

## ABSTRACT

Indian J Surg Oncol. 2022 Jun;13(2):329-342. doi: 10.1007/s13193-022-01533-7. Epub 2022 Apr 25.

Patients' Survival with Astrocytoma After Treatment: a Systematic Review and Meta-analysis of Clinical Trial Studies.

Salari N(1), Fatahian R(2), Kazeminia M(3), Hosseini-Far A(4), Shohaimi S(5), Mohammadi M(6).

Author information:

(1)Department of Biostatistics, School of Health, Kermanshah University of Medical Sciences, Kermanshah, Iran.

(2)Department of Neurosurgery, School of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran.

(3)Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran.

(4)Department of Business Systems & Operations, University of Northampton, Northampton, UK.

(5)Department of Biology, Faculty of Science, University Putra Malaysia, Serdang, Selangor Malaysia.

(6)Cellular and Molecular Research Center, Gerash University of Medical Sciences, Gerash, Iran.

About half of the brain tumours are primary and the rest are metastatic. The impact of each of these treatments alone or together on the prognosis of patients with astrocytoma tumours, especially low-grade astrocytoma, is unclear which may pose many challenges in the decision-making of surgeons and patients. Considering the importance of patient's outcomes with astrocytoma and lack of general statistics, this study aimed to determine the survival of patients with high-grade astrocytoma and low-grade astrocytoma after treatments. This study follows a systematic review and a meta-analysis approach. Following a systematic review and meta-analysis method, articles dated from 1982 to March 2020 were extracted from Embase, ScienceDirect, Scopus, PubMed and Web of Science (WoS) international databases. Random effects model was used for analysis, and heterogeneity of studies was investigated considering the I<sup>2</sup> index. Data were analysed using the Comprehensive Meta-Analysis software (version 2). According to a meta-analysis of studies, the mean overall survival in patients with high-grade astrocytoma was  $31.9 \pm 2.7$  months, for 2-year survival, 38.1% (95% CI: 27.5-50.1%) and for 5-year survival was 28.6% (95% CI: 24.1-33.4%). Mean overall survival in patients with low-grade astrocytoma was  $64.8 \pm 7.4$  months, for 2-year survival was 74.3% (95% CI: 32.6-94.5%) and for 5-year survival was 74.4% (95% CI: 57.9-86%). The highest mean for survival in patients with high-grade astrocytoma and in chemotherapy and radiation therapy treatments was  $45.2 \pm 5.2$  months, and also the highest mean for survival in patients with low-grade astrocytoma in surgical treatment was  $71.4 \pm 8.8$  months. The results of this study show that the average survival in patients with low-grade astrocytoma is high following the treatment, and in high-grade astrocytoma, there will be the highest survival rate, if the surgical treatment is combined with chemotherapy and radiation therapy. This study summarizes retrospective studies up to 2020 to evaluate the prognosis and survival of patients with brain astrocytoma tumours, and the results of this meta-analysis can be of interest to surgeons and specialists in this field.

© The Author(s), under exclusive licence to Indian Association of Surgical Oncology 2022.

DOI: 10.1007/s13193-022-01533-7

PMCID: PMC9240140

PMID: 35782798

Conflict of interest statement: Competing InterestsThe authors declare no competing interests.