

ERADICATING BRAIN METASTASES IN BREAST CANCER PATIENTS

Cancer is a disease that touches the lives of all families, whether military or civilian, and can be devastating both physically and mentally. According to the Centers for Disease Control and Prevention, breast cancer in the United States is among the most common of cancers in women. While women are now living longer as a result of a variety of breast cancer treatments, some women experience the cancer spreading into other areas of their bodies, or metastases, especially into the brain.

In 2011, Geneva began working with molecular biologist Patricia Steeg, Ph.D., Chief of the Women's Cancers Section at the Center for Cancer Research, National Cancer Institute. Dr. Steeg has been studying metastasis for more than 20 years and focuses her research on brain metastases in breast cancer patients.

Brain metastases in breast cancer patients are increasing in incidence over time. Brain metastases occur in at least 15% of breast cancer metastatic patients and present a dismal prognosis. Treatment typically includes whole brain irradiation, or possibly surgery with whole brain radiation, resulting in approximately a 20% chance of one year survival. Undergoing whole brain irradiation can put a patient at risk of severe long term damage to the brain. These effects can begin months after the treatment and can include a devastating generalized radiation necrosis with dementia, neurotoxicity, and speech problems.

Dr. Steeg's research team has formed the first group to examine this topic in a comprehensive multi-disciplinary manner. The development of preventive strategies for women at high risk for breast cancer requires a 'molecular map' of the cancer progress. Several initiatives are underway with the ultimate aim to eradicate brain metastases in breast cancer patients. In partnership with Geneva, Dr. Steeg and her team's innovative research initiatives strive to be even closer to treating and eradicating brain metastases due to breast cancer.

Conclusions from the studies have shown that "bioinformatic analysis" identified a 13-gene signature predictive of rapid versus late brain metastasis. There are signals within the body's DNA which provide insight into how quick brain metastasis can occur once diagnosed with breast cancer. The results from these studies may just give doctors something to look for when diagnosing and predicting brain metastases in women with breast cancer.

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