Astrocytoma IDH-mutant Grade 2

- Gliomas Uncovered: A Deep Dive Into Immunohistochemical and Molecular Features From a Tertiary Care Facility Perspective
- ATRX loss in adult gliomas lacking H3 alterations or IDH mutations, an exceptional situation for exceptional diagnoses: the experience of Sainte-Anne hospital
- PIK3R2 immunostaining status predicts prognosis in patients with newly diagnosed glioblastoma treated with an autologous tumor vaccine
- Methionine PET Findings in the Diagnosis of Brain Tumors and Non-Tumorous Mass Lesions: A Single-Center Report on 426 Cases
- Challenges in implementing 2021 WHO CNS tumor classification in a resource-limited setting
- Double fluorescence-guided surgery with 5-ALA and fluorescein sodium in grade 2 and grade 3 adult-type diffuse gliomas: retrospective analysis of 112 cases
- Low-grade IDH-mutant gliomas: from standard post-surgical treatments to novel IDH inhibitors
- Clinical, molecular and radiological predictors of prognosis in newly diagnosed astrocytoma, IDH-mutant, WHO grade 4

Definition

Well-differentiated Astrocytoma IDH-mutant with low mitotic activity

No necrosis or microvascular proliferation

CDKN2A homozygous deletion/B absent

Prognosis

Care must be taken when reviewing survival data as the classification system used (WHO 2007 vs 2016 vs 2021) will dramatically affect the results.

The 5-year survival for adult-type astrocytoma IDH-mutant varies by grade:

grade 2 and 3 (combined): 9.3 years *

grade 4: 3.6 years

* NB: It is almost certain that grade 2 tumors do somewhat better and grade 3 do somewhat worse, although little data on this exists on strictly molecular-based diagnosis (post-2016).

Case report from the HGUA

Q9680

The 23-year-old male sought urgent medical attention due to an episode involving stiffness in the upper limbs and a ten-minute jaw-clenching incident accompanied by a loss of consciousness (tonic-clonic seizure). Notably, there were no reported occurrences of sphincteric relaxation or tongue biting during the episode. Following this event, the patient experienced subsequent nausea. The patient also reported a history of prior headaches, particularly during activities demanding concentration.

In the supratentorial region, a space-occupying intra-axial lesion measuring approximately 47x39x47 mm in maximum diameter (CCxTxAP) is observed. It is located in the left frontal lobe and erodes the adjacent bone. The tumor appears predominantly hyperintense on FLAIR, especially at the periphery, hyperintense on T2, and hypointense on T1, and does not enhance after intravenous gadolinium administration. There is also no diffusion restriction. The first possibility to be ruled out is a low-grade glial lesion.

The patient was positioned in the supine with the head centered, slightly flexed, and secured with a Mayfield skull clamp. A bicoronal skin incision at 3/4 length was made. A left frontoparietotemporal craniotomy was performed using three trephines over the superior sagittal sinus.

Under the surgical microscope, the dura was opened in a C-shape, folding it medially, and it was found to be intact. Upon examination of the left middle frontal gyrus, a bulging area was noted without vascular alterations. Intraoperative ultrasound delineated tumor boundaries. A corticotomy over F2 revealed a slightly grayish and rubbery lesion without neovascularization. An intraoperative pathology sample was sent, reporting a Low-Grade Glioma.

Subpial resection of the lesion and excision with the aid of CUSA were performed. Subtotal tumor resection was achieved, with a probable residual lesion near the posterior border adjacent to the supplementary motor area. Hemostasis was achieved using Floseal, and the surgical site was thoroughly irrigated with saline. The dura was hermetically closed with continuous sutures and Tachosil. The bone flap was repositioned using titanium mini plates (3 trephine holes + one simple). Central dural elevation was performed. The closure was done in layers, with the skin secured using staples. No drainage was left in place. The procedure was uneventful.

Astrocytoma IDH-mutant Grade 2 KI67: 1% ATRX: Normal. CDKN2A/2B: ABSENCE of homozygous deletion.

3 years later there is a progressive growth observed in the remaining tumor around the surgical bed cavity in the left middle frontal convolution. This manifests as thickening of the gyri, hypointense in T1 and hyperintense in T2, with a lower signal in FLAIR (T2-FLAIR mismatch) about mutated IDH

astrocytoma. No enhancement zones or diffusion restrictions are noted.

The remaining tumor has a greater thickness at the posterior level of the surgical bed cavity, measuring approximately 17 mm, while the thickness at the anterior level is around 11 mm and 10 mm at the interolateral level. No viable tumor is detected medial to the surgical bed cavity.

In the perfusion study, a zone with a slight increase in VCSr compared to the contralateral white matter is identified, reaching up to 1.3. Hemosiderin remnants are present in the periphery of the surgical bed cavity. Spectroscopy is not evaluable. The midline is centered.