

Review

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Modifiable risk factors for glioblastoma: a systematic review and meta-analysis

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Abstract

Glioblastoma (GBM) is the most common and aggressive glioma histological subtype, associated with high disability and poor survival. The etiology of this condition is still mostly unknown, and evidence about risk factors is elusive. The aim of this study is to identify modifiable risk factors for GBM. Electronic search was performed by two reviewers independently using the keywords and MeSH terms 'glioblastoma' OR 'glioma' OR 'brain tumor' AND 'risk factor'. The inclusion criteria were (1) observational studies or experimental studies on humans, (2) studies assessing the association between glioblastoma and exposure to modifiable conditions, and (3) studies published in English or Portuguese. Studies on the pediatric population or about exposure to ionizing radiation were excluded. A total of 12 studies were included. Seven were case-control studies, and five were cohort studies. The risk factors assessed included body mass index, alcohol consumption, exposure to magnetic fields, diabetes mellitus type 2 (DM2), and use of non-steroidal anti-inflammatory drugs (NSAID). No significant link was found between GBM incidence and DM2 or magnetic field exposure. On the other hand, higher BMI, alcohol consumption, and NSAID use demonstrated a protective effect on GMB risk. However, given the limited number of studies, it is not possible to obtain a behavioral recommendation; instead, these findings are relevant to guide future basic scientific studies on GBM oncogenesis.

Keywords: Brain tumor; Exposure; Glioblastoma; Risk factor.

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