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Immunotherapy and Melanoma Brain Metastases: Is It Time to Omit Radiation?

Richard White [1] , Stephen Abel [2] , Stephen Karlovits [2] , Larisa Greenberg [3] , Christie Hilton [4] , Hashem Younes [3] , Jonathan Lee [5] , Rodney Wegner [2]

1. Internal Medicine, Allegheny Health Network, Pittsburgh, USA 2. Radiation Oncology, Allegheny Health Network, Pittsburgh, USA 3. Medical Oncologist, Allegheny Health Network, Pittsburgh, USA 4. Medical Oncology, Allegheny, Pittsburgh, USA 5. Surgical Oncology, Allegheny Health Network, Pittsburgh, USA

Corresponding author: Richard White, richard.white2@ahn.org

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Abstract

Objectives: The implementation of immunotherapy (IMT) has revolutionized systemic therapy and drastically improved outcomes in malignant melanoma. With the penetration of the CNS by IMT, radiotherapy's (RT) rolein this setting has come into question. We sought to use the National Cancer Database (NCDB) to examine the use of IMT with and without brain directed radiation to determine predictors of use and any effect on outcome.

Methods: We queried the NCDB for melanoma patients with brain metastasis at diagnosis receiving IMT alone or in combination with brain directed radiation. Multivariable logistic regression analysis identified variables associated with increased likelihood of receiving IMT alone. Multivariable Cox regression was used to generate hazard ratios. Propensity matching was used to account for indication bias.

Results: We identified 528 and 142 patients that were treated with combination RT/IMT and IMT alone, respectively. Patients with lower comorbidity score were more likely to receive IMT alone. Extracranial disease, as well as treatment outside of an academic/research program, were associated with worse survival. Median OS for all patients was 11.0 months. After propensity matching, treatment with stereotactic radiosurgery (SRS) in addition to IMT was superior to IMT alone, median OS of 19.0 versus 11.5 months (p=0.006). However, whole brain radiation therapy (WBRT) in combination with IMT performed worse than IMT alone, median OS of 7.7 versus 11.5 months (p=0.0255).

Conclusions: Based on the results presented here, for melanoma patients requiring WBRT, immunotherapy use alone may be reasonable in asymptomatic patients. For patients with more limited intracranial disease that are eligible for SRS, combination therapy appears to provide better outcomes. Results of ongoing prospective studies will continue to provide more guidance in the combination of IMT and radiation for this patient population.

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