Temporal lobe tumor

- Dissecting the endothelial cell landscape in meningioma: single-cell insights into PLVAP+ subpopulations and their role in tumor angiogenesis
- A unique case of extra-cerebral diffuse glioneuronal tumor with oligodendroglioma-like features and nuclear clusters
- Visual hallucinations in neurosurgery: A systematic review and two case insights into Charles Bonnet Syndrome
- A Rare Case of Brain Metastasis of Gastric Neuroendocrine Carcinoma
- Gliomagenesis following chronic subdural hematoma: A case report
- Clinicopathological features of EBV-positive polymorphic B-cell lymphoproliferative disorders involving central nervous system in people living with HIV
- Potential Risk of Cognitive Impairment Due to Irradiation of Neural Structures in Locally Advanced Nasopharyngeal Cancer Treated by Curative Radiotherapy
- Clinical Findings in Temporal Lobe Epilepsy Associated With Isolated Amygdala Enlargement

Temporal lobe glioma

see Temporal lobe glioma.

Temporal mediobasal tumor

see Temporal mediobasal tumor.

Histology

tumors (in order of decreasing frequency)

Ganglioglioma

Dysembryoplastic neuroepithelial tumor (DNET).

Pilocytic astrocytoma

Diffuse astrocytoma

Oligodendroglioma

Pleomorphic xanthoastrocytoma (PXA)

Multinodular and vacuolating neuronal tumor of the cerebrums (MVNT)

Clinical features

Temporal lobe tumor clinical features.

Differential diagnosis

Temporal lobe consider:

Cysts

neuroepithelial cyst

choroid fissural cyst

other

herpes simplex encephalitis: usually some bilateral changes, and different presentation

limbic encephalitis: usually some bilateral changes, and different presentation

mesial temporal sclerosis (MTS)

If cortical elsewhere consider:

low-grade astrocytoma

ganglioglioma

pleomorphic xanthoastrocytoma (PXA)

oligoastrocytoma/oligodendroglioma

Taylor dysplasia

Treatment

Temporal lobe tumors causing chronic intractable epilepsy demonstrated excellent results in seizure improvement after surgery [1)].

There has been considerable controversy regarding most appropriate management, with some advocating lesionectomy only, and other arguing for more extensive resection.

A study specifically addressing this issue, it was found that patients treated with lesionectomy alone

had lower seizure-free outcomes than those with more extensive electrophysiologically guided resection.

In another study, however, postoperative seizure control was achieved in 94% of patients after complete lesionectomy regardless of the extent of seizure focus resection.

Thus, this issue remains to be resolved, and the only agreement at this time appears to be that gross-total resection, as long as it can be safely performed, should be the minimum goal of surgery.

Visual field defects (VFDs) due to optic radiation (OR) injury are a common complication of temporal lobe surgery. Faust and Vajkoczy analyzed whether preoperative visualization of the optic tract would reduce this complication by influencing the surgeon's decisions about surgical approaches. The authors also determined whether white matter shifts caused by temporal lobe tumors would follow predetermined patterns based on the tumor's topography.

One hundred thirteen patients with intraaxial tumors of the temporal lobe underwent preoperative diffusion tensor imaging (DTI) fiber tracking. In 54 of those patients, both pre- and postoperative VFDs were documented using computerized perimetry. Brainlab's iPlan 2.5 navigation software was used for tumor reconstruction and fiber visualization after the fusion of DTI studies with their respective magnetization-prepared rapid gradient-echo (MP-RAGE) images. The tracking algorithm was as follows: minimum fiber length 100 mm, fractional anisotropy threshold 0.1. The lateral geniculate nucleus and the calcarine cortex were employed as tract seeding points. Shifts of the OR caused by tumor were visualized in comparison with the fiber tracking of the patient's healthy hemisphere.

Temporal tumors produced a dislocation of the OR but no apparent fiber destruction. The shift of white matter tracts followed fixed patterns dependent on tumor location: Temporolateral tumors resulted in a medial fiber shift, and thus a lateral transcortical approach is recommended. Temporopolar tumors led to a posterior shift, always including Meyers loop; therefore, a pterional transcortical approach is recommended. Temporomesial tumors produced a lateral and superior shift; thus, a transsylvian-transcisternal approach will result in maximum sparing of the fibers. Temporocentric tumors also induced a lateral fiber shift. For those tumors, a transsylvian-transopercular approach is recommended. Tumors of the fusiform gyrus generated a superior (and lateral) shift; consequently, a subtemporal approach is recommended to avoid white matter injury. In applying the approaches recommended above, new or worsened VFDs occurred in 4% of the patient cohort. Total neurological and surgical morbidity were less than 10%. In 90% of patients, gross-total resection was accomplished.

Preoperative visualization of the OR may help in avoiding postoperative VFDs [2].

Outcome

Visual field defects (VFDs) due to optic radiation (OR) injury are a common complication of temporal lobe surgery.

Little is known regarding the neurocognitive impact of temporal lobe tumor resection.

In patients with temporal lobe glioma, neurocognitive functioning (NCF) decline in the subacute postoperative period is common. As expected, patients with Left temporal lobe tumor (LTL) show more frequent and severe decline than patients with right temporal lobe tumor (RTL), particularly on verbally mediated measures. However, a considerable proportion of patients with RTL tumor also

exhibit decline across various domains, even those typically associated with left hemisphere structures, such as verbal memory. While patients with RTL lesions may show even greater decline in visuospatial memory, this domain was not assessed. Nonetheless, neuropsychological assessment can identify acquired deficits and help facilitate early intervention in patients with temporal lobe glioma [3].

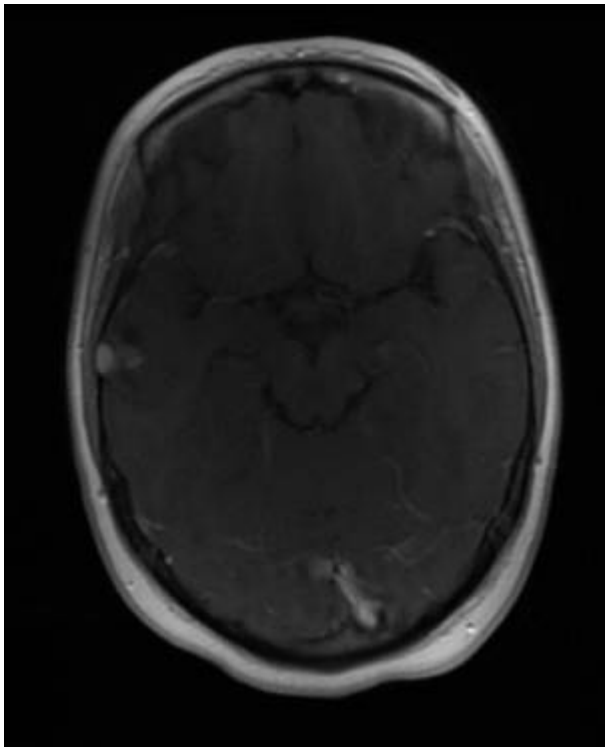
Case report

14-year-old woman admitted due to a right temporal lobe tumor.

She was transferred from other Hospital after finding a right temporal lesion on MRI in the context of seizures.

Unprovoked focal seizure. Paroxysmal episodes of blank stare, unresponsiveness, Orofacial Dyskinesia, Guttural sounds, and hypersalivation lasting approximately 30 seconds. Transient global amnesia. He refers to a similar episode a month ago.

Cranial magnetic resonance imaging without and with intravenous contrast (8ml gadovist) was performed with the usual protocol: sagittal T1 TSE, axial T2 TSE, coronal T2 TSE, axial T2 FLAIR, axial T2 EG and axial diffusion.



A signal alteration centered on the anterior pole of the right temporal lobe of approx. 2.2×2.7×1.7cm (TxAPxCC) associates diffuse cortical thickening and the presence of a heterogeneous lesion with a solid and microcystic component that is hypointense in the T1 sequences and hyperintense in the T2 sequences, it also presents a hyperintensity of the peritumoral signal and an increase in diffusion in DWI sequences without presenting signal drop in the ADC. The perfusion sequences did not show an increase in cerebral perfusion at this level with ADC: 1.3. This lesion presents a heterogeneous contrast uptake, drawing attention to the presence of a solid pole adjacent to the dura that presents intense enhancement, but does not present dural enhancement. These findings may be related to a dysembryogenic neuroepithelial tumor (DNET) or to a Ganglioglioma as the main differential

diagnoses. No microbleeds were seen in the gradient echo T2 sequence or calcifications. The rest of the cerebral, cerebellar and brainstem parenchyma show no morphological or signal alterations. Middle line centered. Free basal and perimesencephalic cisterns. Centered ventricular system with preserved ventricular size. The main arterial and intracranial venous vessels show a caliber and signal void within normality. Unoccupied paranasal sinuses and mastoid cells. Slight descent of the cerebellar tonsils not significant (2 mm).

Diagnostic impression:

Heterogeneous lesion centered on the anterior temporal pole of the right temporal lobe with a solid / cystic component and enhancement after contrast administration, with tumor characteristics suggesting a Dysembryoplastic neuroepithelial tumor (DNET) or a ganglioglioma as the main differential diagnoses.

1)
Ruban D, Byrne RW, Kanner A, Smith M, Cochran EJ, Roh D, Whisler WW. Chronic epilepsy associated with temporal tumors: long-term surgical outcome. Neurosurg Focus. 2009 Aug;27(2):E6. doi: 10.3171/2009.5.FOCUS0998. PubMed PMID: 19645562.
2)
Faust K, Vajkoczy P. Distinct displacements of the optic radiation based on tumor location revealed using preoperative diffusion tensor imaging. J Neurosurg. 2015 Oct 2:1-10. [Epub ahead of print] PubMed PMID: 26430843.
3)
Noll KR, Weinberg JS, Ziu M, Benveniste RJ, Suki D, Wefel JS. Neurocognitive Changes Associated With Surgical Resection of Left and Right Temporal Lobe Glioma. Neurosurgery. 2015 Nov;77(5):777-85. doi: 10.1227/NEU.0000000000000987. PubMed PMID: 26317672.