Neuropathological and neuroradiological spectrum of pediatric malignant gliomas: correlation with outcome.


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Abstract

BACKGROUND: The diagnostic accuracy and reproducibility for glioma histological diagnosis is suboptimal. Objective: To characterize radiological and histological features in pediatric malignant gliomas, and to determine whether they had an impact on survival.

METHODS: We retrospectively reviewed a series of 96 pediatric Malignant Gliomas (pMG). All histological samples were blindly and independently reviewed and classified according to WHO 2007 and Sainte-Anne (SA) classifications. Radiological features were reviewed independently. Statistical analyses were performed to investigate the relationship between clinical, radiological and histological features and survival.

RESULTS: Cohort median age was 7.8 y and median follow-up was 4.8 y. Tumors involved cerebral hemispheres or basal ganglia in 82% of cases, and brainstem for the remaining 18%. After histo-pathological review, low-grade gliomas and non-glial tumors were excluded (n=27). The WHO classification was not able to demonstrate differences between groups and patients survival. The SA classification identified a 3-year survival rate difference between the histological sub-groups (oligodendrogloma A, oligodendroglioma B, Malignant GlioNeuronal Tumours (MGT), and glioblastomas) (P=0.02). The MGT was the only glioma subtype with specific radiological features. Tumor location was significantly associated with 3-year survival rate (P=0.005). Meningeal attachment was the only radiological criteria associated with longer survival (P= 0.02).

CONCLUSION: The SA classification was better able to distinguish pMG in terms of survival compared to WHO classification. In this series, neither of these 2 histological classifications can provide a prognostic stratification of the patients.

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