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Long-term survival with glioblastoma

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Surviving glioblastoma for more than 5 years: The patient’s perspective

Abstract—The authors performed a comprehensive analysis of the functional outcome of 10 patients who had survived 5 years from a diagnosis of glioblastoma. Neurologic deficits were mild in most patients, but neuropsychological testing demonstrated cognitive deficits in all patients. Depression and anxiety were common. Although most patients thought that their social functioning and work ability were impaired, little reduction in overall quality of life was perceived.

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Long-term survival with glioblastoma multiforme

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The median survival of glioblastoma patients is ~12 months. However, 3–5% of the patients survive for more than 3 years and are referred to as long-term survivors. The clinical and molecular factors that contribute to long-term survival are still unknown. To identify specific parameters that might be associated with this phenomenon, we performed a detailed clinical and molecular analysis of 55 primary glioblastoma long-term survivors recruited at the six clinical centres of the German Glioma Network and one associated centre. An evaluation form was developed and used to document demographic, clinical and treatment-associated parameters. In addition, environmental risk factors, associated diseases and occupational risks were assessed. These patients were characterized by young age at diagnosis and a good initial Karnofsky performance score (KPS). None of the evaluated socioeconomic, environmental and occupational factors were associated with long-term survival. Molecular analyses revealed MGMT hypermethylation in 28 of 36 tumours (74%) investigated. TP53 mutations were found in 9 of 31 tumours (29%) and EGFR amplification in 10 of 38 tumours (26%). Only 2 of 32 tumours (6%) carried combined 1p and 19q deletions. Comparison of these data with results from an independent series of 141 consecutive unselected glioblastoma patients registered in the German Glioma Network revealed significantly more frequent MGMT hypermethylation in the long-term survivor group. Taken together, our findings underline the association of glioblastoma long-term survival with prognostically favourable clinical factors, in particular young age and good initial performance score, as well as MGMT promoter hypermethylation.
Long-Term Survival in Primary Glioblastoma With Versus Without Isocitrate Dehydrogenase Mutations

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Abstract

Figure 3. Distribution of glioblastomas by IDH1/2 mutation and MGMT promoter methylation status among the 3 patient groups: control (A), LTS-36 (B), and LTS-60 (C) patients.
Study Design

- Glioblastoma patients with different outcome
  A Long-term survival (> 36 months)
  B Short-term survival (< 12 months)
  C Intermediate survival

- Molecular profiling
  MGMT promoter methylation
  Isocitrate dehydrogenase mutation
  Array-CGH
  Transcriptional profiling (Affymetrix)
Molecular genetics of long-term survival in glioblastoma: fact or fiction?

Reifenberger et al. Int J Cancer 2014
A molecular profile of long-term survival in IDH-wild-type glioblastoma: fact or fiction?
Reifenberger et al. Int J Cancer 2014
Summary and Conclusion

- IDH mutations dominate molecular clustering of glioblastoma
- „Neural“ glioblastoma not identified
- No survival-related molecular signature identified among IDH wildtype glioblastomas
- Do host factors determine long-term survival in glioblastoma?