Characteristics and survival outcomes associated with the lack of radiation in the treatment of glioblastoma.

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Radiation increases survival in glioblastoma (GBM); however, 30% do not receive this treatment. We sought to identify characteristics associated with not receiving radiation and the impact on outcomes. We analyzed the Surveillance, Epidemiology, and End Results program (SEER) 18 registries 2000-2013 research database on 30,479 GBM cases that were aged 20 years and older. In total, 21,179 received radiation as first course of therapy, while 8218 did not with 5178 (63%) being 65 years and older. Early decisions on surgery often predicted radiation therapy with 61% having only a biopsy or no surgery at diagnosis. Radiation use as upfront therapy has slowly increased over time at a rate of 0.4% per year; still 25% did not receive radiation in 2013. Cases treated with radiation were more likely to be younger, underwent surgery, lived in a metropolitan area, had higher socioeconomic status, and were in a couple-based relationship. An increased survival in GBM was associated with the use of upfront radiation along with younger age, being of race other than white, undergoing surgery, and a more recent diagnosis. Not receiving radiation therapy adversely affects survival. A trend toward an increased use of radiation was observed although many young adults still do not receive this treatment. Decreased usage of radiation in the elderly and in biopsy-only surgeries was anticipated, but race, gender, and poverty were also statistically significant. Clinicians should be aware of this underutilization, and an increased usage of radiation should improve outcomes for glioblastoma.

KEYWORDS: Disparity; Glioblastoma; Race; Radiation therapy; Surgery

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