

## Updates in geriatric neurosurgery – 1st International Congress

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### Surgery of gliomas of eloquent areas in the elderly

G. Bertani – Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano

*Introduction:* nowadays the median age of patients with newly diagnosed glioblastoma is 60 to 62 years, and approximately 45% of patients are older than 65 years (herein defined as elderly patients). A clear trend toward an increasing incidence of elderly patients with glioblastoma is being seen in developed countries. Present evidence suggests a benefit from resection followed by adjuvant radiotherapy or temozolomide in elderly patients.

*Materials and methods:* a brief summary of our Center experience in the last three years is presented. Only patients harboring brain lesions located in eloquent areas (rolandic and perirolandic cortex, insula, perisylvian areas of the dominant hemisphere) were considered. For each case, intraoperative monitoring (IOM) and brain mapping techniques were tailored according to lesion location, neuroradiological appearance, patient preoperative functional status and extensive neuropsychological evaluation. IOM and brain mapping included electromyography (EMG), electroencephalography (EEG), electrocorticography (EcoG), motor- and somatosensory evoked potentials (MEPs and SSEPs), and direct cortical and subcortical stimulation, either with monopolar and/or bipolar probes. Awake surgery was offered when deemed necessary for intraoperative language testing.

*Results:* since January 2011, 68 patients were operated on in our Institution for gliomas located in eloquent areas; 24 of these patients were aged 65 years and older. In this small series of elderly patients, surgery was mainly performed under general anaesthesia (total intravenous anaesthesia, TIVA); awake surgery was performed only once. In 22 cases primary tumors were diagnosed. 18 tumors were located in the right, non-dominant hemisphere. IOM and/or mapping were always feasible. There were 3 intraoperative seizures, 2 electrical and 1 clinical; all seizures were easily controlled with cold irrigation. Histopathological analysis revealed a high-grade glioma (HGG) in 18 cases, a low-grade glioma in 4 and a metastasis in 2. 7 patients showed new neurological focal deficits after surgery, and 3 of them required postoperative inpatient rehabilitation.

*Conclusions:* surgical resection should always be considered for elderly patients affected by gliomas, even if located in eloquent areas. IOM and brain mapping techniques often allow to obtain maximal resection with minimal morbidity, although awake surgery is restricted to the patients with very good preoperative Karnofsky and ASA scores.