Immunosuppression in Patients with High Grade Gliomas Treated with Radiation and Temozolomide.

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Abstract

PURPOSE: Patients with high grade gliomas (HGG) routinely receive radiation, temozolomide, and glucocorticoids. As each of these is immunosuppressive, we conducted a prospective, multicenter study to follow CD4 counts over time and determine if low CD4 counts were associated with adverse outcomes. Experimental design: Patients with newly diagnosed HGG had CD4 counts drawn before initiating standard therapy and monthly thereafter for one year. Information on hospitalizations, infections, glucocorticoid use, survival, and cause of death were also collected.

RESULTS: Ninety-six evaluable patients were accrued (85% glioblastoma, median age of 57, median KPS 90). The median CD4 count before radiation and temozolomide was 664 cells/mm³. The CD4 count nadir occurred 2 months after initiating therapy when 73% of patients had CD4 counts <300 cells/mm³ and 40% had <200 cells/mm³. CD4 counts remained low throughout the year of follow-up. Patients with CD4 counts <200 cells/mm³ at 2 months had shorter survival than those with higher counts (median 13.1 versus 19.7 months, p=0.002). Median survival was related to CD4 toxicity grades (I=23.8 months, II=19.7 months, III-IV=13.1 months, p=0.009). The adjusted hazard ratio for death attributable to 2-month CD4 count below 200 was 1.66 (p=0.03). Eighty-eight percent of deaths resulted from disease progression while only 2.5% were due to infection.

CONCLUSIONS: Severe reductions in CD4 counts in patients with newly diagnosed HGG treated with radiation and temozolomide are common, treatment-related, long-lasting, and associated with early death from tumor progression.

PMID: 21737504 [PubMed - as supplied by publisher]

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