

2024 AANP Diagnostic Slide Session

Case 4

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SCHOOL OF MEDICINE

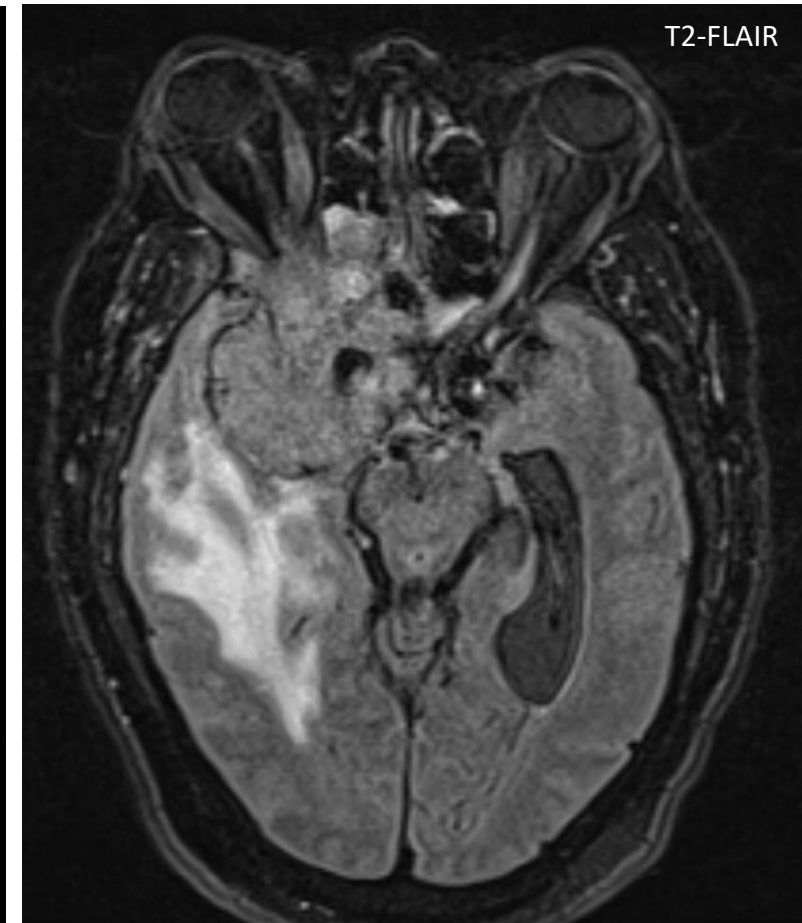
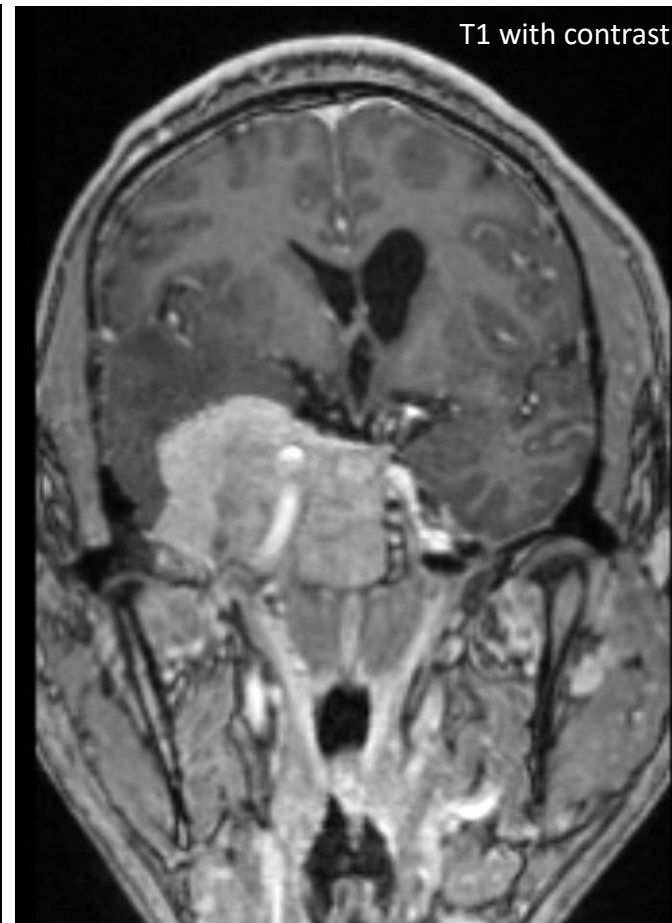
Pathology and Lab Medicine

History & Imaging

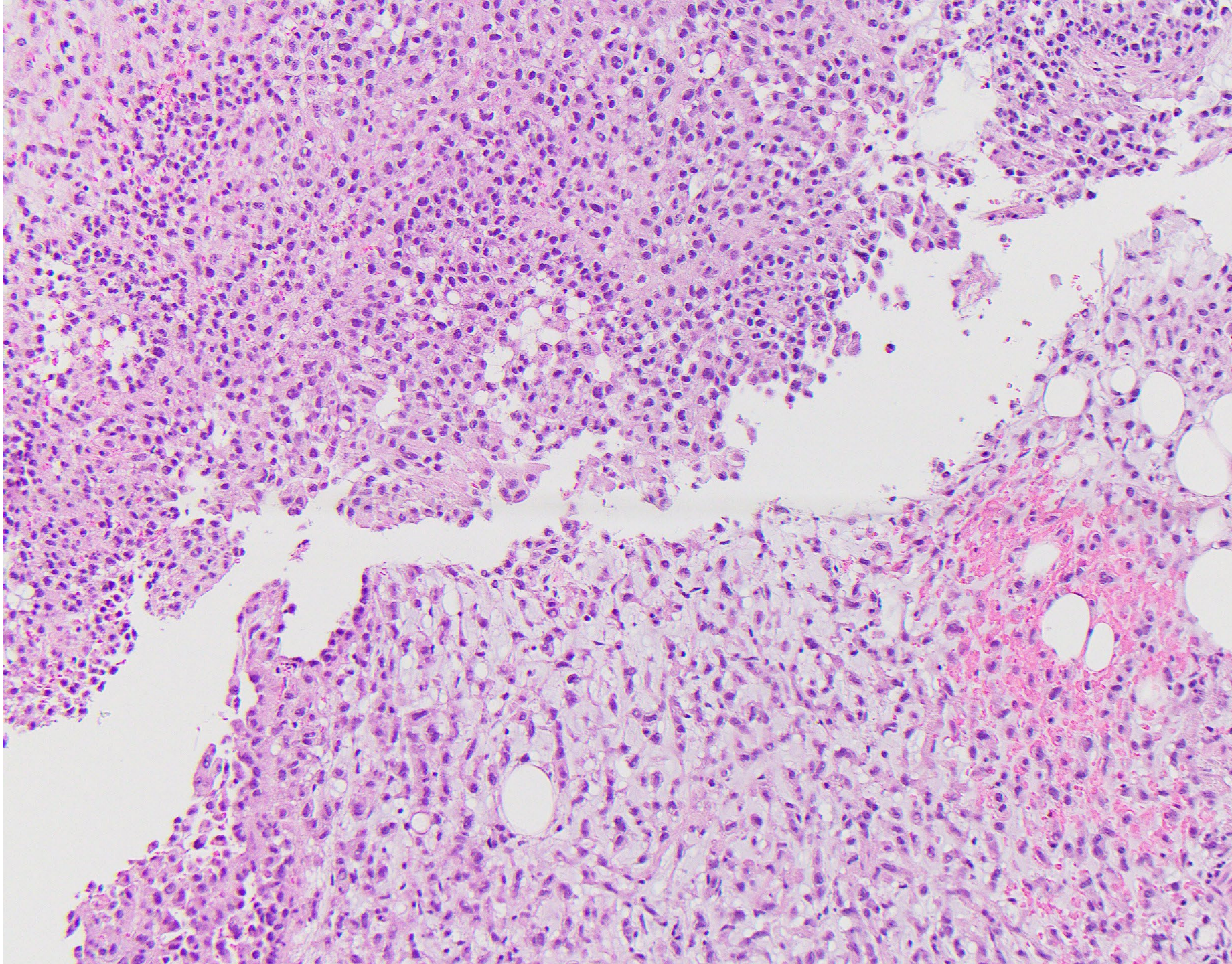
60 year old male from Nigeria

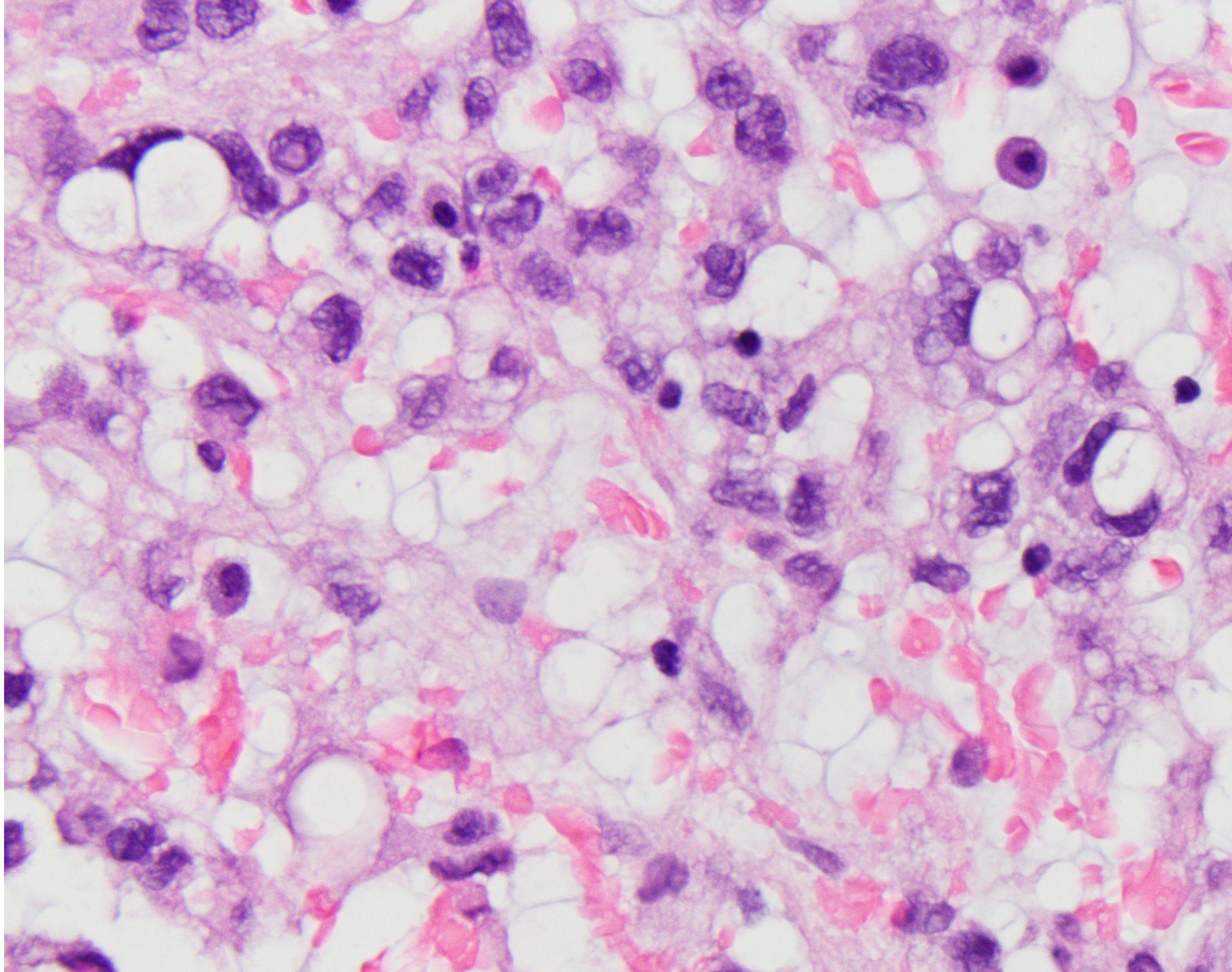
2 to 3 months of right-sided headaches

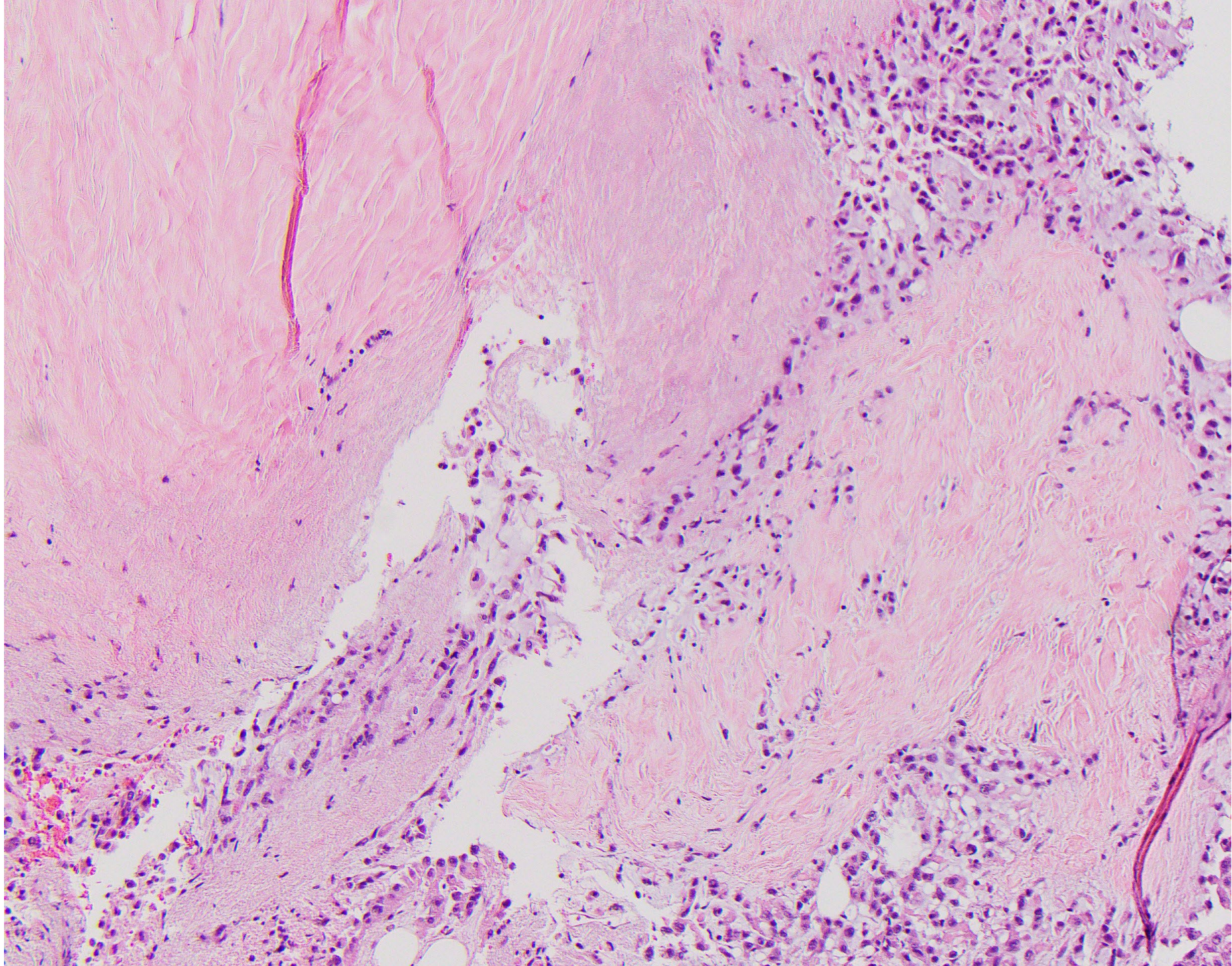
7 x 6 cm infiltrative skull base mass on MRI

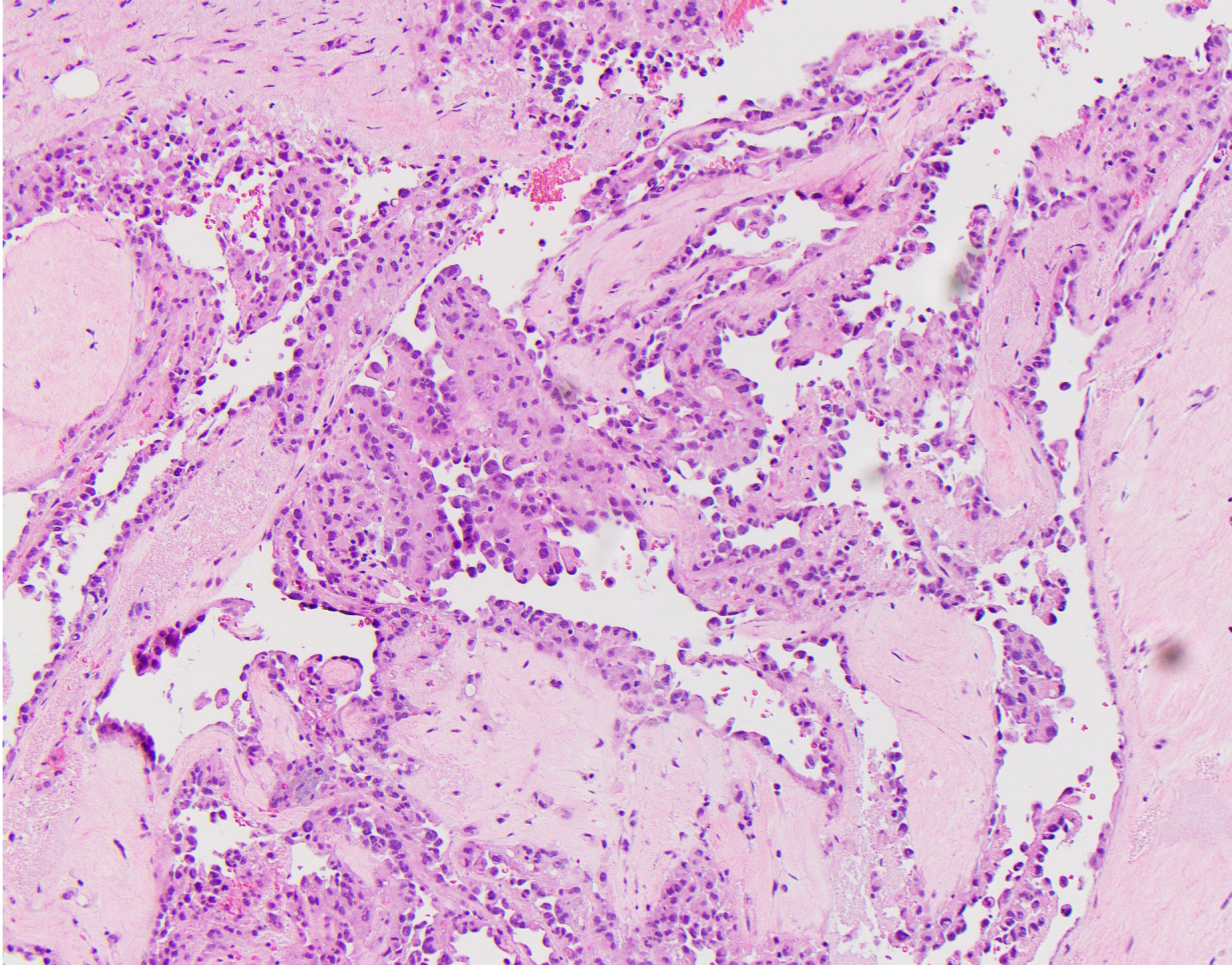


H&E







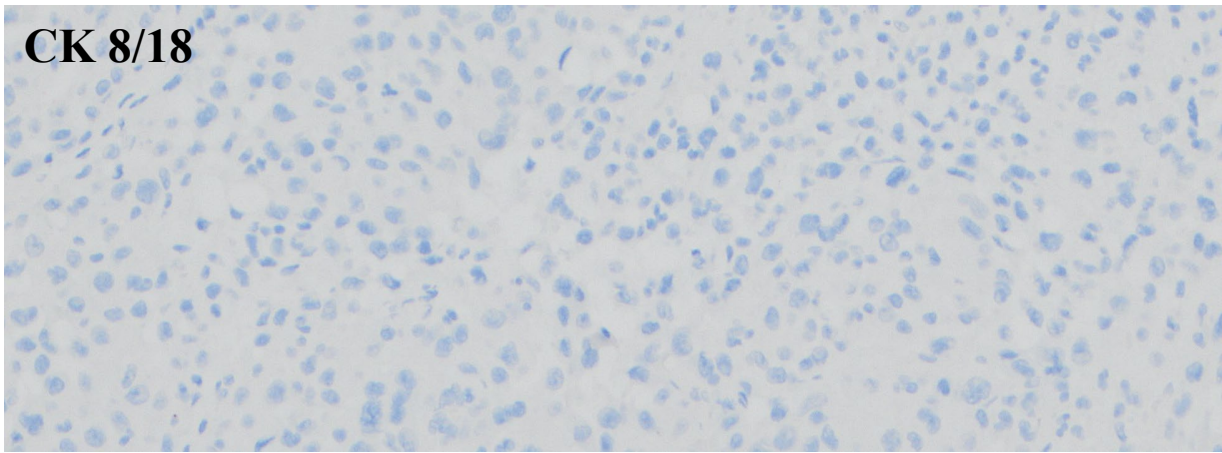


GROUP DISCUSSION

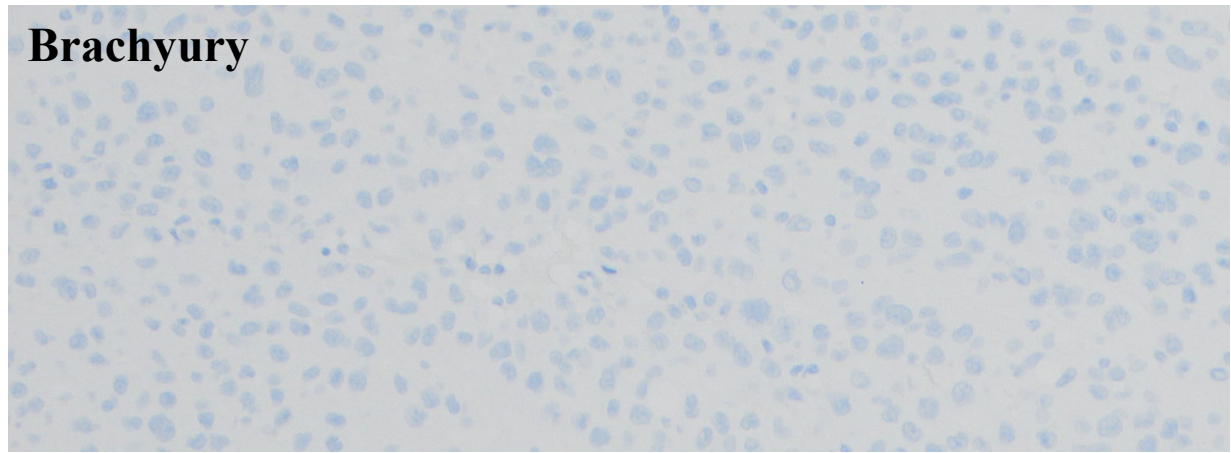
Morphological Differentials

- Conventional chordoma
- Chordoid meningioma
- Chordoid glioma
- Atypical teratoid/rhabdoid tumor
- Desmoplastic myxoid tumor of the pineal region, SMARCB1-mutant
- Invasive pituitary adenoma
- Primary papillary epithelial tumor of the sella (PPET)
- Other (sarcomas, metastases...)

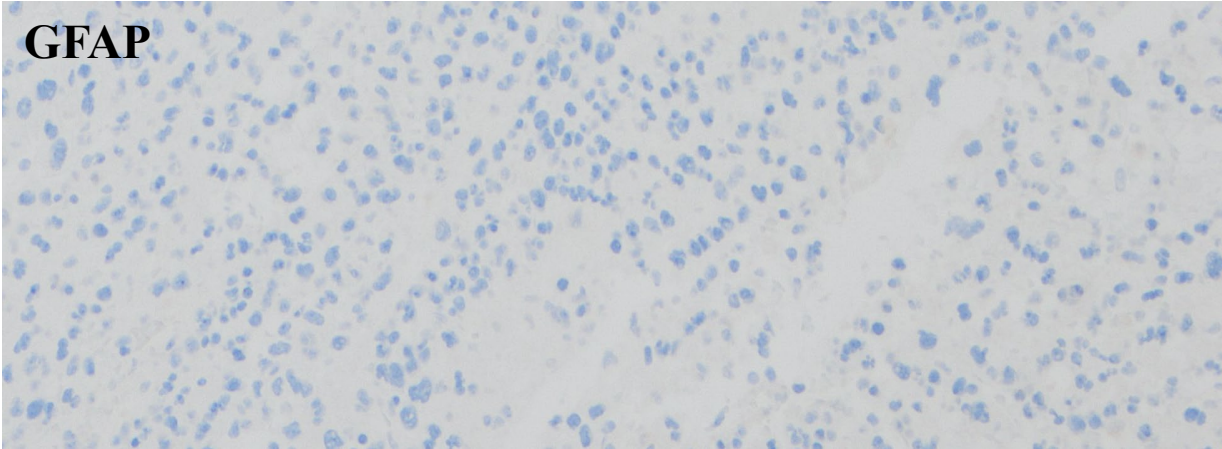
CK 8/18



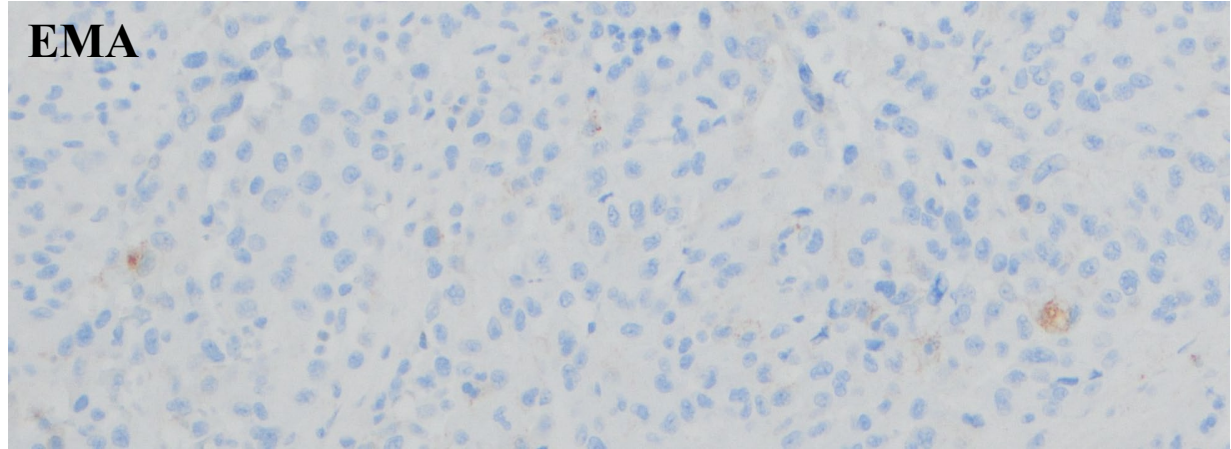
Brachyury



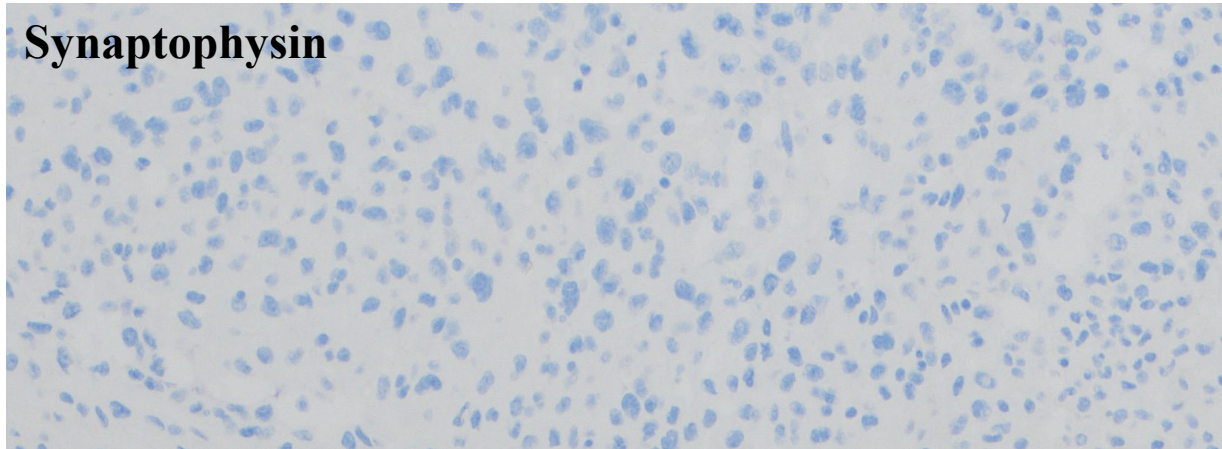
GFAP



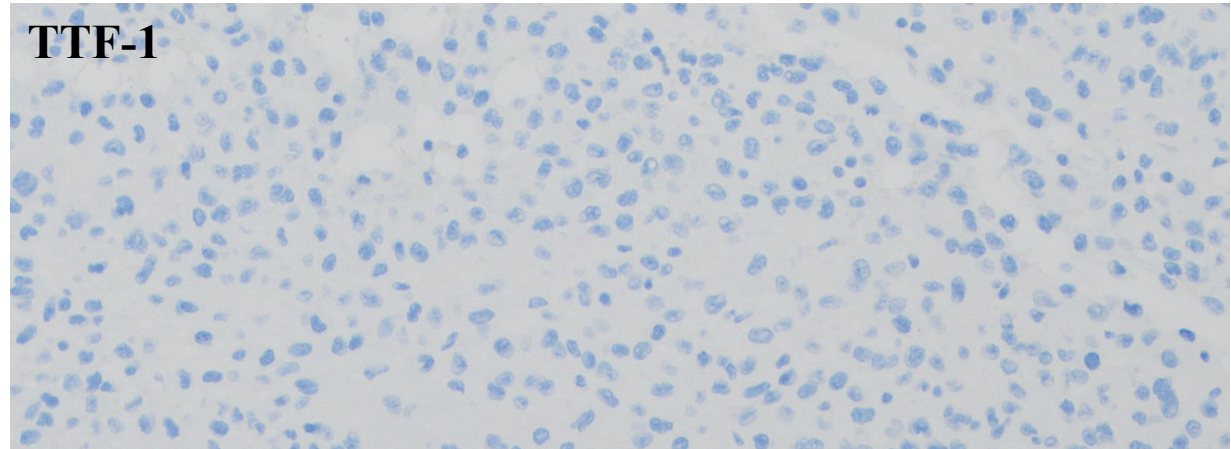
EMA

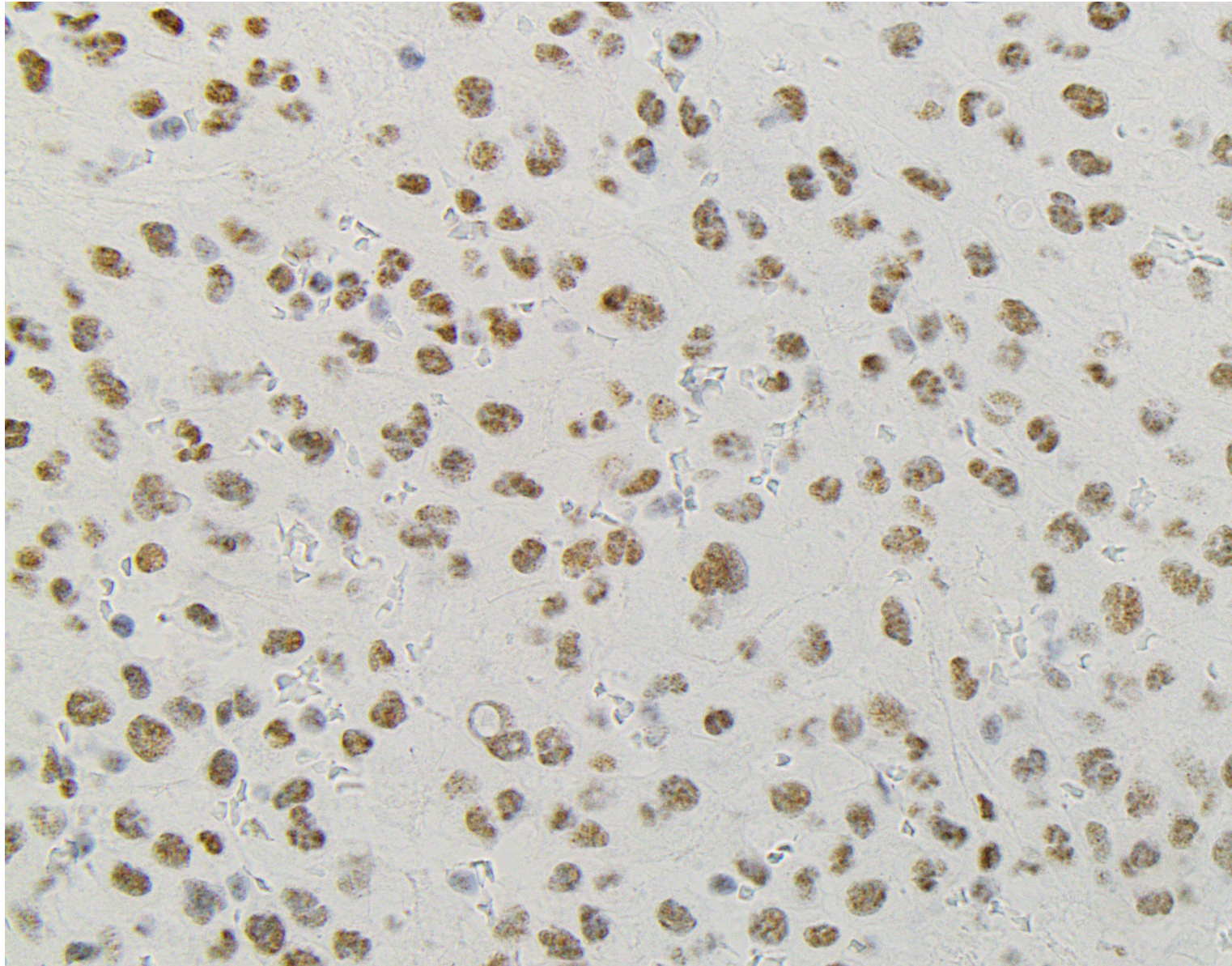


Synaptophysin

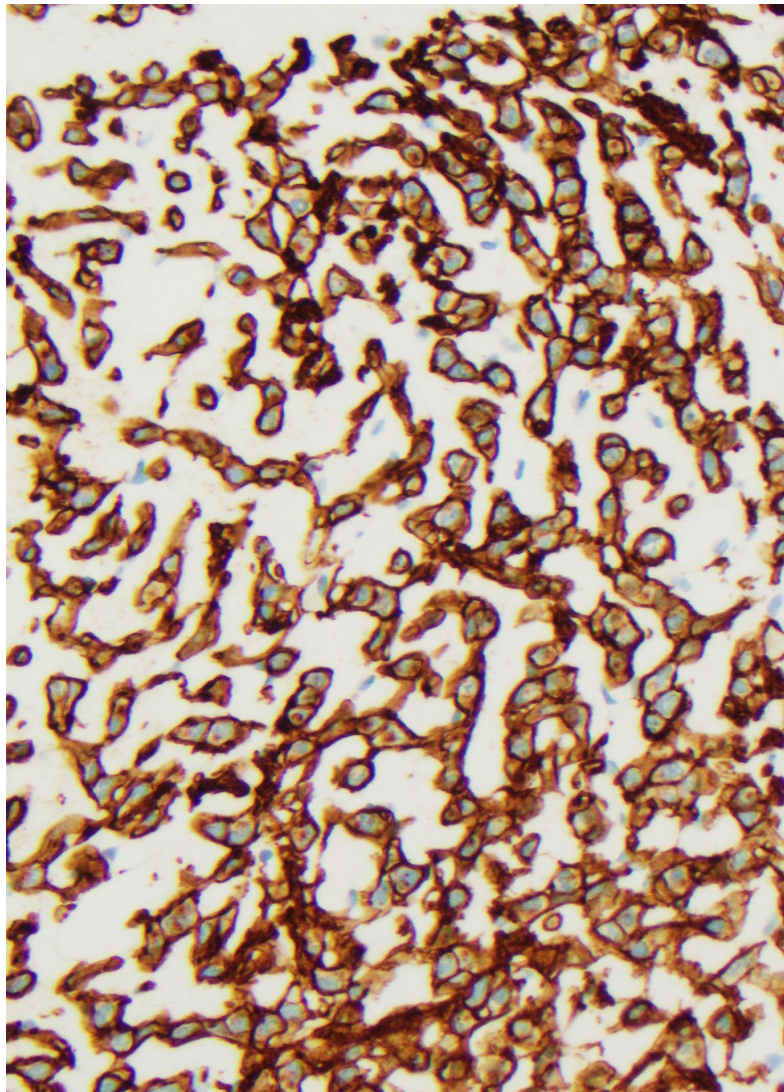


TTF-1

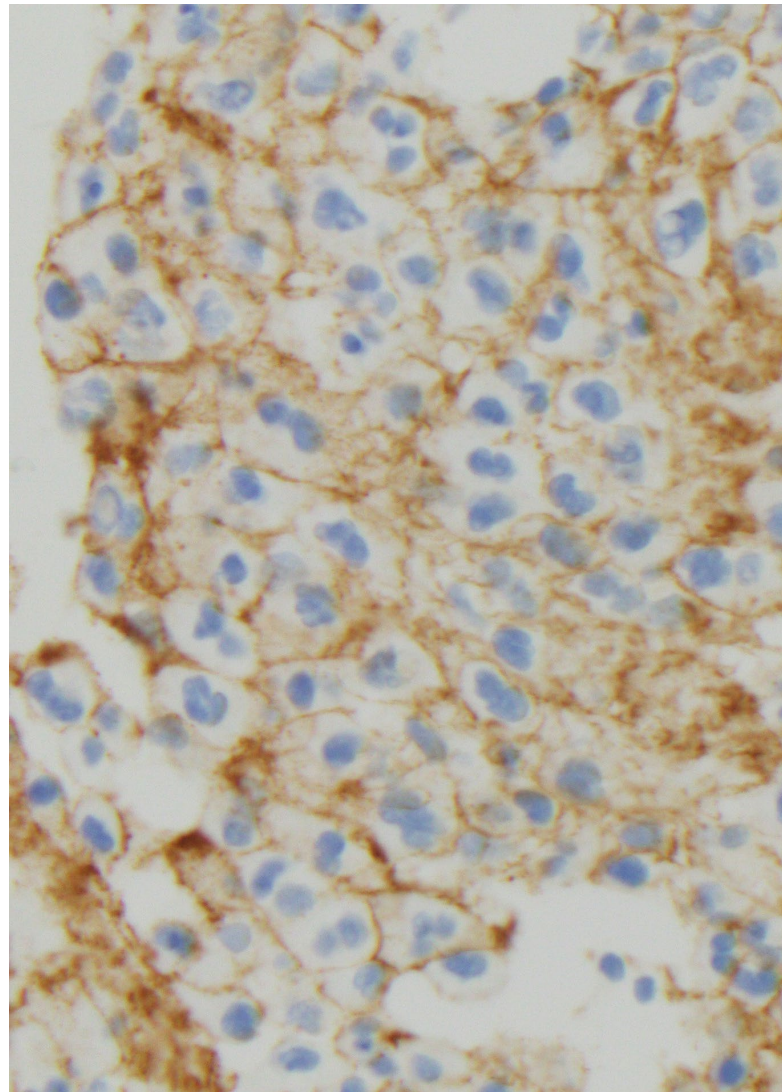




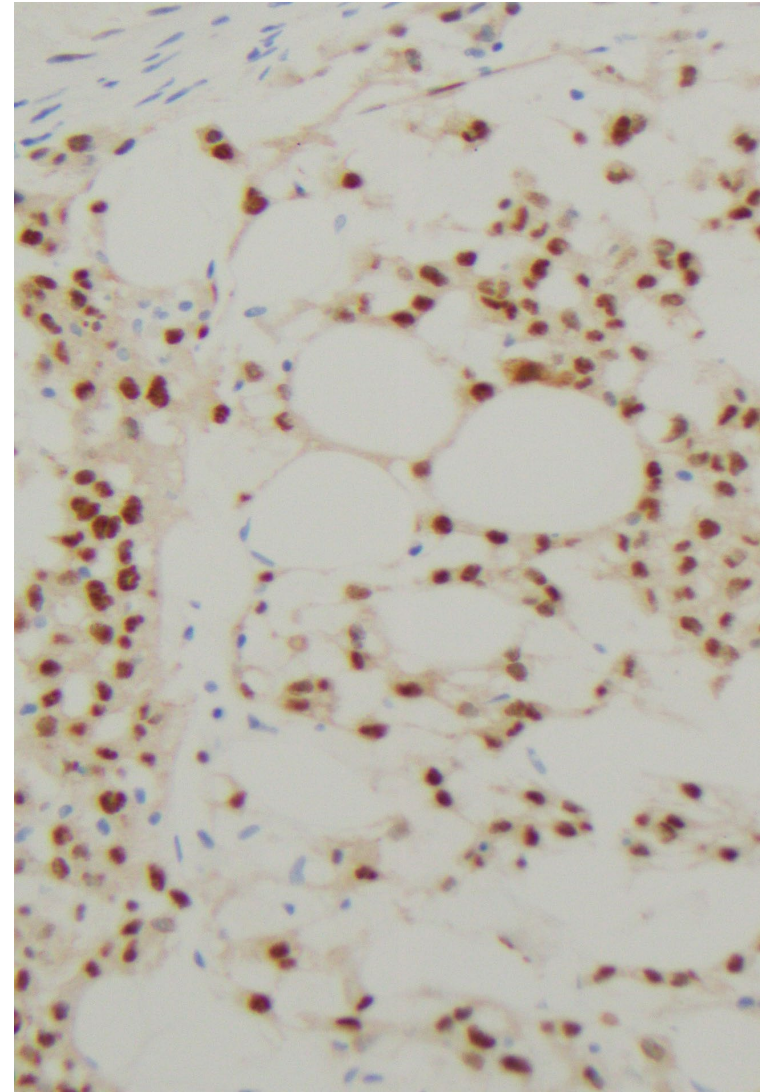
INI-1



CD34



CD31



ERG

Summary of IHC

Negative staining:

CK AE1/AE3	STAT6
CK8/18	D2-40
Brachyury	SMA
GFAP	Desmin
EMA	HHV-8
PR	CAMTA1
Synaptophysin	
TTF-1	
S100	

Positive staining:

CD34
CD31
ERG

INI-1 retained

Sarcoma targeted gene
fusion/rearrangement panel:

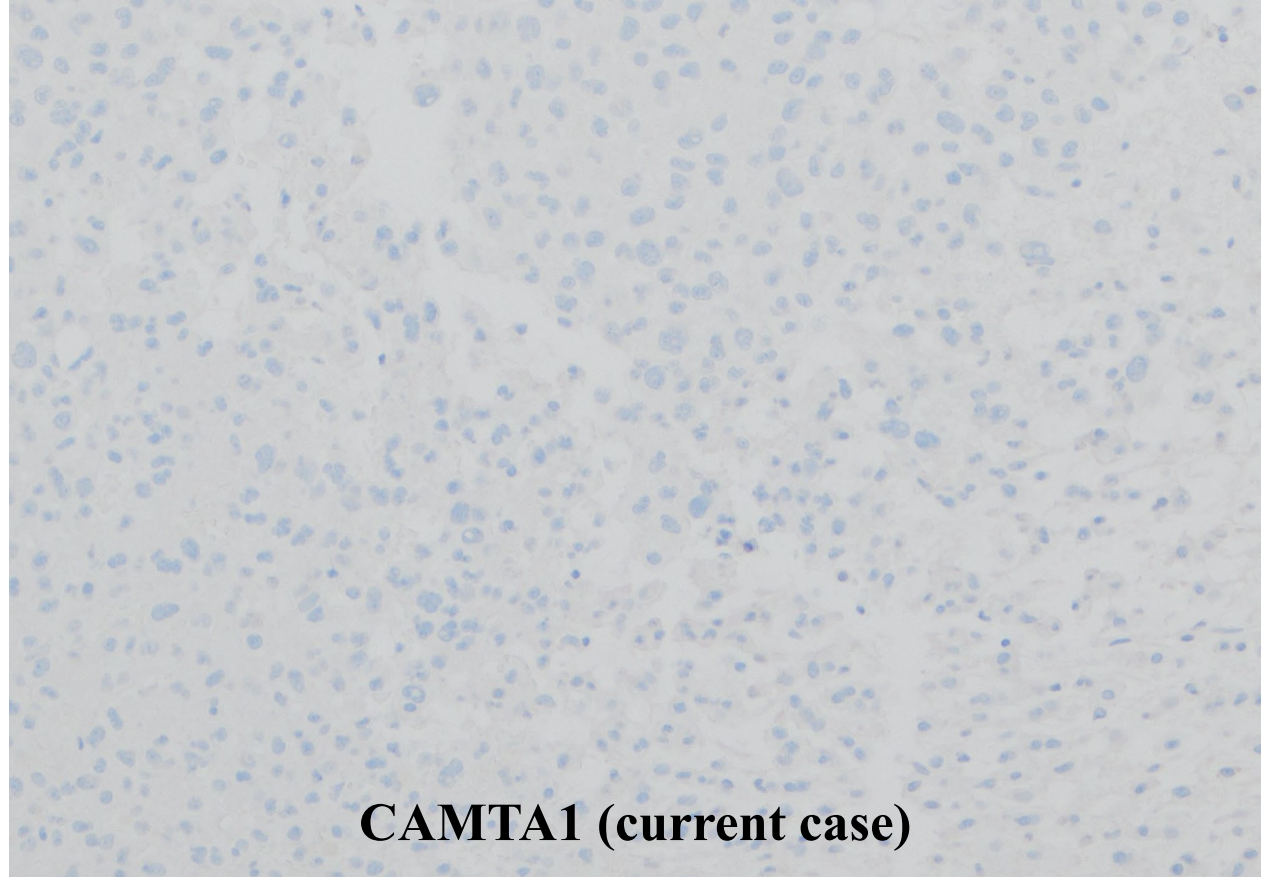
YAP1::TFE3 fusion identified

Diagnosis

Epithelioid Hemangioendothelioma (EHE)
with *YAP1::TFE3* fusion

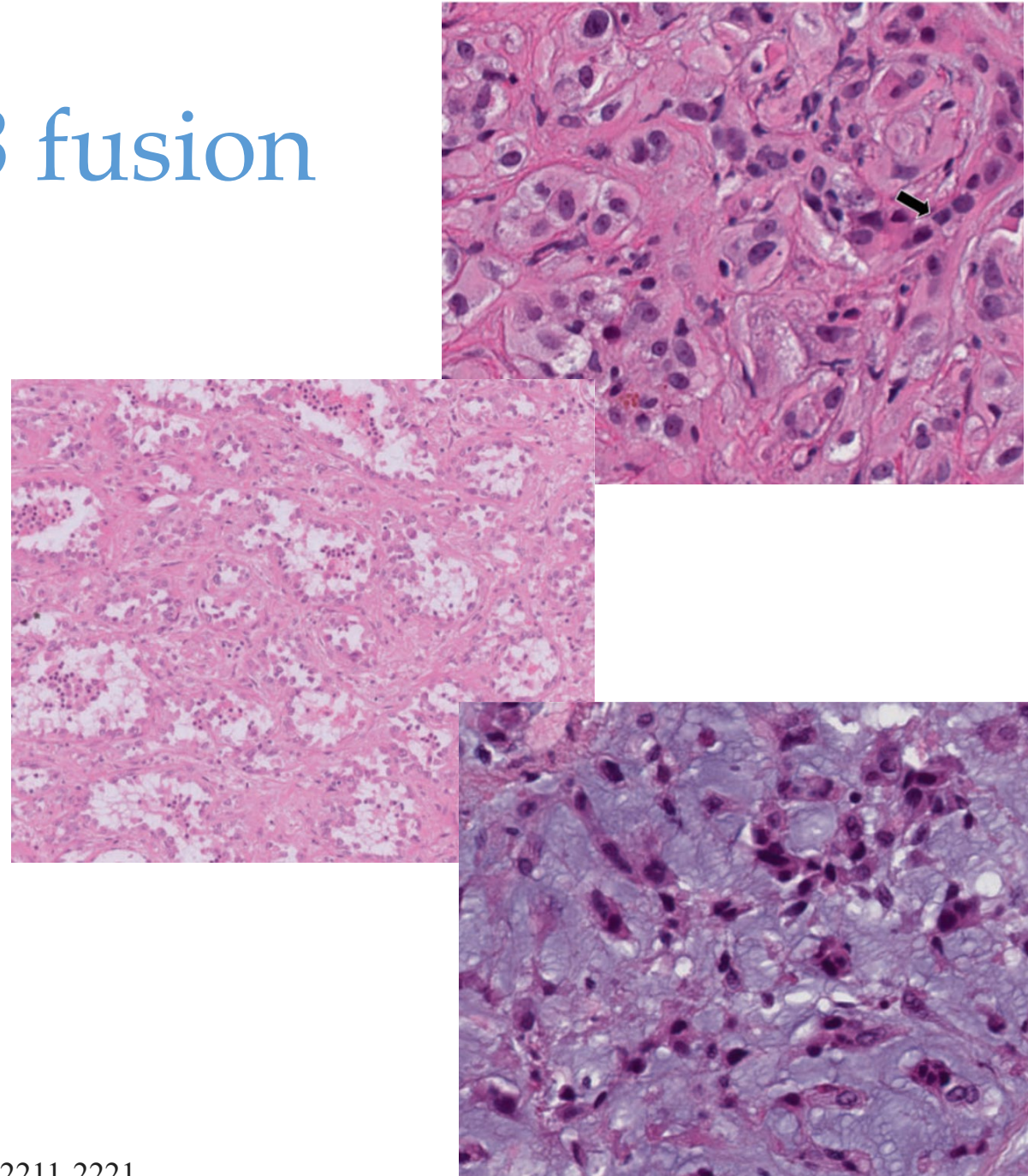
Epithelioid Hemangioendothelioma (EHE)

- Rare malignant vascular neoplasm
- Most commonly occurs in soft tissue, lung, liver, and bone
- Most are associated with a *WWTR1-CAMTA1* fusion (>90% of cases)
 - CAMTA1 immunohistochemistry is a good surrogate marker.



EHE with *YAP1-TFE3* fusion

- Small subset of EHE cases
- Three dominant architectural patterns (Dermawan et al. 2021):
 - Solid sheets/nests separated by fibrous septa
 - Pseudoalveolar and (pseudo)vasoformative pattern
 - Discohesive strands/clusters in myxo-hyaline stroma



Outcomes of EHE with *YAP1-TFE3* fusion

- May be more likely to metastasize than *CAMTA1* fusion cases
- Of 24 cases studied by Dermawan et al. 2021:
 - Over half (59%) presented with multifocal disease
 - 7 cases with distant metastases
 - 5-year progression-free survival 88%
- Many experience years of stable disease despite multifocal and/or metastatic tumor.

Bibliography

Antonescu, Cristina R., Francois Le Loarer, Juan-Miguel Mosquera, Andrea Sboner, Lei Zhang, Chun-Liang Chen, Hsiao-Wei Chen, et al. “Novel *YAP1-TFE3* Fusion Defines a Distinct Subset of Epithelioid Hemangioendothelioma.” *Genes, Chromosomes and Cancer* 52, no. 8 (August 2013): 775–84. <https://doi.org/10.1002/gcc.22073>.

Dermawan, Josephine K., Elizabeth M. Azzato, Steven D. Billings, Karen J. Fritchie, Sebastien Aubert, Armita Bahrami, Marta Barisella, et al. “YAP1-TFE3-Fused Hemangioendothelioma: A Multi-Institutional Clinicopathologic Study of 24 Genetically-Confirmed Cases.” *Modern Pathology* 34, no. 12 (December 2021): 2211–21. <https://doi.org/10.1038/s41379-021-00879-7>.

Flucke, Uta, Rob Jc Vogels, Nicolas De Saint Aubain Somerhausen, David H Creytens, Robert G Riedl, Joost M Van Gorp, Anya N Milne, et al. “Epithelioid Hemangioendothelioma: Clinicopathologic, Immunohistochemical, and Molecular Genetic Analysis of 39 Cases.” *Diagnostic Pathology* 9, no. 1 (December 2014): 131. <https://doi.org/10.1186/1746-1596-9-131>.

