Delayed leptomeningeal and subependymal seeding after multiple surgeries for supratentorial diffuse low-grade gliomas in adults.

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Abstract

Object Diffuse WHO Grade II glioma (diffuse low-grade glioma [DLGG]) is an infiltrative brain tumor that usually migrates along the white matter fibers. The delayed CSF dissemination of supratentorial DLGGs is an exceptional complication and is rarely described in adults. Here, the authors report outcomes in a surgical series of 9 patients with DLGGs with subsequent leptomeningeal and/or subependymal seeding (LMSS) following multiple incomplete resections. Methods The authors performed a retrospective review of patients who underwent surgery for histopathologically confirmed WHO Grade II gliomas between 1998 and 2012 and experienced a secondary CSF spread. Information regarding clinical features, surgical procedures, histopathological results, adjuvant treatment, and clinical outcomes was collected and analyzed. Results Nine consecutive patients were included in this study. There were 6 men and 3 women whose mean age was 35.5 years (range 22-59 years) at the time of initial symptom onset. All patients underwent surgery with the aid of intraoperative mapping, with incomplete tumor removal because of invasion of eloquent structures. The neuropathological examination diagnosed a DLGG in all cases (7 oligodendrogliomas, 1 astrocytoma, and 1 oligoastrocytoma). Five patients had a 1p19q codeletion. Because of tumor regrowth, the 9 patients underwent reoperation (2 surgeries in 6 cases and 3 surgeries in 3 cases), again with incomplete resection. There were no surgical complications. Adjuvant therapy (radiotherapy and chemotherapy) was administered in all patients because of progression to a higher grade of malignancy that was histopathologically confirmed in all tumors. The patients suddenly worsened, and the diagnosis of LMSS was made with a mean delay of 77 months (range 27-140 months) after the initial symptom onset. Six patients benefited from salvage chemotherapy while palliative care was chosen in 3 cases. The median survival in the 6 patients who underwent LMSS treatment was significantly longer than that in the 3 patients who did not receive salvage chemotherapy (p = 0.03). Indeed, all patients died, with a mean delay between the diagnosis of LMSS and death of 11 months (range 2-38 months) and with a mean delay between the initial symptom onset and death of 88 months (range 34-144 months). Conclusions Cerebrospinal fluid dissemination of DLGG is a rare but possible event. It can occur throughout the progression of WHO Grade II oligodendrogliomas, oligoastrocytomas, and astrocytomas, regardless of 1p19q status. This complication seems to appear in patients who have undergone multiple incomplete resections. Salvage therapy can be considered in patients with good neurological status. However, LMSS is associated with a decreased overall survival. Therefore, this rare entity deserves further multicenter studies to better understand its pathophysiology and to adapt therapeutic strategies.

PMID: 24286144 [PubMed - as supplied by publisher]