Risk That Metastatic Breast Cancer Will Spread to the Brain Varies With the Subtype of the Disease

Findings underscore the importance of identifying markers of which patients with breast cancer are most likely to develop brain metastases.

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For patients with metastatic breast cancer, the risk of spread to the brain is higher in some molecular subtypes of the disease than others, an analysis of data from nearly 17,000 patients indicates. The risk also increases as patients undergo more lines of treatment, according to Sarah Sammons, MD, a breast medical oncologist at Dana-Farber Cancer Institute. The findings will be presented at the 2023 San Antonio Breast Cancer symposium.

Sammons' analysis showed that the cumulative incidence of brain metastasis was highest in patients whose breast cancer was hormone receptor-negative, HER2-positive, or triple-negative. The incidence was lowest among those whose cancer was both hormone receptor-positive and HER2-negative.

The findings underscore the importance of identifying markers of which patients with breast cancer are most likely to develop brain metastases – and devising strategies for preventing such metastases – the investigators say.

For the study, researchers analyzed data from the U.S. Flatiron Health database, which maintains health record information on more than 2.6 million patients with cancer. They focused on 16,973 patients with metastatic breast cancer but no brain metastases when their records first appear in the database. Over the next five years, 2,248 of them – representing 13.2% of the total group – developed brain metastases.

By the time patients were receiving their fourth line of therapy, 26.1% of those with hormone receptor (HR)-positive, HER2-positive breast cancer had a brain metastasis, as did 37.1% of those with HR-negative, HER2-positive breast cancer and 24.7% of those with triple-negative breast cancer. By contrast, only 7.2% of those with HR-positive, HER2-negative had had the disease spread to their brain. HER2 low status did not contribute to development of brain metastases.

(HR-positive cancers grow in response to the hormone estrogen and progesterone; HER2-positive

cancers have high levels of the HER2 growth-control protein; and triple-negative cancers lack these three features.)

“In a large real-world analysis of breast cancer brain metastases, patients with HR-/HER2+ and triple-negative breast cancer had the highest incidence of brain metastases,” said Sammons. “HER2-low did not impact brain metastases incidence within respective subgroups.”

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