# Butterfly glioma

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## Latest News

- Butterfly glioblastoma: trends in therapeutic modalities, extent of resection and survival in the temozolomide era. a SEER-based study
- Glioblastoma Masquerading as Metastasis in a Routine Follow-Up of a 79-Year-Old Woman
- An adaptive stacking generalization integrated with Raman spectroscopy feature enhancement algorithm for fine glioma grading identification
- Tissue Is the Issue: The Diagnosis of Butterfly Brain Lesions
- The Impact of Extensive Surgical Resection of Butterfly Glioblastomas on Outcomes in the Presence of TERT Mutation and EGFR Amplification: A Retrospective Cohort Study
- Transglabellar Butterfly Incision for Anterior Cranial Vault Access: Case Report
- Letter to the editor: Butterfly gliomas: a time for stratified management?
- Ultrastructural and immunohistochemical insights on the anti-glioma effects of a dual-drug cocktail in an in vivo experimental model

## Definition

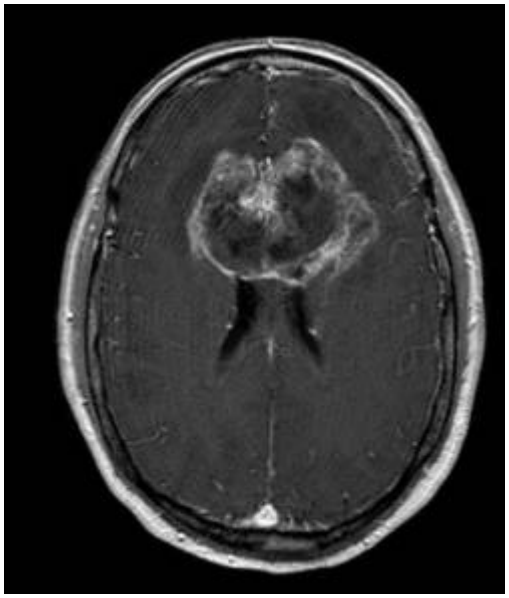
Butterfly glioma is a high-grade astrocytoma, usually a Butterfly glioblastoma (WHO grade IV), which crosses the midline via the corpus callosum. Other white matter commissures are also occasionally involved. The term butterfly refers to the symmetric wing-like extensions across the midline.

## Epidemiology

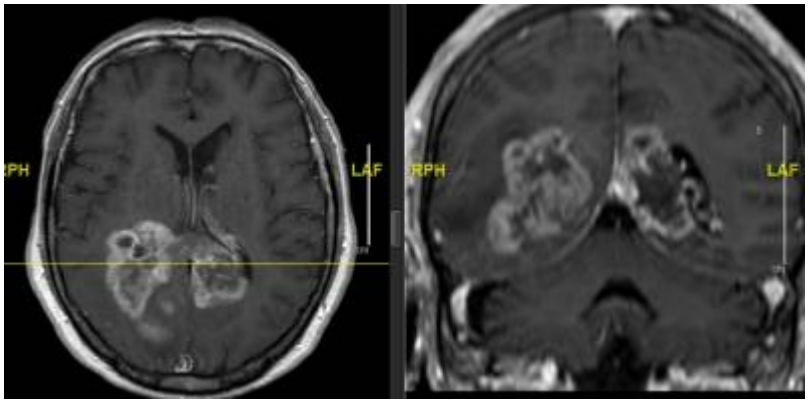
Most frequently butterfly gliomas occur in the frontal lobes, crossing via the genu of the corpus callosum, however posterior butterflies are also encountered.

## Classification

### Anterior Butterfly Glioma



### Posterior Butterfly Glioma




## Differential diagnosis

Primary central nervous system lymphoma: especially in AIDS patients

cerebral toxoplasmosis: especially in AIDS patients

tumefactive demyelination

cerebral metastases (rare)

occasionally a leptomeningeal process that fills the quadrigeminal and ambient cisterns can cause confusion.

A meningioma can mimic butterfly glioma when it arises from the falx cerebri and crosses the midline. The presence of a cerebrospinal fluid intensity cleft between the tumor and adjacent brain cortex is a useful sign to identify the extra-axial location of these lesions and differentiate them from butterfly gliomas [1].

# Treatment

Butterfly glioma treatment.

# Systematic Review of the Literature

included 52 studies comprising 683 patients. Most patients experienced headache (33%), cognitive decline (18.7%), and seizures (17.7%). Tumors mostly infiltrated the corpus callosum genu (44.2%) with bilateral extension (85.4%) into frontal (68.3%) or parietal (8.9%) lobes. Most G-I-CC were glioblastomas (84.5%) with IDH-wildtype (84.9%) and unmethylated MGMT promoter (53.5%). Resection (76.7%) was preferred over biopsy (23.3%), mostly gross-total (33.8%) and subtotal (32.5%). The tumor-infiltrated corpus callosum was resected in 57.8% of cases. Radiation was delivered in 65.8% of patients and temozolomide in 68.3%. Median follow-up was 12 months (range, 0.1-116). In total, 142 patients (31.8%) experienced post-surgical complications, including transient supplementary motor area syndrome (5.1%) and persistent motor deficits (4.3%) or abulia (2.5%). Post-treatment symptom improvement was reported in 42.9% of patients. No differences in rates of complications (p = 0.231) and symptom improvement (p = 0.375) were found in cases with resected versus preserved corpus callosum. Recurrences occurred in 40.9% of cases, with median progression-free survival of 9 months (0.1-72). Median overall survival was 10.7 months (range, 0.1-116), significantly longer in low-grade tumors (p = 0.013) and after resection (p < 0.001), especially gross-total (p = 0.041) in patients with high-grade tumors.

Conclusions: G-I-CC show clinicopathological patterns comparable to other more frequent gliomas. Maximally safe resection significantly improves survival with low rates of persistent complications [2)].

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A systematic review of the literature was conducted using PubMed, EMBASE, and Cochrane databases through March 2021 in accordance with the PRISMA checklist. Pooled hazard ratios were calculated and meta-analyzed in a random-effects model including an assessment of heterogeneity. Out of 3367 articles, seven studies were included with 293 patients. Surgical resection was significantly associated with longer overall survival (HR 0.39, 95%CI 0.2-0.55) than biopsy. Low heterogeneity was observed (I2: 0%). In further analysis, the effect persisted in the extent of resection subgroups of both ≥80% and <80%. No statistically significant difference between surgery and biopsy was detected in terms of postoperative complications, although these were numerically larger for surgery. In patients with bGlioblastoma, surgical resection was associated with longer survival prospects compared with biopsy [3)].

# Case series

Butterfly glioma case series.

# Case reports

A 54-year-old man presented with change in behaviour, nocturnal enuresis, abnormal limb movement and headache of one week's duration. The diagnosis of butterfly glioma (glioblastoma multiforme) was made based on imaging characteristics and was further confirmed by biopsy findings. As the corpus callosum is usually resistant to infiltration by tumours, a mass that involves and crosses the corpus callosum is suggestive of an aggressive neoplasm [4].

1)
Watts J, Box G, Galvin A, et al. Magnetic resonance imaging of meningiomas: a pictorial review. Insights Imaging. 2014;5:113–22.
2)
Palmisciano P, Ferini G, Watanabe G, Ogasawara C, Lesha E, Bin-Alamer O, Umana GE, Yu K, Cohen-Gadol AA, El Ahmadieh TY, Haider AS. Gliomas Infiltrating the Corpus Callosum: A Systematic Review of the Literature. Cancers (Basel). 2022 May 19;14(10):2507. doi: 10.3390/cancers14102507. PMID: 35626112; PMCID: PMC9139932.
3)
Chawla S, Kavouridis VK, Boaro A, Korde R, Amaral Medeiros S, Edrees H, Mezzalira E, Sala F, Mekary RA, Smith TR. Surgery vs. Biopsy in the Treatment of Butterfly Glioblastoma: A Systematic Review and Meta-Analysis. Cancers (Basel). 2022 Jan 9;14(2):314. doi: 10.3390/cancers14020314. PMID: 35053478; PMCID: PMC8773472.
4)
Krishnan V, Lim TC, Ho FC, Peh WC. Clinics in diagnostic imaging (175). Corpus callosum glioblastoma multiforme (Glioblastoma): butterfly glioma. Singapore Med J. 2017 Mar;58(3):121-125. doi: 10.11622/smedj.2017017. PubMed PMID: 28361164; PubMed Central PMCID: PMC5360865.