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Consolidation radiotherapy in primary central nervous system lymphomas: impact on outcome of different fields and doses in patients in complete remission after upfront chemotherapy.

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Abstract

PURPOSE: Avoidance radiotherapy or reduction of irradiation doses in patients with primary central nervous system lymphoma (PCNSL) in complete remission (CR) after high-dose methotrexate (HD-MTX)-based chemotherapy has been proposed to minimize the neurotoxicity risk. Nevertheless, no study has focused on the survival impact of radiation parameters, as far as we know, and the optimal radiation schedule remains to be defined.

METHODS AND MATERIALS: The impact on outcome and neurologic performance of different radiation fields and doses was assessed in 33 patients with PCNSL who achieved CR after MTX-containing chemotherapy and were referred to consolidation whole-brain irradiation (WBRT). Patterns of relapse were analyzed on computed tomography-guided treatment planning, and neurologic impairment was assessed by the Mini Mental Status Examination.

RESULTS: At a median follow-up of 50 months, 21 patients are relapse-free (5-year failure-free survival [FFS], 51%). WBRT doses ≥ 40 Gy were not associated with improved disease control in comparison with a WBRT dose of 30 to 36 Gy (relapse rate, 46% vs. 30%; 5-year FFS, 51% vs. 50%; $p = 0.26$). Disease control was not significantly different between patients irradiated to the tumor bed with 45 to 54 Gy or with 36 to 44 Gy, with a 5-year FFS of 35% and 44% ($p = 0.43$), respectively. Twenty patients are alive (5-year overall survival, 54%); WB and tumor bed doses did not have an impact on survival. Impairment as assessed by the Mini Mental Status Examination was significantly more common in patients treated with a WBRT dose ≥ 40 Gy.

CONCLUSION: Consolidation with WBRT 36 Gy is advisable in patients with PCNSL in CR after HD-MTX-based chemotherapy. Higher doses do not change the outcome and could increase the risk of neurotoxicity.

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