Low-grade glioma treatment

The management of low grade glioma (LGG) still remains controversial because the effectiveness of early and extensive resection is unclear, and the use of radiation therapy or chemotherapy is not well-defined.

The relatively long survival compared to other brain tumors makes consideration of treatment toxicity, and thus timing of potentially damaging interventions such as surgery, radiation, and chemotherapy, crucial. Moreover, the rarity of these tumors makes clinical trials to ascertain optimal care challenging.

The discovery that most low-grade gliomas harbor isocitrate dehydrogenase (IDH) mutations that confer a favorable prognosis has improved diagnosis and risk stratification of these tumors. Although Level of evidence 1 is still lacking, increasing data support the concept of maximal safe tumor debulking as a first step in tumor management. Preliminary results from a large randomized trial suggest chemotherapy is of comparable effectiveness to radiation therapy for one molecular subtype of low-grade glioma. Importantly, however, the final results of a phase 3 trial comparing radiation with or without procarbazine, CCNU (lomustine), and vincristine (PCV) chemotherapy indicate a large survival advantage to combined chemotherapy and radiation, raising questions about using chemotherapy alone as an initial treatment strategy.

While the combination of radiation and PCV provides the best proven overall survival with low-grade gliomas, important questions remain. These include whether the better-tolerated temozolomide is as effective as PCV in conjunction with radiation therapy and whether the use of initial chemotherapy as a strategy to defer the potential delayed cognitive toxicity associated with radiation will yield acceptable survival results with a favorable toxicity profile 1).

Choosing the best treatment strategy for each patient with a diffuse low grade glioma, in other words optimizing the oncologic and functional balance, implies not only a full knowledge of the natural history of this chronic disease, but also an understanding of the adaptation of the brain in response to growth and spread of the glioma 2).

The ideal management of suspected low-grade gliomas (LGGs) has historically been controversial in neurosurgery and neurooncology 3) 4) 5).

**Surgery**

see Low-grade glioma surgery.

**Chemotherapy**

see Low grade glioma chemotherapy.

**Radiosurgery**

see Low grade glioma radiosurgery.
Radiotherapy

see Low grade glioma radiotherapy.


