Pathol Res Pract. 2024 Aug 8:262:155516. doi: 10.1016/j.prp.2024.155516. Online ahead of print.

TP53 mutations and survival in patients with histologically defined Glioblastoma, IDH-wildtype

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PMID: 39163733 DOI: 10.1016/j.prp.2024.155516

Abstract

Background: Mutations of the TP53 oncosuppressor gene are frequent events in patients with malignant tumors including IDH-wildtype GBM (GBM IDH wt). However, the effective impact of TP53 mutations on prognosis has been poorly evaluated.

Methods: We performed a retrospective study investigating the impact of TP53 mutations on patients with GBM IDH wt. Only patients with PS=0-1, treated with temozolomide concurrent with and adjuvant to radiotherapy, and younger than 70 years assessed with NGS were included in the analysis.

Results: 97 GBM IDH wt have been selected. The median follow-up was 34.5 months (95 %CI, 30.6 - NA). Overall, 20 patients (19.4 %) presented a TP53 mutation. There were no significant differences in terms of TERT mutation (75 % vs 79.2 %) between TP53 mutated and TP53 wild-type (wt) patients. We detected 6 TP53 mutations not previously described within GBM IDH wt patients. The overall survival (OS) did not significantly differ between TP53 mutated and wt patients (HR 0.69, 95 %CI 0.37-1.27, p = 0.24). Considering only patients with an OS longer than 36 months (n = 10), the presence of a TP53 mutation was significantly associated with prolonged survival (45.6 months vs Not Reached, p = 0.037).

Conclusion: The presence of a TP53 mutation does not appear to be correlated with overall survival in this patient cohort. While there is an association with survival for patients with an OS of 36 months or longer, the number of patients is low and there is no available evidence correlating TP53 mutations to long-term survivors.

Keywords: Glioblastoma; Long-term survivors; Prognosis; TP53.