The cut-off value correlated with good favorable prognostic outcome in patients with newly diagnosis of glioma

National Cancer Institute "Regina Elena"

BACKGROUND

O6-methylguanine-DNA-methyltransferase (MGMT) has emerged as a relevant predictor of therapeutic response and good prognosis in patients with glioblastoma (GBM). Studies with pyrosequencing (PSQ) showed that this technique has a higher reproducibility and sensitivity than other techniques. However, the definition of a prognostically relevant threshold for the percentage of MGMT methylation remains one of the most critical issues in the use of PSQ analysis. OBJECTIVE The aim of this study was to define the cut-off value of PSQ-detected MGMT promoter hypermethylation which correlated with the most favourable prognostic outcomes.

METHODS

Data of patients affected by newly diagnosed primary GBM who underwent surgery or biopsy and followed at the Neuro-Oncology Unit of Regina Elena National Cancer Institute were retrospectively analyzed. Tissue samples were matched with a comprehensive set of clinical data collected in the database of IRE Neuro-Oncology Unit for each patient. Tissue samples were analyzed by means of PSQ for methylation status of MGMT assessment according to standardized procedure.

RESULTS

In total, 177 patients (102 men, 75 women) diagnosed as affected by Malignant Glioma from June 2013 to september 2016 were included in this study. There were no significant differences between women and men in terms of baseline demographic and clinical characteristics. The mean and median percentage of MGMT methylation, as detected by PSQ, were 21.5% and 36% (ranging from 2 to 85). Patients with MGMT>25 showed a better prognosis (see fig 1 AND 2). In tale 1 reported a Curva ROC analysis.

CONCLUSIONS:

ROC analysis shows that MGMT>35% and 25% should be considered as the best cut off.

Tab 1. ROC analyses showing the best cut-off values of MGMT predicting PFS and OS in the study sample (n=204)

	PFS	OS
Status	Not progressed	Alive
AUC (95%CI)	0,65 (0,56-0,74)	0,62 (0,54-0,70)
Cut-off	≥36%	≥25%
Sensitivity	46%	58%
Specificity	80%	70%
p-value	0,002	0,003

Fig 1 Overall OS MGMT ≥ 25%: 58 mesi (0-128,1) < 25%: 13 mesi (10,9-15,1) p<0.001
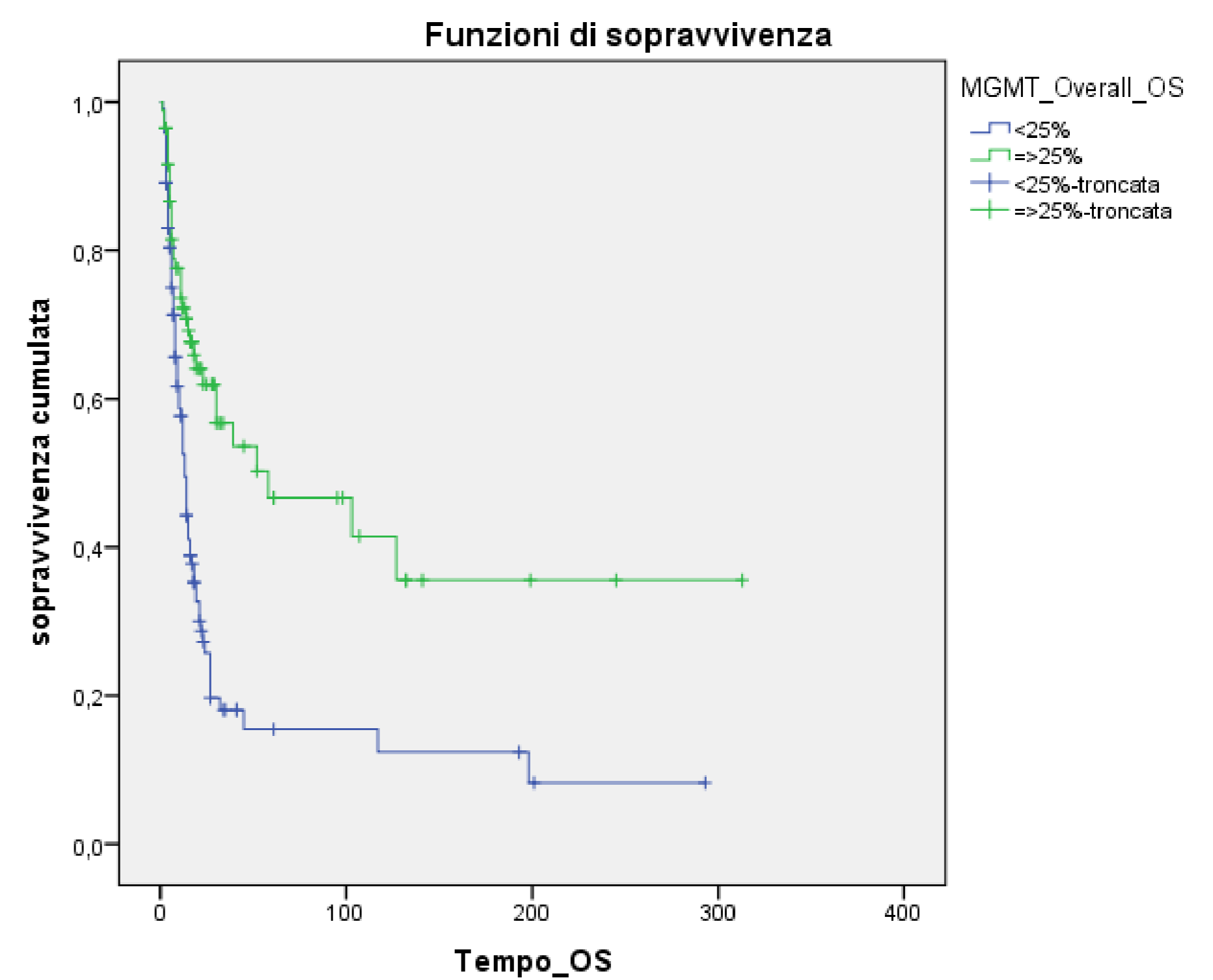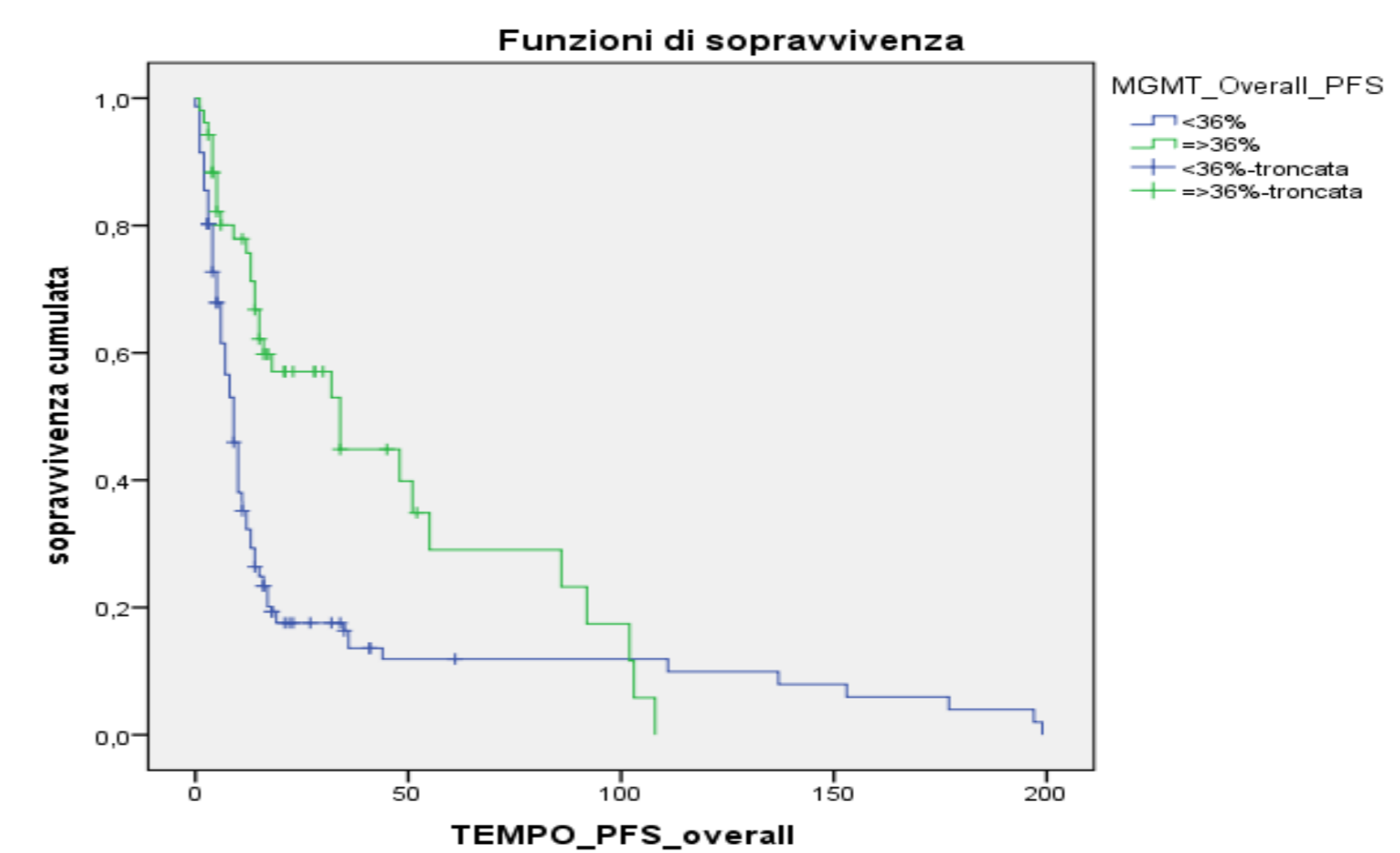

Fig 2 Overall PFS MGMT ≥ 36%: 34 mesi (12,1-55,9) < 36%: 9 mesi (7,7-10,3) p<0.001

Bibliografia

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