

# Case 2023-2

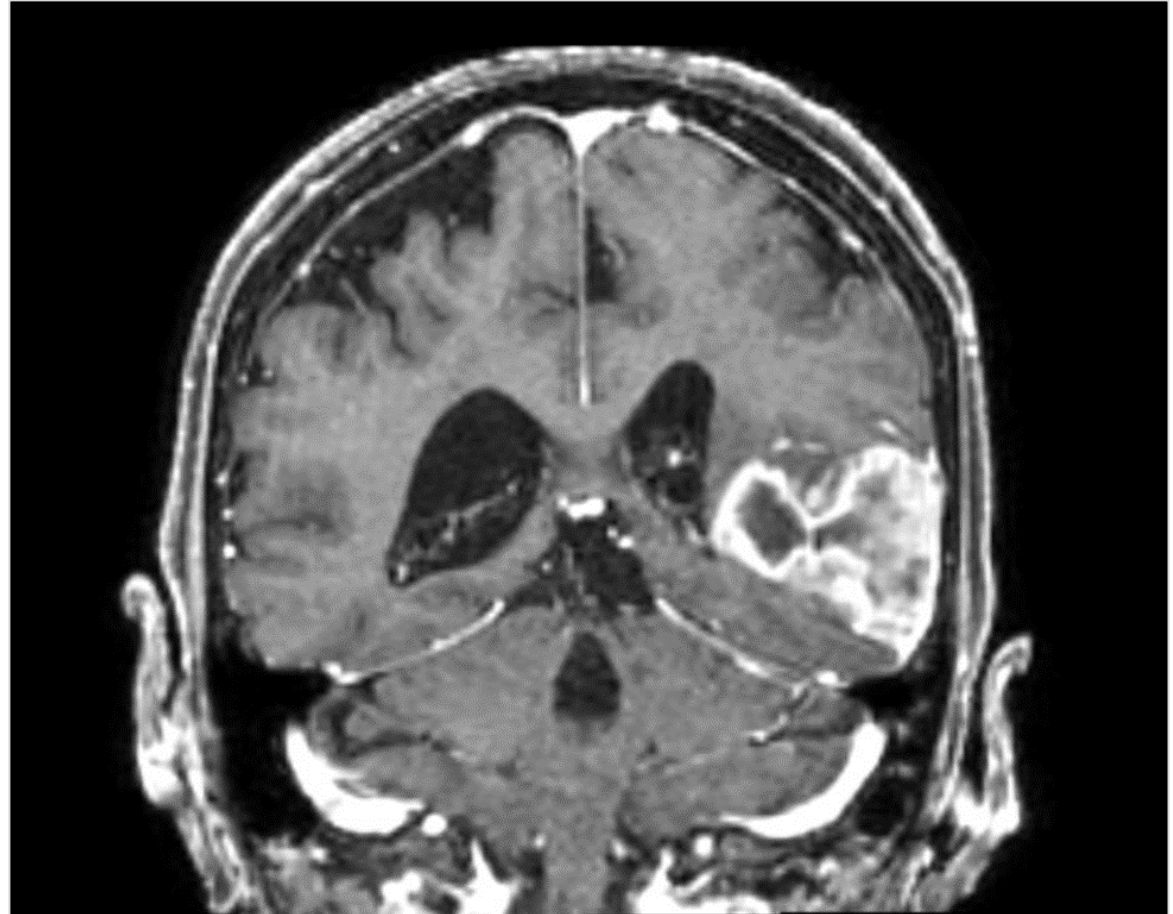
Dr. William O. Humphrey, MD

Dr. John C. DeWitt, MD PhD

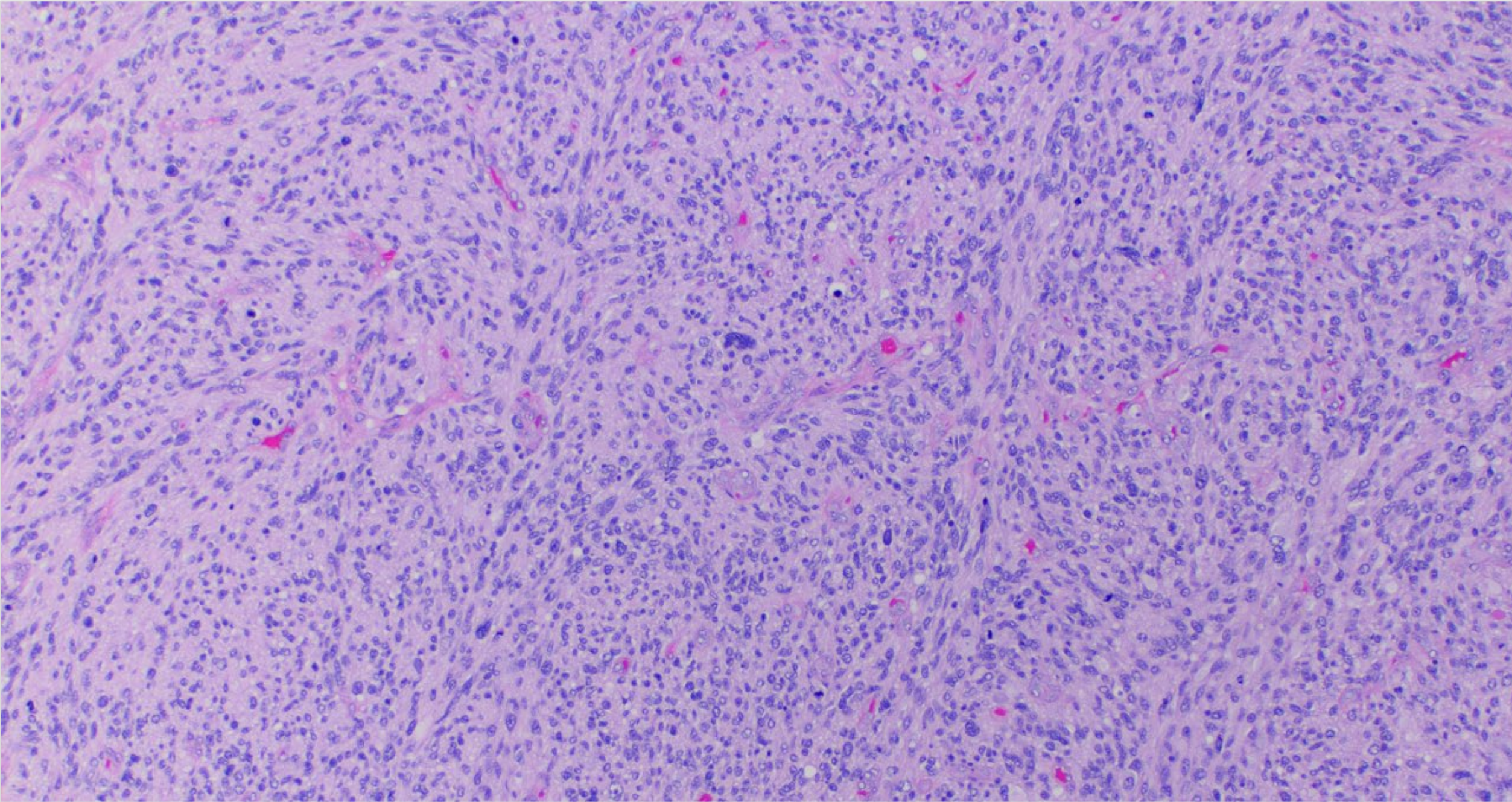
University of Vermont Medical Center

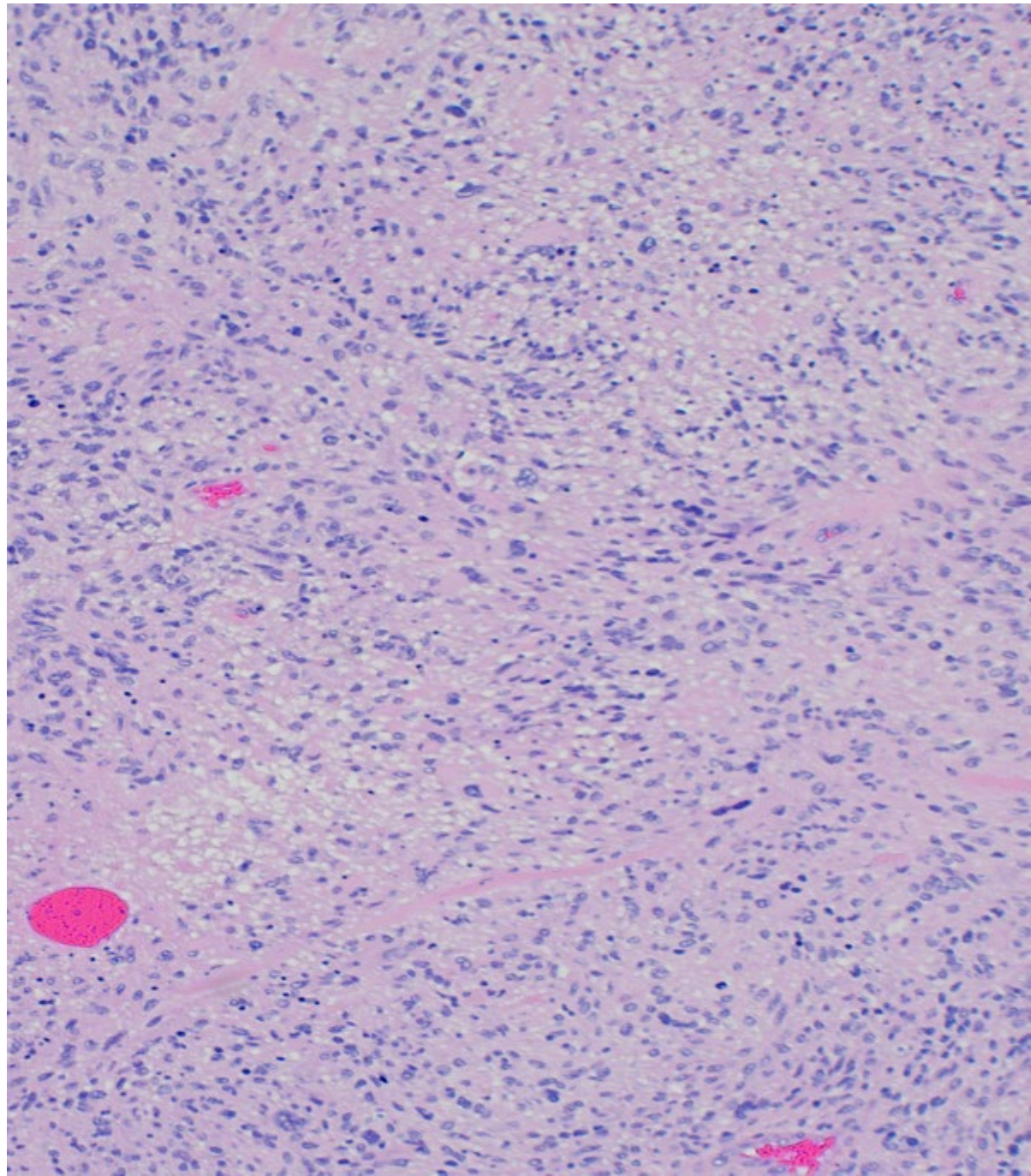
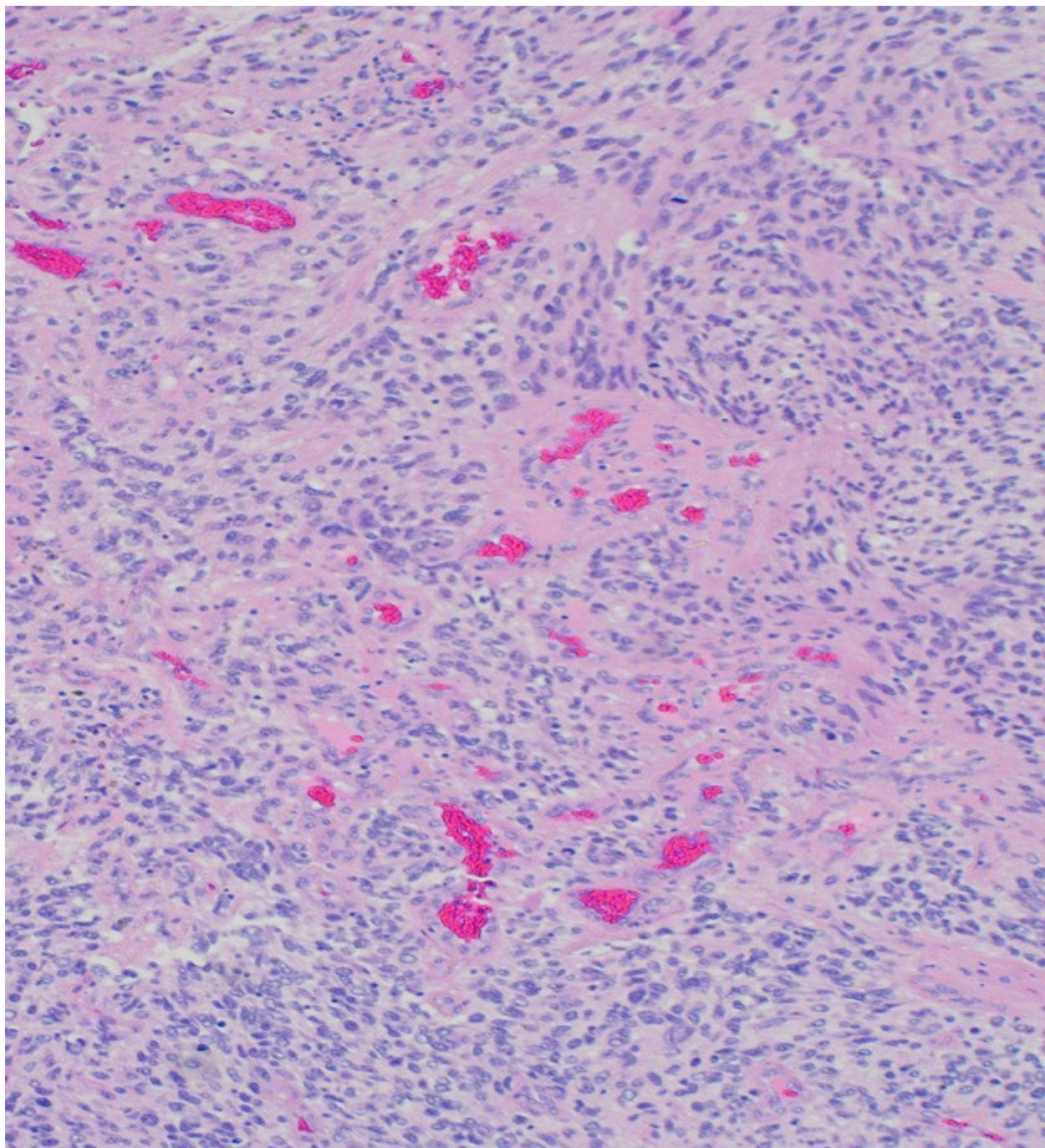
# Clinical History

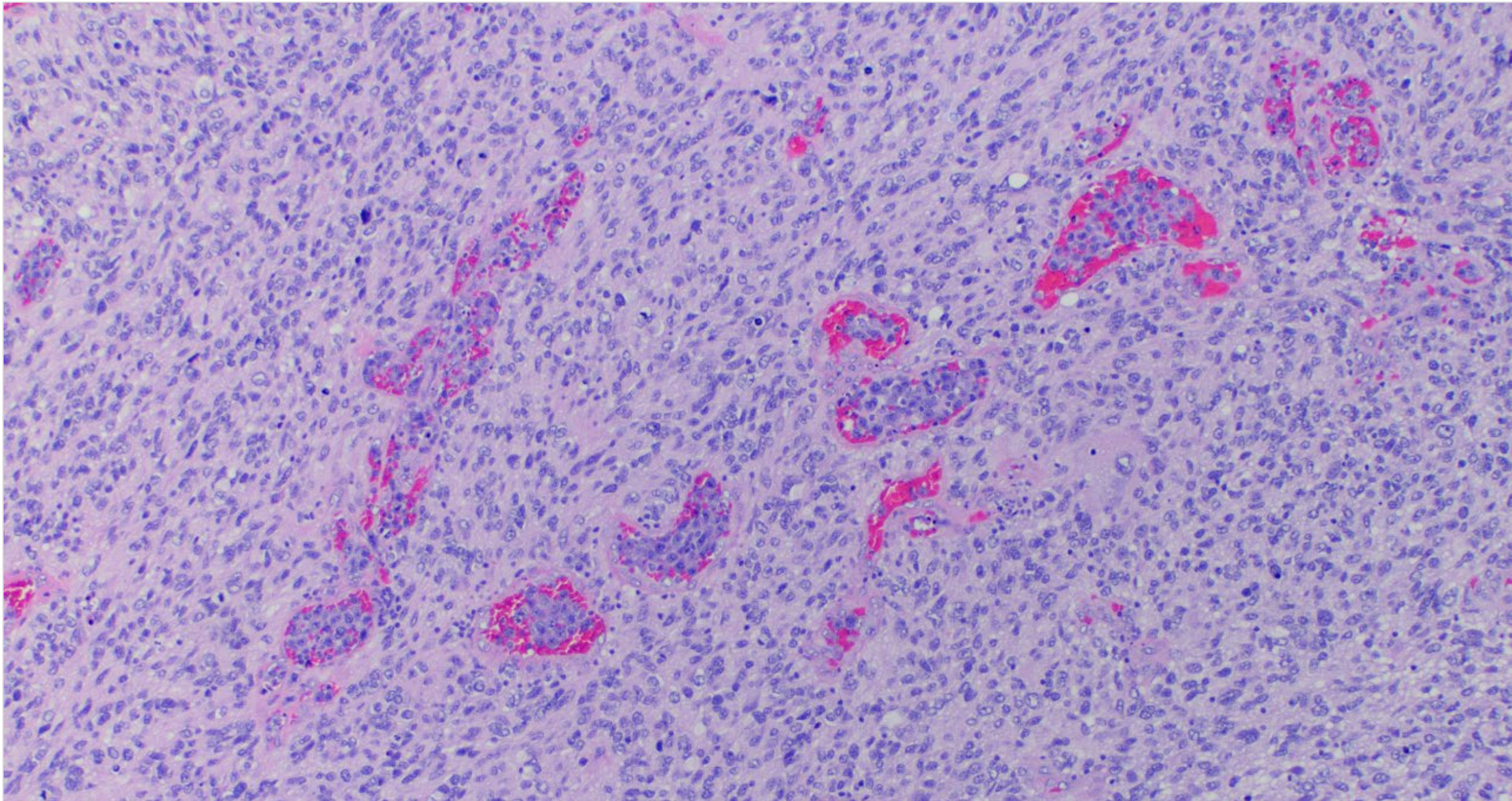
- Eighty-two-year-old woman
- Presented with acute neurocognitive decline
- MRI revealed a left temporal lobe mass

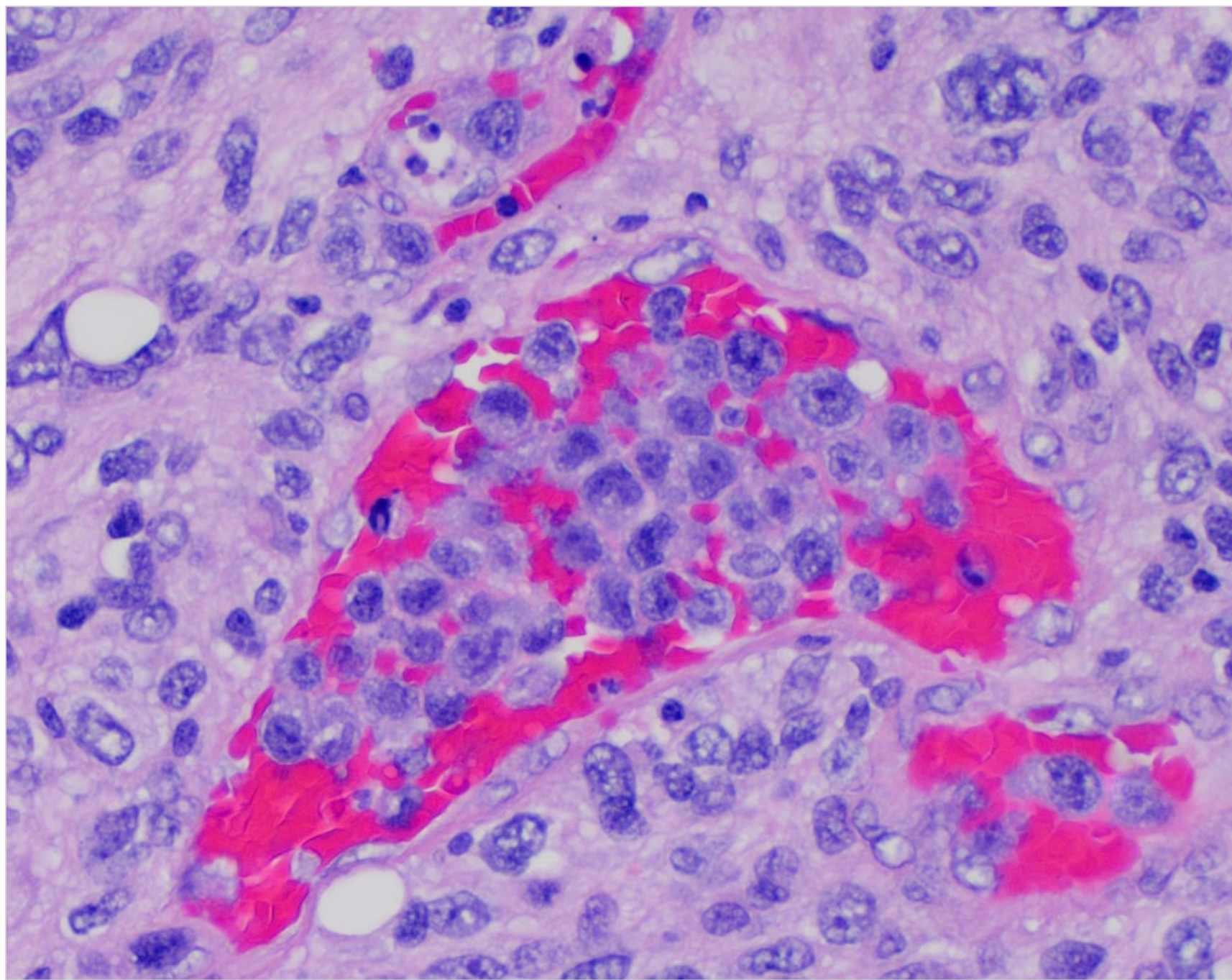


**T1-post-GAD**

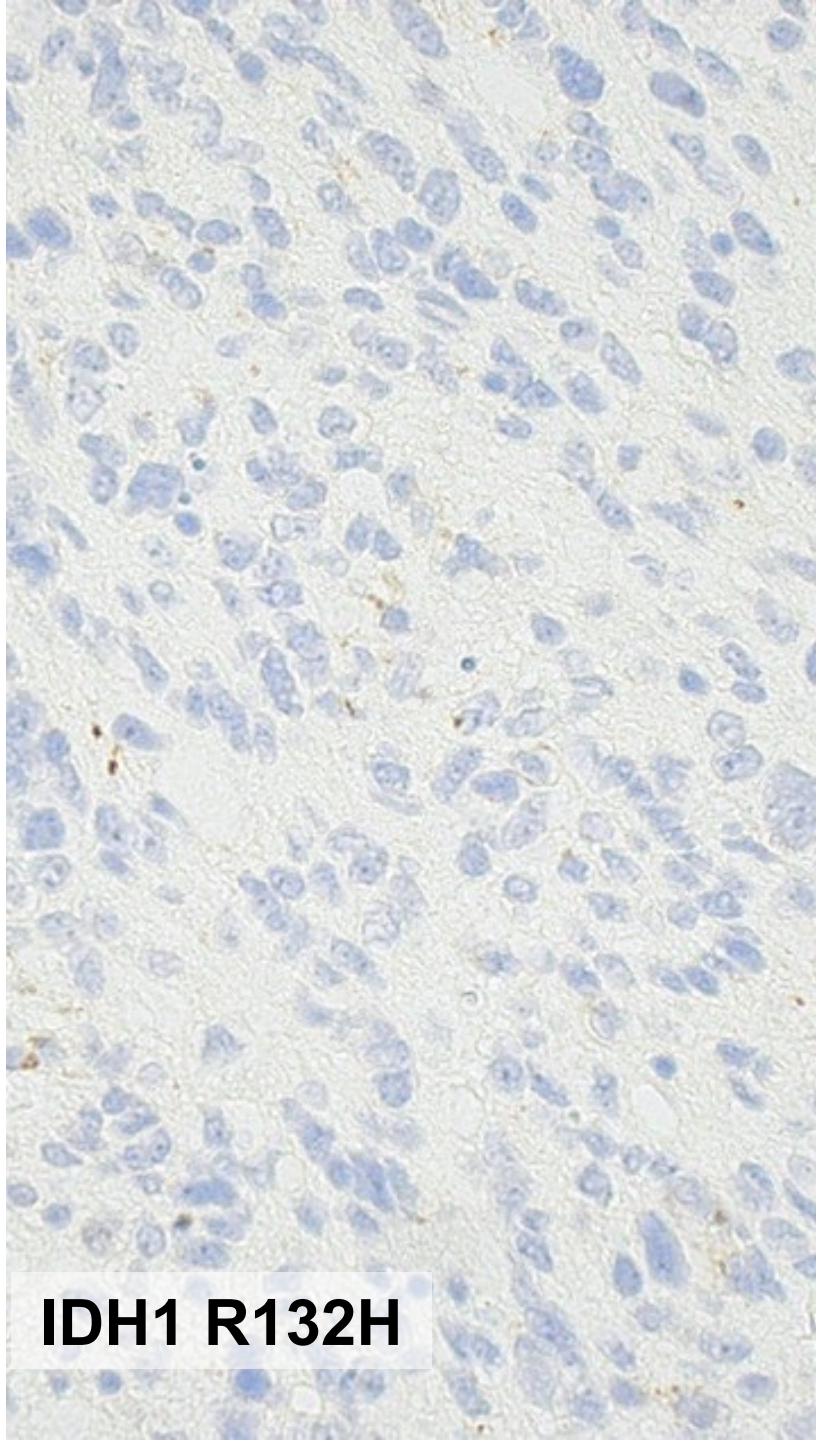




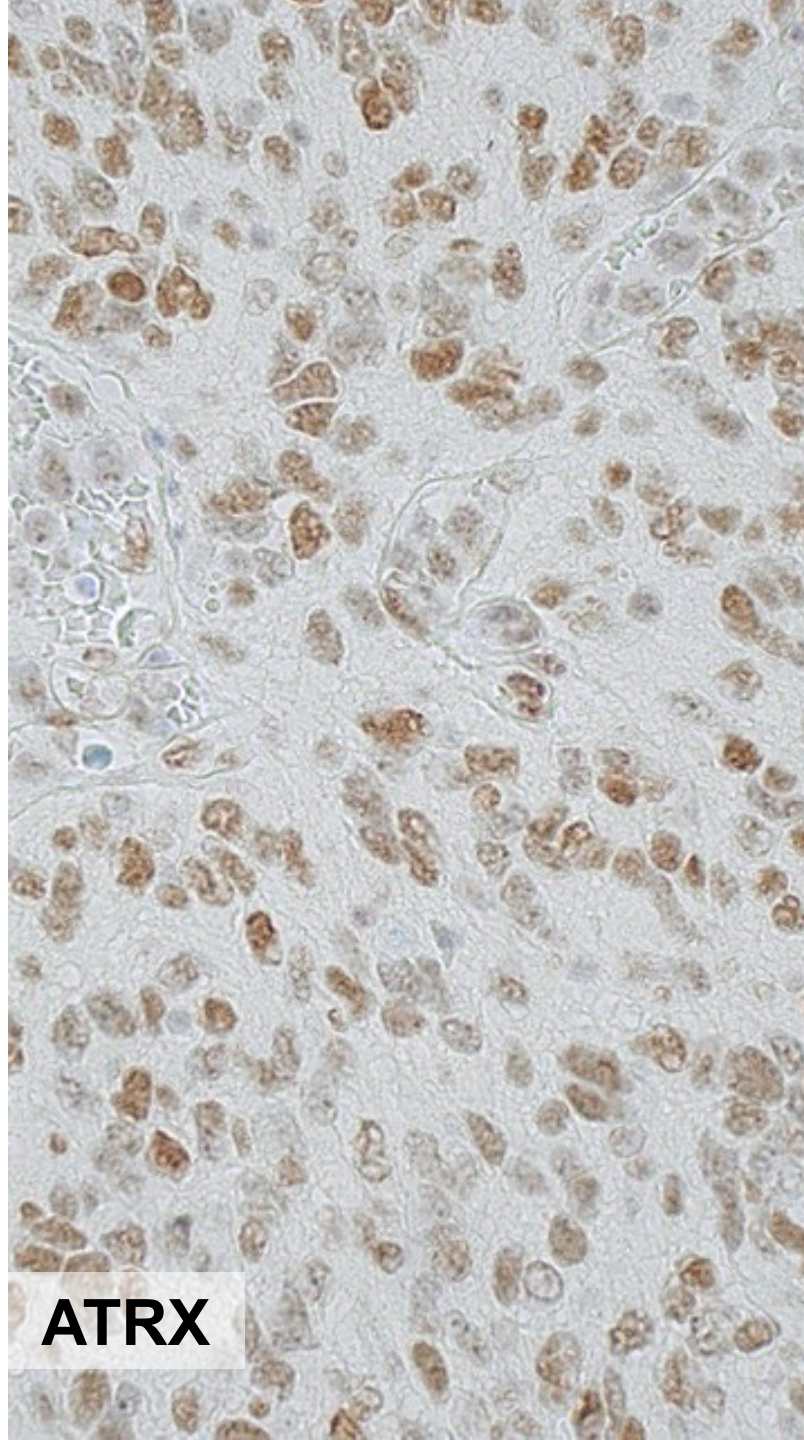




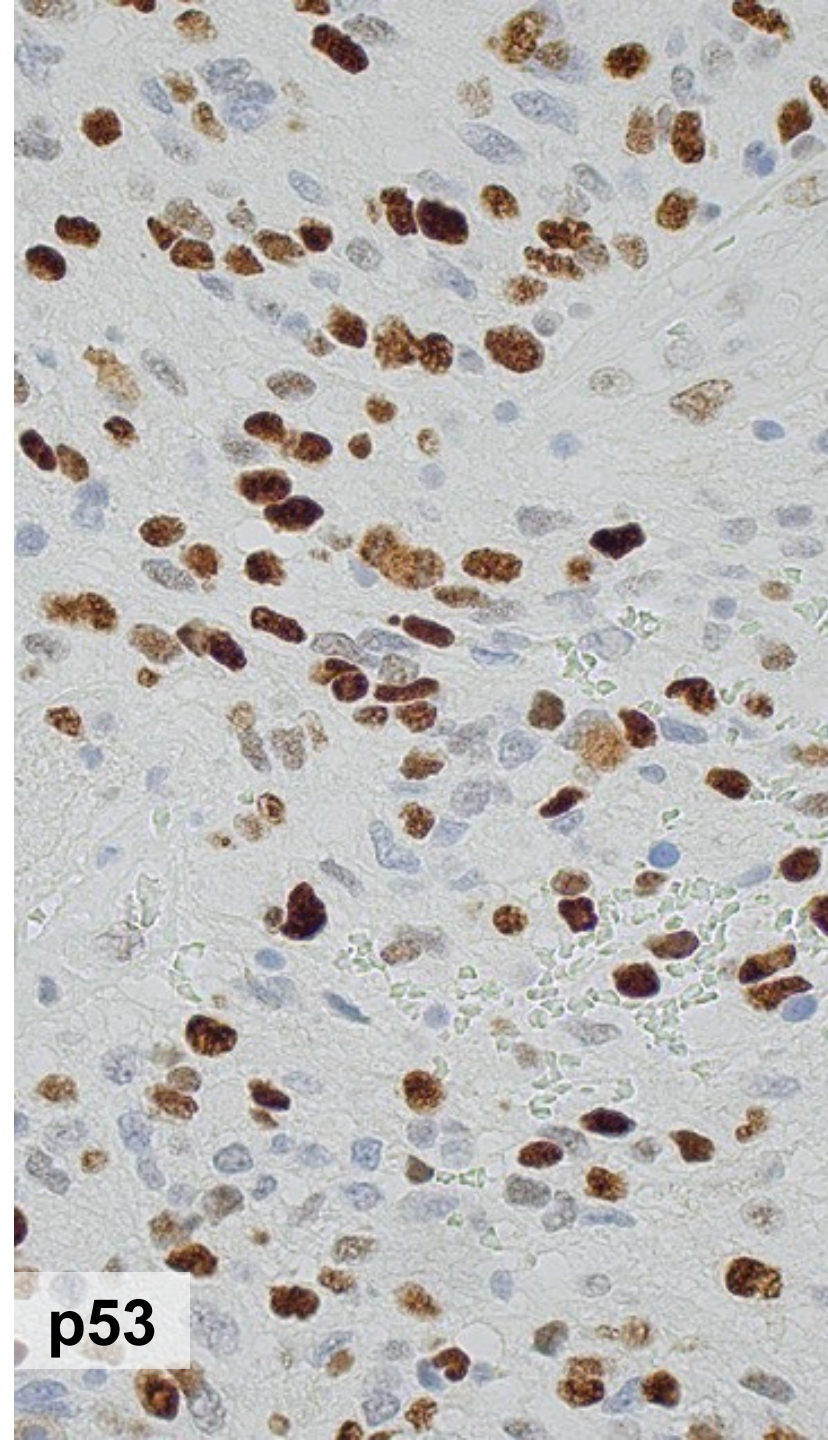
Diagnosis?



**IDH1 R132H**



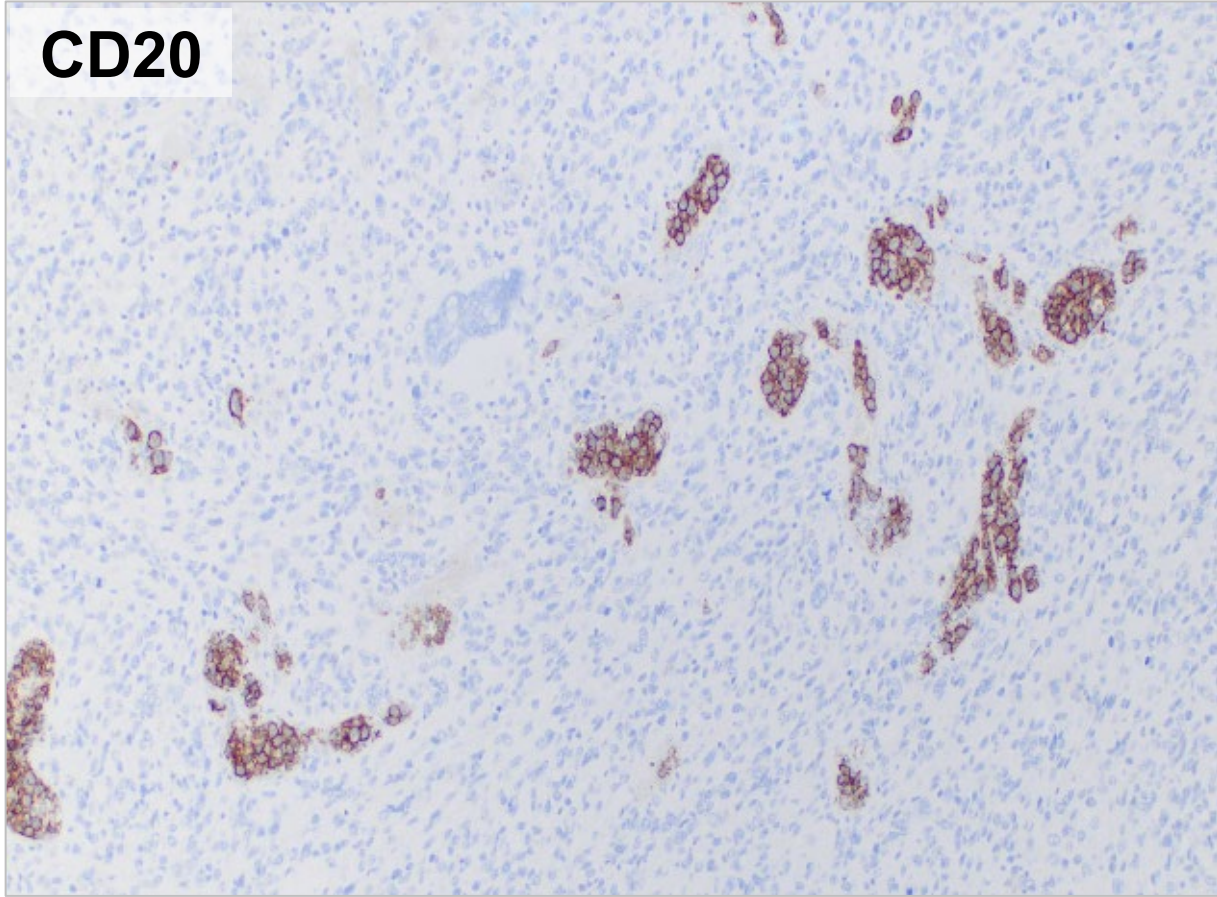
**ATRX**



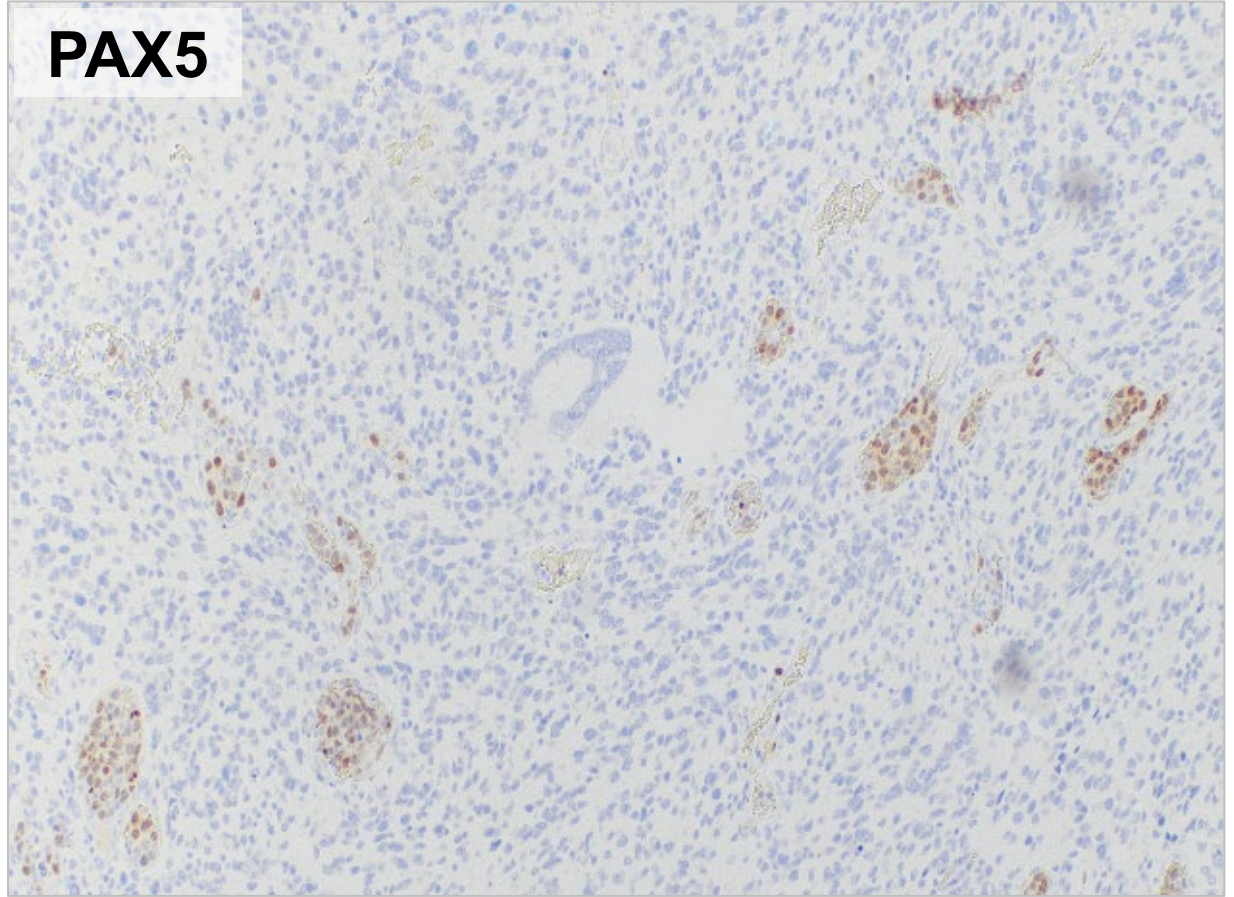
**p53**

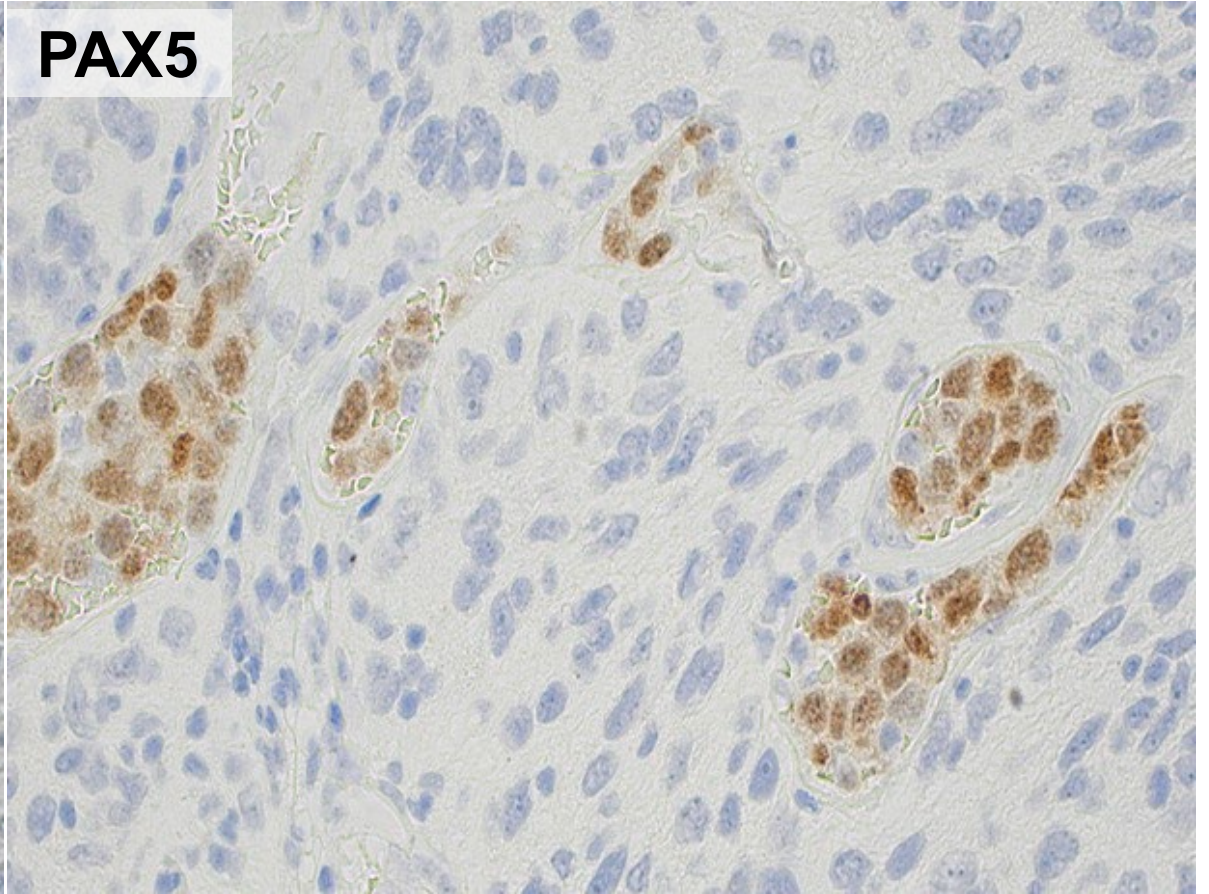
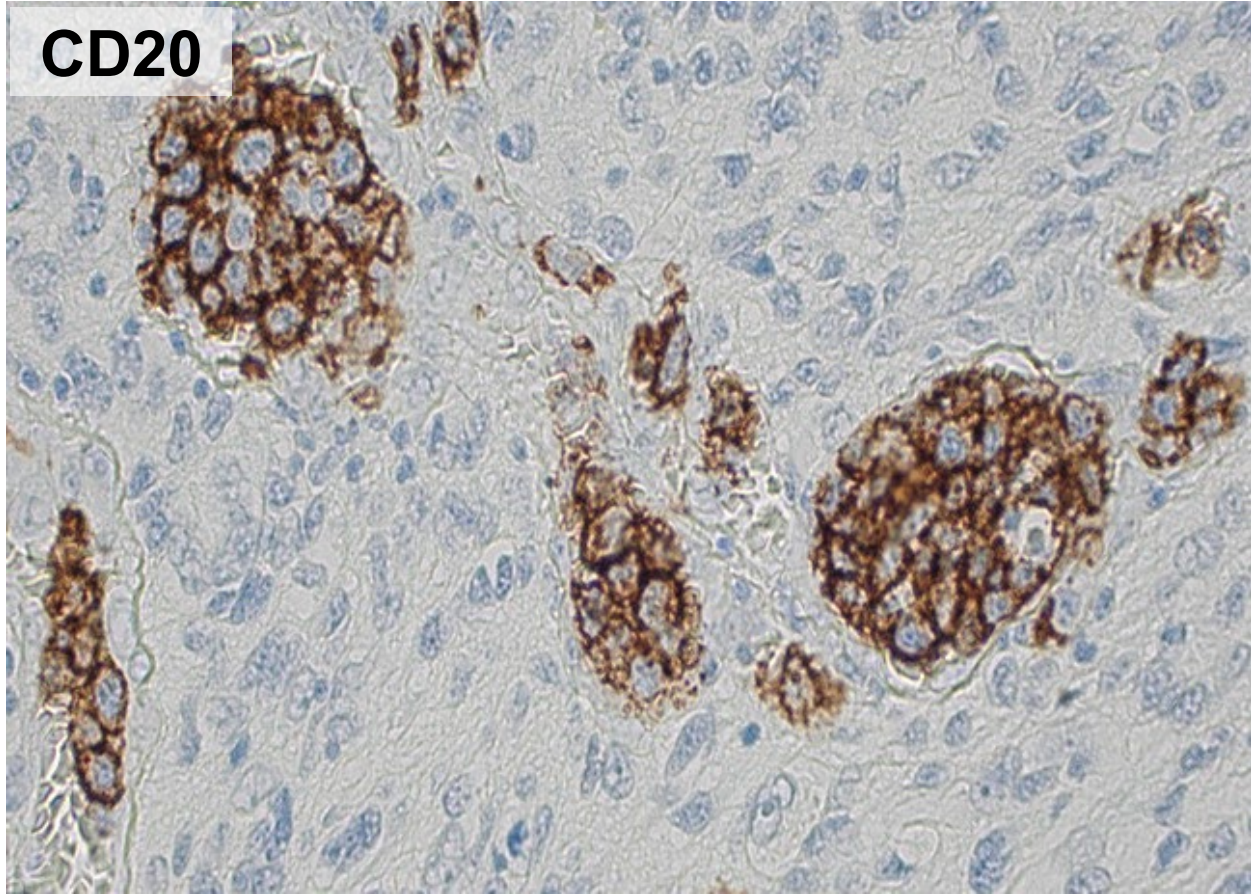


**CD20**



**PAX5**







# Final Diagnosis

**INTEGRATED DIAGNOSIS:** GLIOBLASTOMA, IDH-WILDTYPE, CNS WHO GRADE 4

**HISTOLOGICAL DIAGNOSIS:** GLIOBLASTOMA

**CNS WHO GRADE:** 4

**MOLECULAR INFORMATION (by immunohistochemistry):**

- IDH1 R132H: negative (consistent with wild type)
  - ATRX: nuclear expression retained (consistent with wild type)
  - p53: many strong positive (consistent with *TP53* mutation )
- 
- Positive for MGMT promoter methylation.

# Final Diagnosis cont.

In addition, focal vessels contain large malignant appearing lymphoid cells within blood vessel lumens

- Positive for CD20 and Pax5, and negative for EBER, consistent with a diagnosis of **concurrent intravascular large B-cell lymphoma (IVLBCL)**.



# Discussion

- Intravascular large B-cell lymphoma (IVLBCL) is characterized by lymphoma cells, predominantly within lumina of blood vessels, especially capillaries, with the exclusion of larger arteries and veins
- Few to no circulating lymphoma cells in peripheral blood, lymph node involvement is rare
- Localization to blood vessel lumens partially explained by lack of CD29 ( $\beta 1$  integrin) and CD54 (ICAM1), both of which are important for trans-vascular lymphocyte migration



# Discussion

- Clinical presentation ranges from mild systemic symptoms (fever, pain, organ specific symptoms) to severe symptoms (signs of multiorgan failure)
  - Imaging and laboratory test are often non-specific
- Skin lesions and neurologic impairment are most common organ-specific findings
  - Diagnosis typically established by biopsy of affected or enlarged organ, most often a skin biopsy



# Discussion

- IVLBCL accounts for 1% of B-cell lymphomas with a median age of 70 years
- Patients with IVLBCL have a median overall survival of 105 months, with chemotherapy 135 months, 5-year survival of approximately 50 - 60%
- To our knowledge there are no cases of coinciding glioblastoma and IVLBCL in the current literature

# Patient Followup

- Completed 7 (of 10) fractions of radiation therapy
  - Radiation treatments stopped due to seizures requiring admission
- Currently on cycle 3 of temozolomide
  - Complicated by cellulitis and bacteremia
- Recent MRI showing increasing enhancement in resection cavity concerning for tumor progression



# References

1. Shimada K, Kiyoi H. Current progress and future perspectives of research on intravascular large B-cell lymphoma. *Cancer Sci*. 2021 Oct;112(10):3953-3961. doi: 10.1111/cas.15091. Epub 2021 Aug 9. PMID: 34327781; PMCID: PMC8486207.
2. Ponzoni M, Campo E, Nakamura S. Intravascular large B-cell lymphoma: a chameleon with multiple faces and many masks. *Blood*. 2018 Oct 11;132(15):1561-1567. doi: 10.1182/blood-2017-04-737445. Epub 2018 Aug 15. PMID: 30111607.
3. Mihaljevic B, Sternic N, Skender Gazibara M, Sretenovic A, Antic D, Terzic T, Kostic V. Intravascular large B-cell lymphoma of central nervous system - a report of two cases and literature review. *Clin Neuropathol*. 2010 Jul-Aug;29(4):233-8. doi: 10.5414/npp29233. PMID: 20569674.
4. Matsue K, Abe Y, Narita K, Kobayashi H, Kitadate A, Takeuchi M, Miura D, Takeuchi K. Diagnosis of intravascular large B cell lymphoma: novel insights into clinicopathological features from 42 patients at a single institution over 20 years. *Br J Haematol*. 2019 Nov;187(3):328-336. doi: 10.1111/bjh.16081. Epub 2019 Jul 3. PMID: 31267524; PMCID: PMC6900202.
5. Gajaria PK, Shenoy AS, Baste BD, Goel NA. Glioblastoma Occurring as Second Primary in a Treated Case of Diffuse Large B-Cell Lymphoma. *Asian J Neurosurg*. 2021 Feb 23;16(1):178-182. doi: 10.4103/ajns.AJNS\_230\_20. PMID: 34211890; PMCID: PMC8202363.