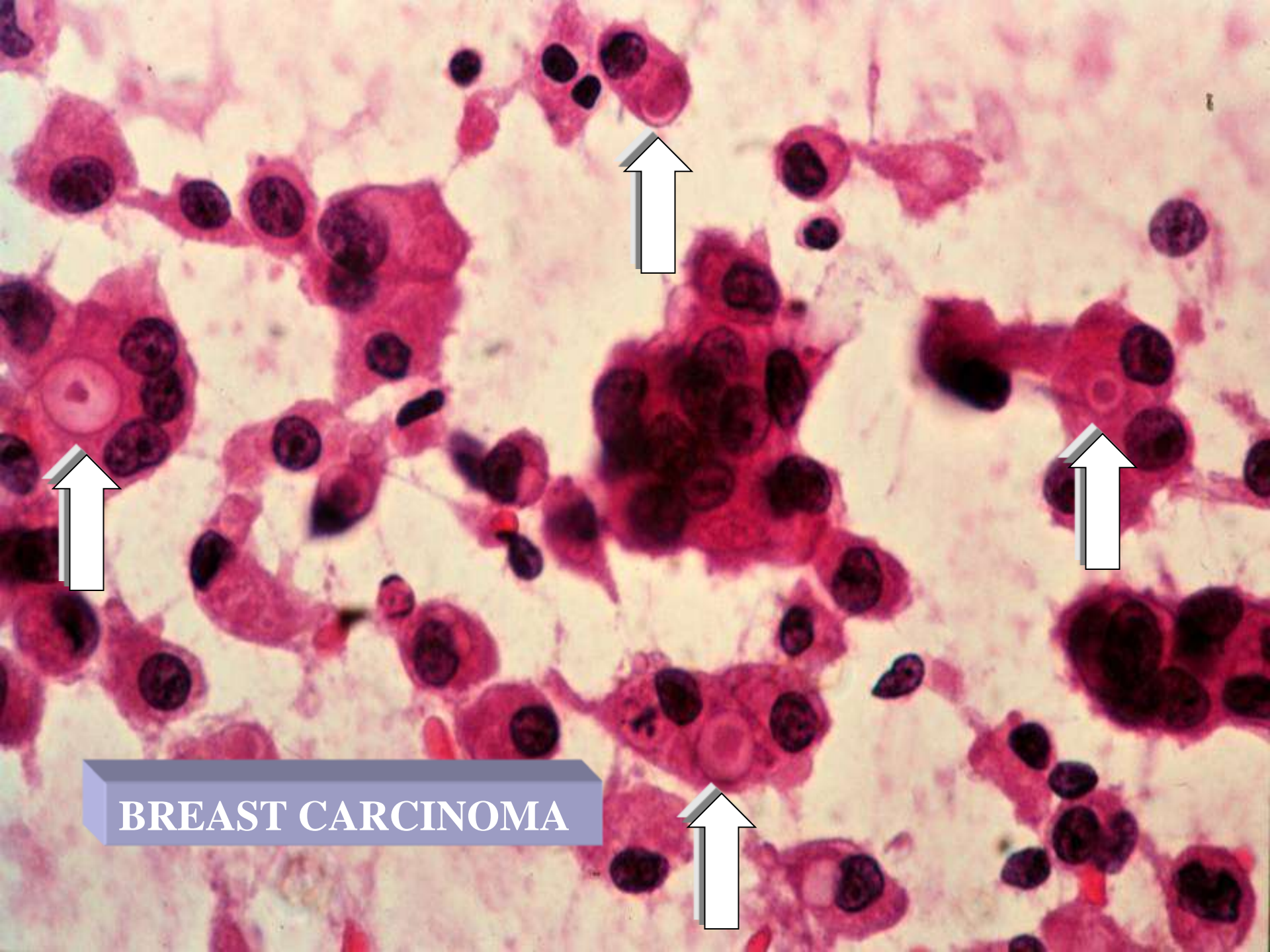
- **Respiratory tract** 50%
- **Breast** 15%
- **Skin/ melanoma** 11%
- **Unknown primary site** 11%

# METASTATIC CARCINOMA



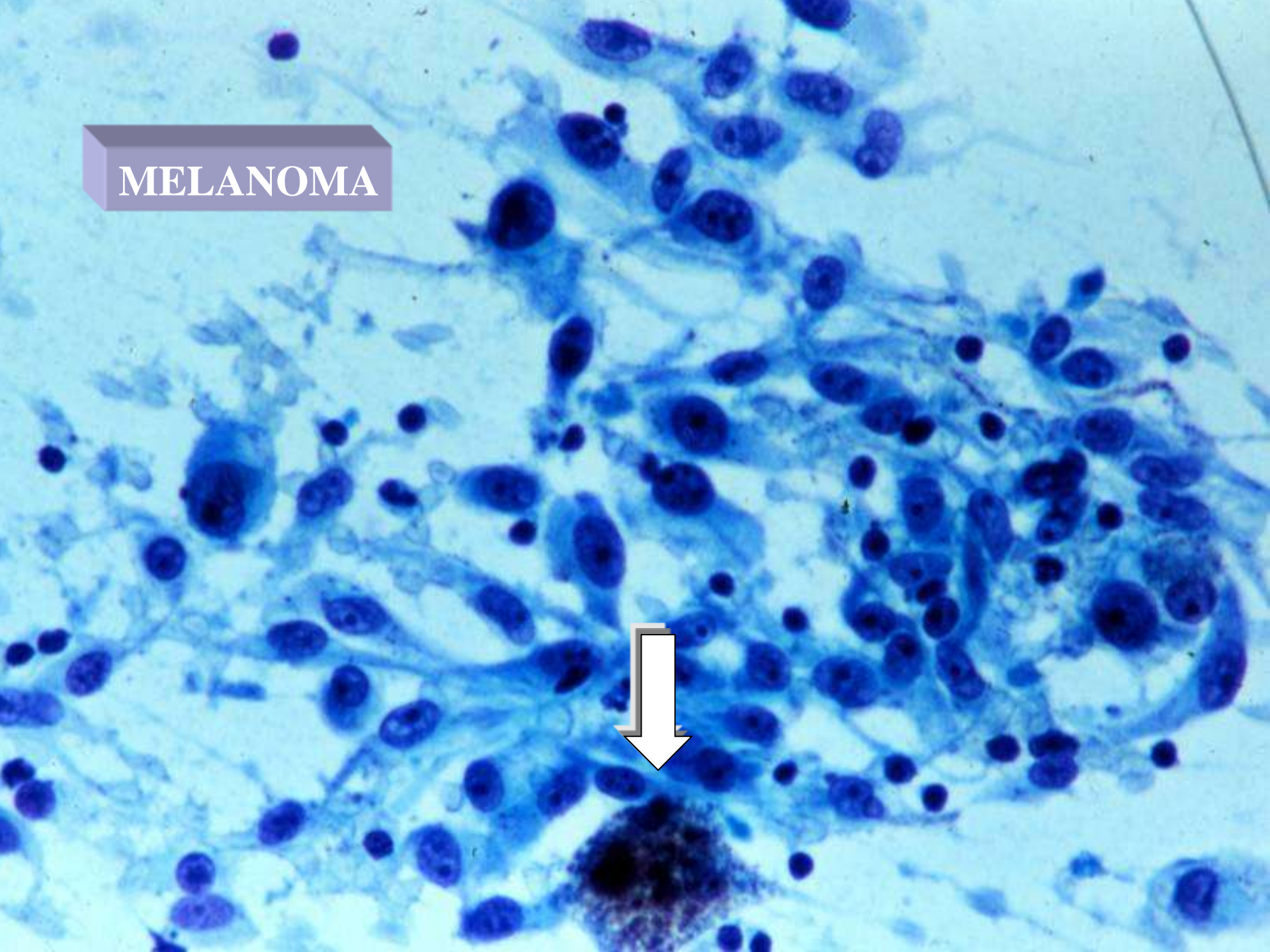


**EPIDERMOID LUNG TUMOR**

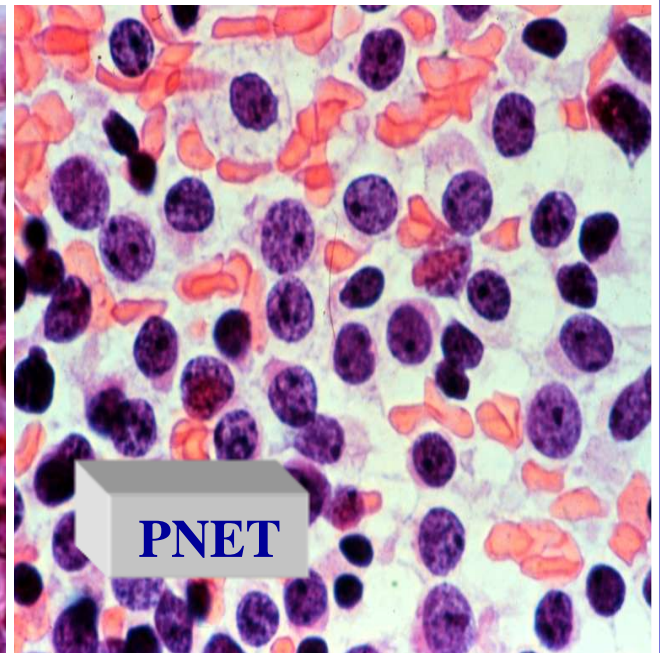
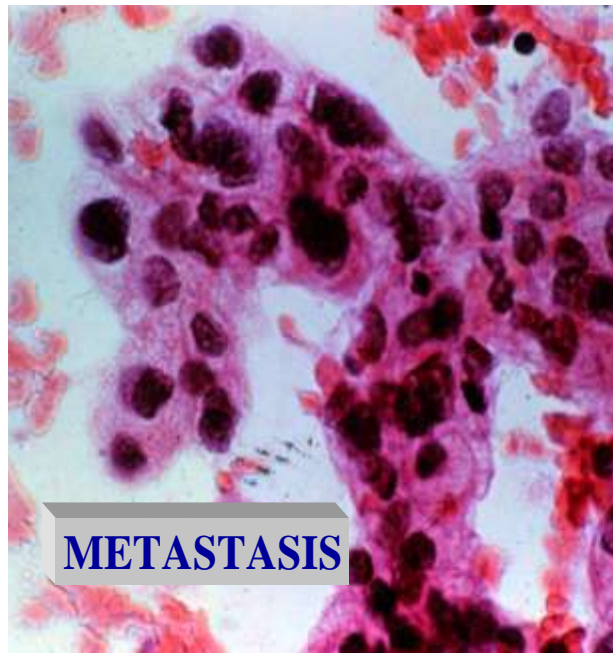
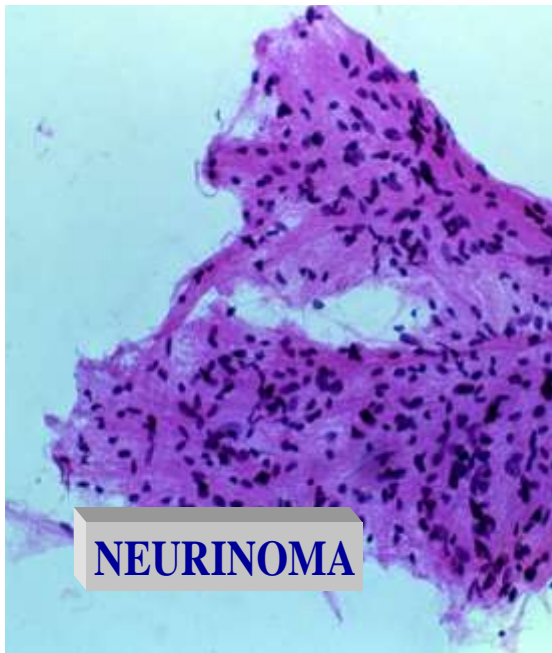
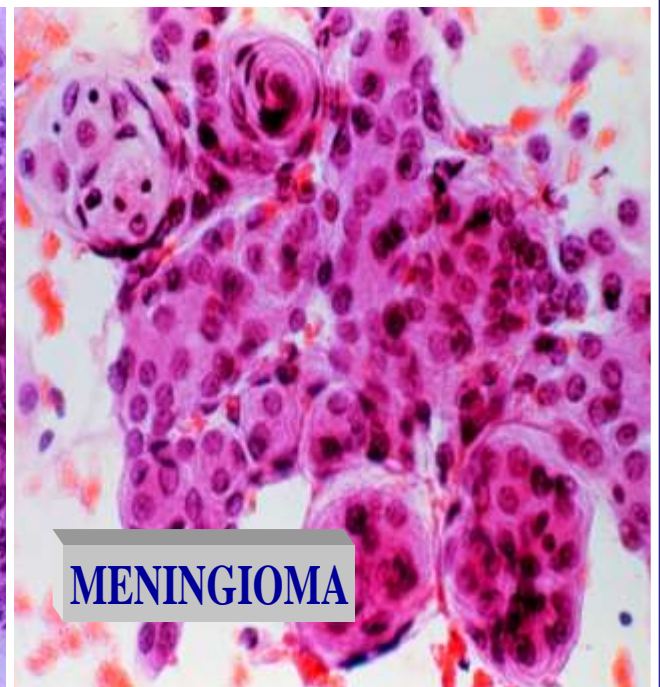
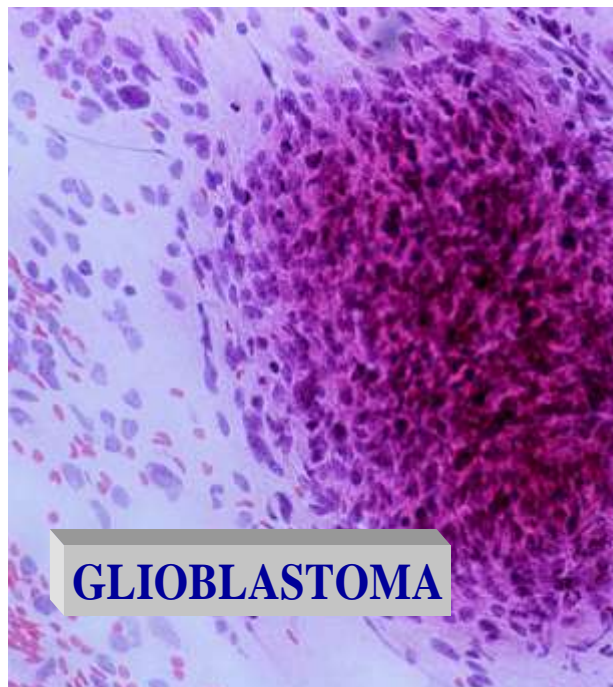
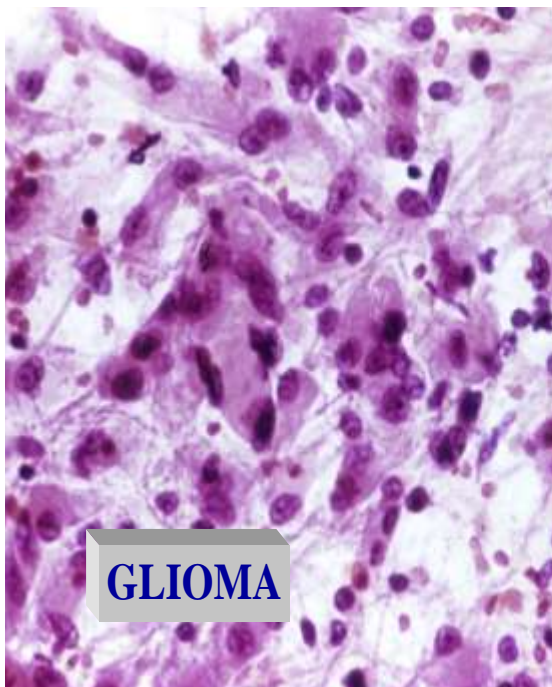


**BREAST CARCINOMA**

**MELANOMA**







# INTRAOPERATIVE CITOLOGY OF C.N.S.

- Neuropathology and Neurocitology always together.
- The pathologist who interprets cytologic or tissue sections based solely on the knowledge that the patient harbors a “brain tumor” is inviting disaster.

A microscopic image of tissue, likely a histological section, stained with blue and red dyes. The blue staining highlights the nuclei and some structural components, while the red staining highlights other cellular or extracellular components. The tissue shows a complex, fibrous structure with numerous small, rounded cells and larger, elongated structures. The text "MUCHAS GRACIAS" is overlaid in the center in a bold, blue, serif font.

**MUCHAS GRACIAS**