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AWAKE SURGERY FOR TUMOR SIN ELOQUENT BRAIN REGION: FIRST CASES IN CROATIA

Krešimir Rotim[1], Tomislav Sajko[1], Inga Mladić-Batinica[2], Marina Zmajević-Schoenwald[1]

[1]University Clinical Hospital Center ‘’Sestre milosrdnice’’, Department of Neurosurgery, Vinogradska 29, HR-10000 Zagreb, Croatia
[2]University Clinical Hospital Center ‘’Sestre milosrdnice’’, Department of Anesthesiology and Intensive care treatment, Vinogradska 29, HR-10000 Zagreb, Croatia

Abstract

Aim. Awake surgery with intraoperative functional mapping is a safe approach for maximizing the extent of tumor removal and minimizing the resulting neurological deficits in the treatment of intracranial tumors involving the eloquent cortex. Authors present their experience with awake surgery of lesions in the eloquent brain region.

Patients and methods. Twelve patients had tumor lesion in close proximity to eloquent cortex, including primary motor and sensory cortex in either hemisphere and language cortex in the dominant hemisphere. Patients underwent a thorough neuropsychological evaluation prior to surgery. Patients were kept fully awake during the whole surgical procedure. Brain mapping was performed by direct cortical stimulation using the Ojemann stimulator to identify a safe corridor for a surgical approach to the tumor. Intraoperative physiological monitoring was carried out by assessment of speech, motor, and sensory functions during the process of surgical resection. All resections were evaluated and verified by postoperative imaging. Postoperative complications and neurological deficits, as well as extent of tumor resection, were evaluated.

Results. Twelve patients were operated due to tumor lesion in the primary motor cortex of the left hemisphere (glioma, metastatic tumor) and one patient due to a tumor lesion in the primary sensor motor cortex of the right hemisphere (meningioma). Patients were fully collaborative during the cortical mapping. There were no perioperative complications. Gross total resection was carried out in two patients and complete tumor removal (Simpson 1) in the meningioma patient. There was no deterioration of the neurological findings after the surgery.

Conclusion. Awake surgery with intraoperative functional mapping is a safe approach for maximizing the extent of tumor removal and minimizing the resulting neurological deficits in the treatment of intracranial lesions involving the eloquent cortex. According to authors’ knowledge, this is the first time in Croatia an awake surgical procedure in patients with brain tumors was performed.

Key words: Neurosurgery; Brain Neoplasms – diagnosis; Consciousness