Medical Xpress

PET scans confirm effectiveness of estrogen-blocking drugs in breast cancer patients

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For the first time, researchers at Seattle Cancer Care Alliance have demonstrated the feasibility of using serial positron emission tomography (PET) scans, using a special estrogen-containing isotope, to confirm the relative effectiveness of estrogen-blocking and estrogen-depleting therapy in patients with metastatic breast cancer. The results of the research are published online in *Clinical Cancer Research*.

The PET scans, taken before, during and after hormonal therapy, confirmed the superior effectiveness of estrogen-receptor-blocking drugs such as tamoxifen and fulvestrant over estrogen-depleting therapies such as aromatase inhibitors in blocking the estrogen receptor in cancer cells. The study also confirmed that tamoxifen is superior to fulvestrant in blocking estrogen.

While the results were expected they had never before been proven, according to corresponding author Hannah Linden, M.D., a breast oncologist at SCCA and an associate professor of Medicine at the University of Washington School of Medicine.

Linden and colleagues measured regional estrogen-receptor blocking and binding by using PET scans with 18F-flouroestradiol (FES), a trace amount of estrogen in isotope form, prior to and during treatment with aromatase inhibitors, tamoxifen and fulvestrant in a series of 30 patients whose breast cancer had spread to the bones. Tumor FES uptake declined more markedly in patients who took estrogen-receptor blockers compared to those who took estrogen-depleting aromatase inhibitors (an

average decline of 54 percent versus 15 percent, respectively). Among the two estrogen-blocking drugs studied, the rate of complete tumor blockade was highest following use of tamoxifen versus fulvestrant.

"What we're suggesting in the paper -- that we couldn't fully test for before -- is if estrogen is incompletely blocked you're not getting a good outcome for the patient," Linden said.

"Our findings support the ability of FES PET to visualize the in vivo activity of endocrine therapy," the authors concluded. "This technology could be used early in drug development to measure effectiveness at the intended therapeutic targets, and to help refine selection and dosing for agents to move forward in drug development."

Additionally, pharmacodynamic imaging could provide clinicians with a promising tool for therapeutic selection and for predicting and evaluating response to estrogen-receptor-targeted therapy, Linden said.

Provided by Fred Hutchinson Cancer Research Center

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