Abstract
The new 2016 WHO brain tumor classification defines different diffuse gliomas primarily according to the presence or absence of IDH mutations (IDH-mt) and combined 1p/19q loss. Today, the diagnosis of anaplastic oligodendroglioma requires the presence of both IDH-mt and 1p/19q co-deletion, whereas anaplastic astrocytoma is divided into IDH wild-type (IDH-wt) and IDH-mt tumors. IDH-mt tumors have a more favorable prognosis, and tumors with low-grade histology especially tend to evolve slowly. IDH-wt tumors are not a homogeneous entity and warrant further molecular testing because some have glioblastoma-like molecular features with poor clinical outcome. Treatment consists of a resection that should be as extensive as safely possible, radiotherapy, and chemotherapy. Trials of patients with newly diagnosed grade II or III glioma have shown survival benefit from adding chemotherapy to radiotherapy compared with initial treatment using radiotherapy alone. Both temozolomide and the combination of procarbazine, lomustine, and vincristine provide survival benefit. In contrast, trials that compare single modality treatment of chemotherapy alone with radiotherapy alone did not observe survival differences. Currently, for patients with grade II or III gliomas who require postsurgical treatment, the preferred treatment consists of a combination of radiotherapy and chemotherapy. Low-grade gliomas with favorable characteristics are slow-growing tumors. When deciding on the timing of postsurgical treatment with radiotherapy and chemotherapy, both clinical and molecular factors should be taken into account, but a more conservative approach can be considered initially in some of these patients. The factor that best predicts benefit of chemotherapy in grade II and III glioma remains to be established.