Chemotherapy increases long-term survival in patients with adult medulloblastoma-a literature-based meta-analysis.

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Abstract

BACKGROUND: Adult medulloblastoma is a potentially curable malignant entity with an incidence of 0.5-1 per million. Valid data on prognosis, treatment, and demographics are lacking, as most current knowledge stems from retrospective studies. Surgical resection followed by radiotherapy are accepted parts of treatment regimes; however, established prognostic factors and data clarifying the role of chemotherapy are missing.

METHODS: We investigated 227 publications from 1969-2013, with 907 identifiable, individual patients being available for meta-analysis. Demographic data, risk stratification, and treatment of these patients were similar to previous cohorts.

RESULTS: The median overall survival (mOS) was 65 months (95% CI: 54.6-75.3), the 5-year overall survival was 50.9% with 16% of the patients dying more than 5 years after diagnosis. Incomplete resection, clinical and radiological signs for brainstem infiltration, and abstinence from radiotherapy were predictive of worse outcome. Metastatic disease at tumor recurrence was identified as a new prognostic factor, while neither metastasis at initial diagnosis nor desmoplastic/classic histology was correlated with survival. Patients receiving chemotherapy first-line survived significantly longer (mOS: 108 mo, 95% CI: 68.6-148.4) than patients treated with radiation alone (mOS: 57 mo, 95% CI: 39.6-74.4) or patients who received chemotherapy at tumor recurrence. This effect was not biased by tumor stage or decade of treatment. Importantly, (neo)adjuvant chemotherapy also significantly increased the chance for long-term survival (>5 y) compared with radiotherapy alone or chemotherapy at tumor recurrence.

CONCLUSIONS: This meta-analysis clarifies relevant prognostic factors and suggests that chemotherapy as part of first-line therapy improves overall survival and increases the proportion of patients with long-term survival.

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KEYWORDS: adult medulloblastoma; chemotherapy; long-term survival; meta-analysis; radiotherapy

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