Immunohistochemical Analysis of p53 and Ki-67 in Glioblastoma (GBM) and Their Correlations with Patient Survival

Paulo Luz(1,2), Isabel Fernandes(3), Luís Bretes(1)
1.Centro Hospitalar Universitário do Algarve, 2. CBIOS - Research Center for Biosciences and Health Technologies, Universidade Lusófona de Humanidades e Tecnologias, Lisboa, Portugal, 3. Centro Hospitalar Barreiro-Montijo

Backgrpund: GBM is the most common and agressive primary brain tumor with a median survival around 12-14 months. Detection of prognostic factors will be very important in planning and selecting treatment for patients with this disease. Association of TP53 mutations and Ki67 proliferation index with survival outcome in GBM patients has not been consistente.

Aim: the aim of our study were to determine the expression of p53 and Ki67 in our cohort of GBMs patients, and to determine their correlation with patient survival.

Methods: This study is based on samples prospectively collected from 65 patients with glioblastoma. Samples were collected from Centro Hospitalar Universitário do Algarve during the period extending from January 2016 to June 2019. p53 and Ki67 expression was assessed immunohistochemically on Formalin Fixed Paraffin-Embedded tissues. Kaplan-Meier analysis were carried out in each group.

Results: the mean age of the 65 patients (38 males and 27 females) was 63 years old. A total of 53 patients underwent resection and 12 to biopsy. 20 patients completed Stupp Protocol. The median survival time for all patients was 42,1 weeks.
A total of 53.8% exhibited p53 overexpression (p53+). Median survival time (with 95% confidence intervals) was 26.7 weeks for patients with p53+ tumors and 48.6 weeks for those with p53-negative tumors (p=<0.05).
Ki67 >20% was correlated to poor survival however it was not statistically significant.

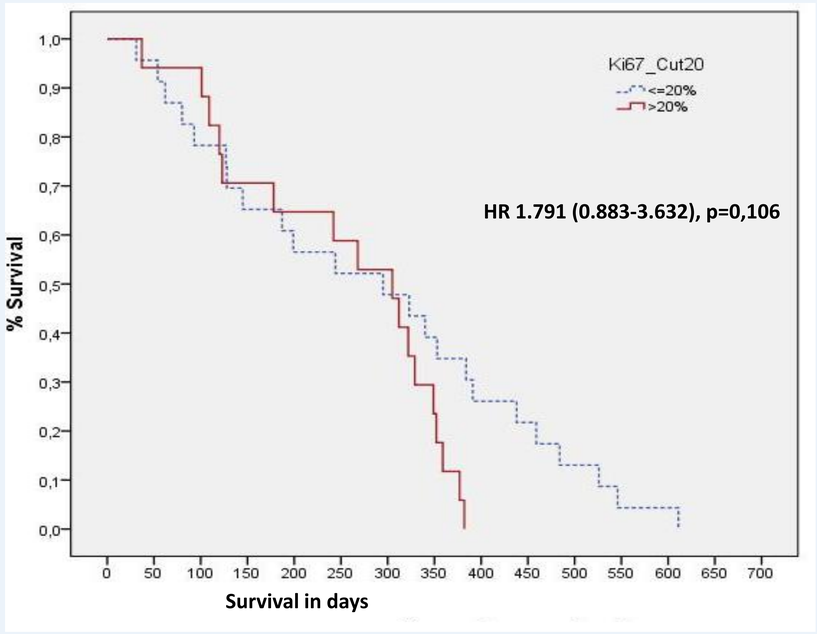

Fig 1. comparison between survival curves for Ki-67 labeling index

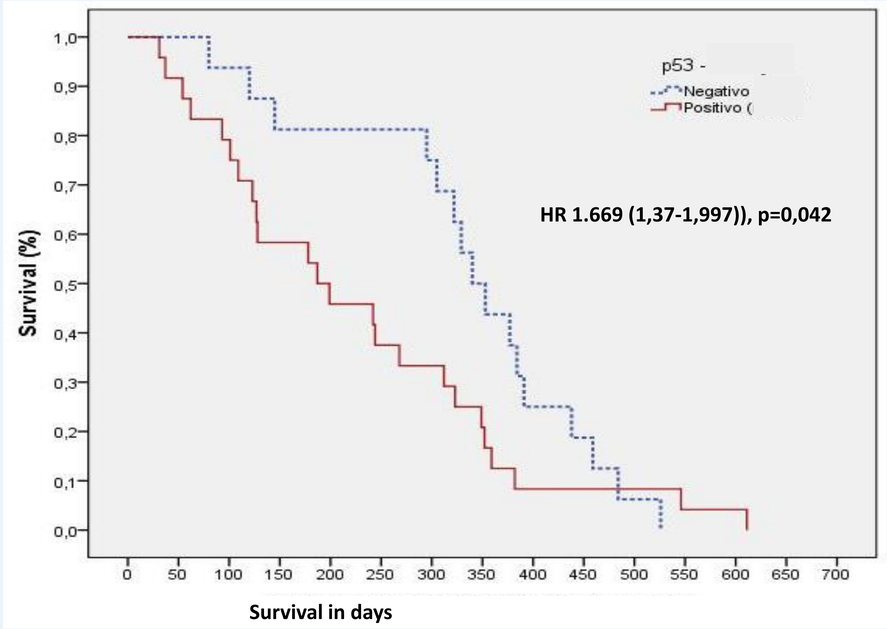

Fig 2. comparison between survival curves for p53 mutation

Conclusion: In our cohort, p53 expression had strong prognostic value. GBM is characterized by extreme heterogeneity which can affect diagnostic accuracy as well the outcome after surgical treatment. A better understanding of the molecular behaviour could help us planning treatment and developing new targets.