

## ABSTRACT

Oncology. 2023 Jan 5. doi: 10.1159/000528588. Online ahead of print.

Clinico-radio-histo-molecular and neurocognitive characteristics of diffuse gliomas in adolescent and young adults. A comprehensive review.

Roux A, Zanella M, Simboli GA, Varlet P, Tauziède-Espariat A, Beccaria K, Blauwblomme T, Puget S, Oppenheim C, Dangouloff-Ros V, Boddaert N, Dhermain F, Dufour C, Grill J, Chrétien F, Pallud J.

**Background** Diffuse gliomas are the most frequent neoplasms in adolescent and young adults (AYAs), especially high-grade gliomas, which have the highest mortality rate. Recent histo-molecular advances are in favour of specialized therapeutic management of AYA patients, which we have analysed in this comprehensive review of the literature. **Summary** A literature search was conducted to identify all studies concerning diffuse gliomas and AYAs (15-39 years). We assessed epidemiology, clinical and imaging findings, histo-molecular characteristics, neurosurgical and neuro-oncological management, prognosis, and health-related quality of life. **Key messages** Diffuse gliomas remain the most frequent brain tumours in the AYA population. Symptoms mainly depend on the tumour location, which varies due to histo-molecular profiles. Specific imaging patterns of histo-molecular subtypes of diffuse gliomas are identified, however no specific pattern related to the age group has been identified. The literature review favours optimizing the extent of surgical resection for diffuse gliomas, whichever the grade, and suggests a dedicated management for these patients. It seems more relevant to consider the treatment according to the histo-molecular profile of the diffuse glioma rather than the age group. Clinical trials will allow AYA patients to benefit from innovative therapies that could improve their outcome. This literature review suggests the need for a close and long-term psychological follow-up for AYA patients with brain tumour during the transitional care, during adulthood, as well as for their family members. Collaborative efforts are needed between paediatric and adult neurosurgical and neuro-oncological teams, to move forward in the therapeutic management of AYA patients harbouring diffuse gliomas.

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DOI: 10.1159/000528588

PMID: 36603564