

Molecular imaging helps predict breast cancer survival

June 7 2010

Research introduced at SNM's 57th Annual Meeting is expanding molecular imaging's role in determining the best course of treatment for recurring breast cancer patients, while offering a means of evaluating certain therapies for potentially positive impact on their chance of survival.

"As the therapeutic arsenal against breast and other cancers continues to grow, the ability to predict and monitor response to therapy will become increasingly important, as additional treatment options become available," said Félix-Nicolas Roy, M.D., fellow, BC Cancer Agency, Vancouver, British Columbia, Canada. "Nuclear medicine and [molecular imaging](#) will play a crucial part in this context of personalized medicine."

For women with recurrent breast tumors characterized by the presence of estrogen receptors, a binding mechanism that breast cells use to modulate cell growth, only a minority have been shown to benefit from hormone therapy, while others find that the course of their disease is virtually unaltered. Clinicians' ability to determine the likely outcome of certain therapies could alter the course of treatment and lead to the use of alternative therapies that might improve patients' prognosis.

In this long-range prospective study, researchers followed 60 patients with suspected recurrence of estrogen-receptor positive [breast cancer](#) up to 83 months after time of suspected recurrence. Before and two months after initiating second-line therapy, mainly hormone therapy with aromatase inhibitors, a drug therapy that shuts down the production of

estrogen in an effort to slow cancer growth, patients were given an injection of an investigational molecular imaging biomarker called 18F-FES, which consists of an analog form of an estrogen known as estradiol. Patients then underwent imaging with positron emission tomography (PET), a molecular imaging technique. For this research, PET scans were performed to predict the success of a patient's particular therapy, a determination made based on the distribution and level of uptake of the imaging agent throughout the body.

Results of the study revealed that patients who showed a favorable response to therapy on PET scans lived significantly longer. Among the 44 patients found to have proven recurrence of estrogen-receptor positive breast cancer, those who still had evidence of disease on FES-PET two months after the initiation of treatment were found to have significantly lower rate of survival. Being able to predict the outcome of treatment could enable clinicians to discontinue futile therapies and provide the benefits of alternative therapy earlier in the course of treatment. Larger prospective studies need to take place before 18F-FES-PET would be considered for standard use in a clinical setting

Provided by Society of Nuclear Medicine

Citation: Molecular imaging helps predict breast cancer survival (2010, June 7) retrieved 3 May 2024 from <https://medicalxpress.com/news/2010-06-molecular-imaging-breast-cancer-survival.html>

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