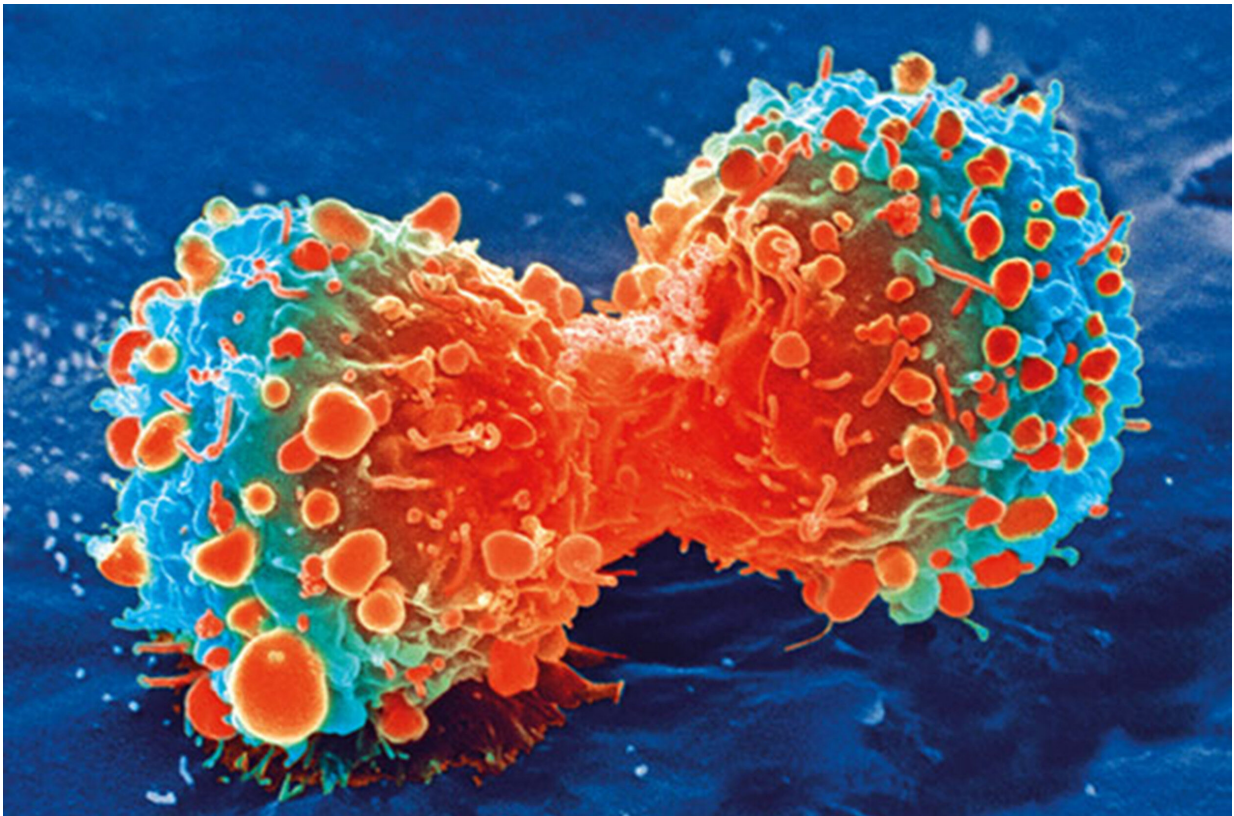


# Elderly survivors of three common cancers face persistent risk of brain metastasis

May 3 2019

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Cancer cell during cell division. Credit: National Institutes of Health

Elderly survivors of breast cancer, lung cancer, and melanoma face risk of brain metastasis later in life, and may require extra surveillance in the years following initial cancer treatment.

"As [cancer](#) treatments have gotten better and more people are surviving a primary cancer diagnosis, it's important to study secondary cancers, including metastasis to the [brain](#)," Barnholtz-Sloan said. "With an aging U.S. population, the number of people with [brain metastasis](#) is increasing, although sometimes that metastasis does not occur until many years after the initial cancer diagnosis."

"As people are living longer after an initial cancer diagnosis, their 'time at risk' for metastasis is going up. In addition, the majority of primary cancer diagnoses have no standard of care for brain metastasis screening," Ascha added.

In this study, researchers analyzed rates of synchronous brain metastases (SBM), those diagnosed during the staging workup for the primary cancer, and lifetime brain metastases (LBM), those diagnosed later in life. Primary cancers in this study were [lung cancer](#), [breast cancer](#), and melanoma, which are more likely to metastasize to the brain than many other cancer types.

The researchers linked data from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) database to Medicare claims data on brain metastases to investigate rates of brain metastasis in [elderly patients](#). Because Medicare is the primary insurer for most patients age 65 or older, the results of SEER-Medicare studies are generalizable to the [elderly](#) population, Barnholtz-Sloan explained. Final data included patients diagnosed in 2010 through 2012, with 70,974 lung cancer cases, 67,362 breast cancer cases, and 21,860 melanoma cases.

The researchers calculated incidence proportion, the ratio of brain metastases counts to the total number of cases, for each primary cancer.

For primary lung cancer, the incidence proportion of SBM was 9.6

percent and for LBM, 13.5 percent. The highest rates of metastasis were in small-cell and non-small-cell lung carcinoma, compared with adenocarcinoma, a more common type of lung cancer.

For primary breast cancer, the incidence proportion of SBM was 0.3 percent and for LBM, 1.8 percent. The rates of brain metastasis were lowest among patients who had localized breast tumors and highest among those whose cancer had already spread to another part of the body. The rates also varied by molecular subtype, with the highest rates for triple-negative breast cancer.

For melanoma, the incidence proportion of SBM was 1.1 percent and for LBM, 3.6 percent. Rates rose dramatically for patients whose melanoma had already spread at the time of diagnosis; 30.4 percent of those who had distant disease at diagnosis would later develop brain metastasis, compared with 15.2 percent of those who had regional and lymph node involvement, 13.2 percent who had lymph node involvement only, 7.8 percent who had regional tissue involvement, and 2.5 percent among those who had localized disease.

Barnholtz-Sloan and Ascha said that the results of the study could help clinicians better understand patients' risk for brain metastasis and could potentially influence screening and surveillance practices.

"Brain metastases are detected with MRI, which is very expensive," Barnholtz-Sloan said. "An improved understanding of who is likely to develop a brain metastasis could help determine who should get an MRI."

Ascha added that more targeted surveillance could potentially help physicians detect metastases at early stages. "If we can identify brain metastases earlier in their progression, that could allow for earlier treatment and improved outcomes for these patients," he said.

The authors said the study's primary limitation is that Medicare data, while providing a comprehensive view of the elderly population, cannot always be generalized to younger patients. Also, the study encompassed four to five years of follow-up, whereas in some cancers, such as breast cancer, brain metastasis can occur decades after the initial cancer, Barnholtz-Sloan said.

**More information:** *Cancer Epidemiology, Biomarkers & Prevention* (2019). [DOI: 10.1158/1055-9965.EPI-18-1116](https://doi.org/10.1158/1055-9965.EPI-18-1116)

Provided by American Association for Cancer Research

Citation: Elderly survivors of three common cancers face persistent risk of brain metastasis (2019, May 3) retrieved 4 May 2024 from <https://medicalxpress.com/news/2019-05-elderly-survivors-common-cancers-persistent.html>

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