Combined Immunochemotherapy With Reduced Whole-Brain Radiotherapy for Newly Diagnosed Primary CNS Lymphoma

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Purpose: Our goals were to evaluate the safety of adding rituximab to methotrexate (MTX)-based chemotherapy for primary CNS lymphoma, determine whether additional cycles of induction chemotherapy improve the complete response (CR) rate, and examine effectiveness and toxicity of reduced-dose whole-brain radiotherapy (WBRT) after CR.

Patients and Methods: Thirty patients (17 women; median age, 57 years; median Karnofsky performance score, 70) were treated with five to seven cycles of induction chemotherapy (rituximab, MTX, procarbazine, and vincristine [R-MPV]) as follows: day 1, rituximab 500 mg/m²; day 2, MTX 3.5 gm/m² and vincristine 1.4 mg/m². Procarbazine 100 mg/m²/d was administered for 7 days with odd-numbered cycles. Patients achieving CR received dose-reduced WBRT (23.4 Gy), and all others received standard WBRT (45 Gy). Two cycles of high-dose cytarabine were administered after WBRT. CSF levels of rituximab were assessed in selected patients, and prospective neurocognitive evaluations were performed.

Results: With a median follow-up of 37 months, 2-year overall and progression-free survival was 67% and 57%, respectively. Forty-four percent of patients achieved a CR after five or fewer cycles, and 78% after seven cycles. The overall response rate was 93%. Nineteen of 21 CR patients received the planned 23.4 Gy WBRT. The most commonly observed grade 3 to 4 toxicities included neutropenia (43%), thrombocytopenia (36%), and leukopenia (23%). No treatment-related neurotoxicity has been observed.

Conclusion: The addition of rituximab to MPV increased the risk of significant neutropenia requiring routine growth factor support. Additional cycles of R-MPV nearly doubled the CR rate. Reduced-dose WBRT was not associated with neurocognitive decline, and disease control to date is excellent.

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