

# Immunotherapy doubles survival rates for patients with melanoma brain metastases

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Cancer immunotherapies and targeted therapy have revolutionized how clinicians take care of patients with advanced skin cancer and have led to long lasting treatment responses for many of them. However, little is known about the survival impact of these therapies for a substantial group of patients. Melanoma patients with cancer that has spread to the brain have been excluded or underrepresented in clinical trials of immunotherapies due to concerns about whether such drugs can cross the blood-brain barrier or will interfere with other forms of treatment. A new study led by investigators at Brigham and Women's Hospital evaluates data from more than 1,500 cancer programs across the country to gather a large enough dataset to determine the effectiveness of checkpoint blockade immunotherapies. The study found that these therapies provided significant improvements in overall survival for patients with melanoma brain metastases. Their results are published this week in *Cancer Immunology Research*.

"Our findings build on the revolutionary success of checkpoint blockade immunotherapy clinical trials for advanced [melanoma](#) and demonstrate that their substantial survival benefits also extend to melanoma [patients](#) with [brain](#) metastases," said corresponding author J. Bryan Iorgulescu, MD, postdoctoral fellow in the Department of Pathology at Brigham and Women's Hospital/Harvard Medical School and Department of Medical Oncology at the Dana-Farber Cancer Institute.

Approximately 1 in 54 people will develop melanoma in their lifetime, most of whom will be diagnosed early and cured by having the tumor

surgically removed. But for patients with advanced disease, the median overall survival rate is less than a year. Advanced melanoma tends to spread to the brain and is the third most common cause of metastatic brain cancer.

Recent FDA approval of checkpoint blockade immunotherapies and targeted therapies, such as BRAF inhibitors, have added new options for treating advanced melanoma. These novel therapeutics have produced exciting preliminary results in clinical trials of patients with advanced melanoma. However, many trials to date have excluded patients whose skin cancer has spread to the brain, making it unclear if these benefits would extend to this patient population.

In the current study, a research team that included investigators from the Brigham and Dana-Farber Cancer Institute compiled data from more than 2,753 patients from cancer hospitals across the country. Patients who received checkpoint blockade immunotherapy had an average survival of 12.4 months (compared to 5.2 months for those who did not receive immunotherapy), and had a four-year survival rate of 28.1 percent (compared to 11.1 percent for those who did not receive immunotherapy). For patients whose cancer had not spread beyond the brain (to the lungs and/or liver, for instance), these improvements were even more dramatic.

"Through the use of nationwide [cancer](#) data, for the first time we can evaluate the impacts on survival that these exciting new therapies have for patients with melanoma brain metastases," said senior author Timothy Smith, MD, Ph.D., MPH, Director of the Computational Neuroscience Outcomes Center at the Department of Neurosurgery at Brigham and Women's Hospital/Harvard Medical School. "This highlights the power of population data to help answer critical, but previously unanswerable, questions that we face every day in clinical practice."

"Historically, central nervous system metastases from melanoma as well as other solid tumor types have proven particularly challenging to treat, with most therapeutic approaches providing minimal clinical benefit for patients," said co-author David Reardon, MD, clinical director of the Center for Neuro-Oncology at Dana-Farber and professor of medicine at Harvard Medical School. "The results of our analyses indicate that immune checkpoint inhibitors can achieve a meaningful therapeutic benefit for metastatic melanoma, including spread to the central nervous system. At the same time, not all patients benefit, indicating that much research is still required to optimize the potential of anti-tumor immune responses for CNS metastatic disease."

The authors note that insurance status was an important barrier to receiving checkpoint blockade immunotherapy in melanoma brain metastasis patients. Uninsured patients were significantly less likely to receive the treatment than those who were insured privately or through Medicare—a situation suggesting that additional efforts are needed to ensure patient access to these critical therapies.

Provided by Brigham and Women's Hospital

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