

For aggressive breast cancer in the brain, researchers clarify immune response

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Once it has begun to spread in the body, approximately half of patients with an aggressive breast cancer type will develop cancer in the brain. Researchers at the University of North Carolina Lineberger Comprehensive Cancer Center want to improve treatment for patients with breast cancer brain metastases, but using the body's existing defenses - the immune system.

In a preliminary study presented at the American Association for Cancer Research Annual Meeting 2018 in Chicago, researchers revealed findings for what kind of [immune response](#) the body is staging against triple negative breast [cancer](#) that has spread to the [brain](#). They hope they can use these findings to improve patient responses to drugs that work by unleashing the immune system against cancer.

"Patients with brain metastases do a lot worse clinically," said the study's first author Benjamin Vincent, MD, UNC Lineberger member and assistant professor in the UNC School of Medicine. "They are sicker, and they die earlier with their disease than patients with metastases everywhere else. What makes the biology of brain metastases and immune responses in the brain different from other sites of disease was our question. We'd love to figure that out so we can target it therapeutically."

For the study, researchers analyzed samples of triple negative breast cancer that had spread to the brain along with matched primary tumors. They genetically sequenced the tumors to understand what types of

immune [cells](#) were present in the tumors, which they could distinguish using specific genetic signatures that are specific to each immune cell.

They found that triple negative [breast cancer](#) brain metastases typically had lower numbers of immune cells in them. However, the immune cells present were of a type that typically has corresponded to response to treatments called immune checkpoint inhibitors, which are drugs that "remove the brakes" on immune cells to allow them to attack tumors. The researchers believe that if they can increase the numbers of immune cells that are able to get to the [brain metastases](#), they would see better response to checkpoint inhibitor therapies.

"This research is still early, but we think that if we can find a way to get immune cells there, they will be responsive there - they will do their job," Vincent said. "The primary problem is not that the environment around the tumor will not allow the immune cells to work. The problem is that the immune cells aren't getting there appropriately. We have to look for strategies to get [immune cells](#) in and treat with immunomodulatory agents for peak effect."

Provided by UNC Lineberger Comprehensive Cancer Center

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