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Background: Glioblastoma (GBM) is the most common primary brain tumor in adults, with an increasing incidence in patients aged 75 through 85 [1]. Prognosis in these patients is particularly dismal due to more aggressive tumor biology, lower functional reserve and high prevalence of comorbidities. Many studies report cognitive impairment in GBM patients, ranging from 29 [2] to 90% [3] and it represents the greatest cause of burden [4]. Since age is an important factor influencing life expectancy [5], neurocognitive evaluation in elderly patients can provide relevant information for clinical choices. This study was aimed at evaluating neurocognitive status of an elderly population with high grade glioma and the correlation with clinical and demographical variables.

Methods: Each patient underwent an extended neuropsychological evaluation by means of a battery of standardized tests tapping on 8 cognitive domains, that is: global function (GF); verbal learning (VL); short and long-term memory (STM); executive functions (EF); abstract reasoning (AR); attention (ATT) and visuo-constructional abilities (CA).

Results: We assessed 69 patients with high glioma, median age at diagnosis of 74 years (range 65-85). 43 out of the 69 patients (62%) presented multi-domain cognitive impairment, 18 patients (26%) showed single-domain deficit and only 8 (12%) showed no impairment. Neuropsychological deficits mainly affected executive functions (n=42), short term memory (n=28), long term memory and attention (n=22), abstract reasoning (n=18). At the time of cognitive assessment, 58 patients (84%) had undergone neurosurgery (7 biopsy, 51 resection), 59 patients (86%) received one or more lines of chemotherapy and 38 (55%) received radiotherapy. Kaplan Meyer estimator showed that patients with AR deficit had a poorer prognosis in terms of progression free survival (PFS) and overall survival (OS) ($p < 0.001$). At the multivariate analysis AR (deficitary vs non, (HR=7.74, 95% CI (2.73-21.96); $p < 0,001$) predicted PFS and OS [AR (deficitary vs non, (HR=4.88, 95% CI (1,54-15.5); $p = 0,007$)).

Conclusions: Our results confirm the importance of neurocognitive evaluation in order to support treatment choices and to monitor toxicities. It highlighted the high prevalence of cognitive deficits in patients with Glioma and their impact on life expectancy. The influence of AR deficit on PSF and OS may rely on the involvement of attentional, linguistic and perceptual functions in this cognitive domain, thus affecting a larger number of patients. Moreover, this study underlines the need to include cognitive functioning evaluation among the standard clinical endpoints in the treatment of elderly neuro-oncological patients.

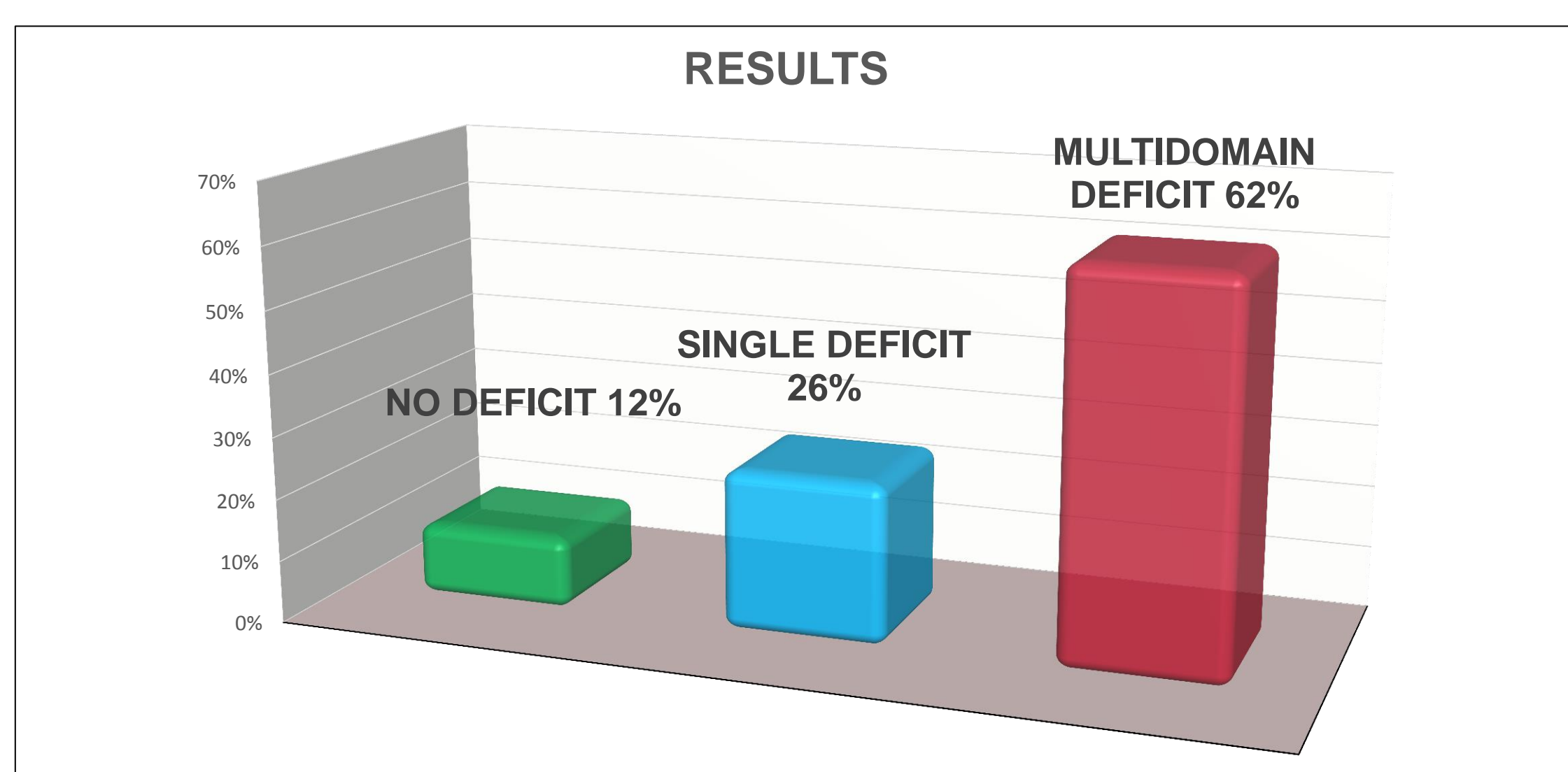


Fig 1 Distribution of deficit in the sample

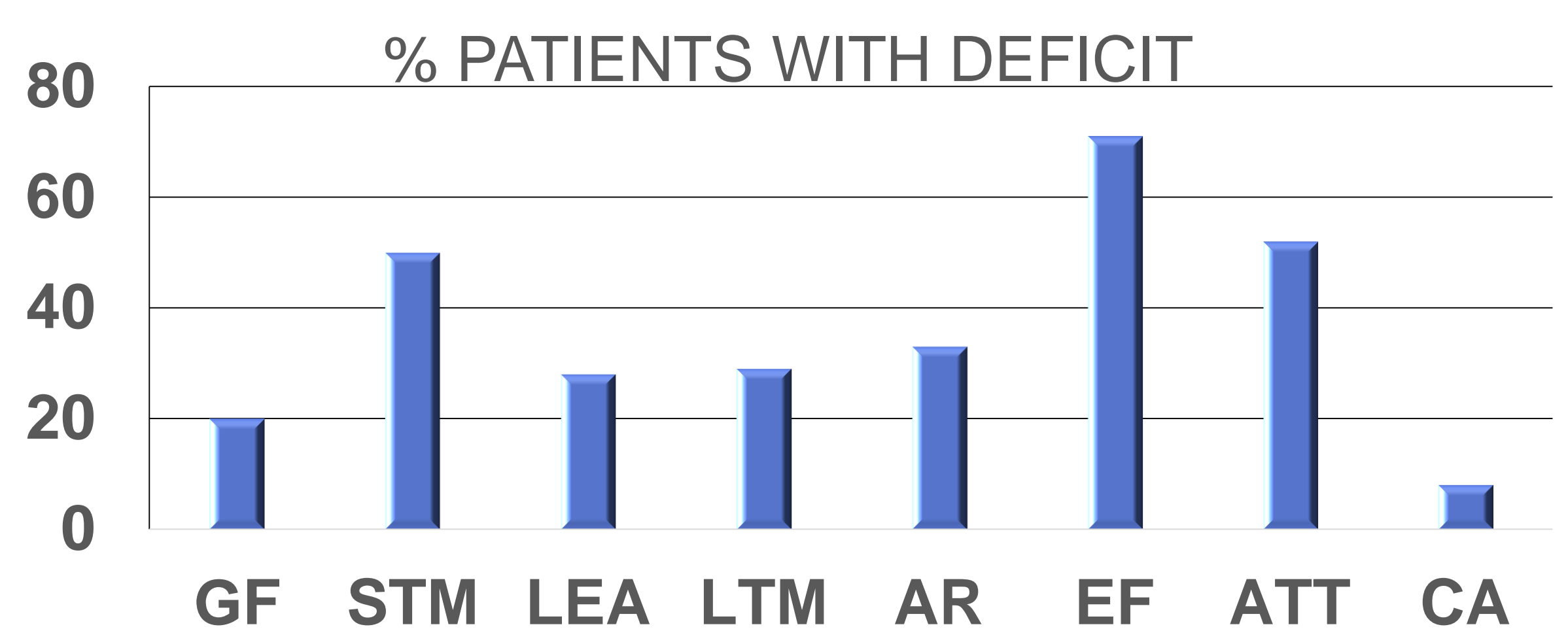


Fig 2 Rate of patients with deficit according to the different domains