Herceptin helps women with multiple chromosomes containing HER2 gene, study finds

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The targeted therapy Herceptin helps women with HER2+ type of breast cancer independent of whether patients have extra copies of chromosome 17, home to the HER2 gene which produces the HER2 protein that fuels cancer growth. Prior to this report, there were conflicting opinions about whether that was the case, say Mayo Clinic investigators who presented their findings at the San Antonio Breast Cancer Symposium.

The analysis came from the North Central Cancer Treatment Group's clinical trial N9831 which tested the use of Herceptin in combination with chemotherapy in patients with surgically-removed HER2+, early-stage, node-positive or high-risk, node-negative breast cancer. Data from the trial on the long term efficacy and safety of this treatment were presented recently by Mayo Clinic researchers and collaborators as part of a joint analysis with another U.S. trial. They demonstrated the significant benefit of using Herceptin, which is a monoclonal antibody that binds the HER2 protein, shutting down its function.

HER2+ breast cancer accounts for approximately 20 percent of all breast cancer cases, and most oncologists decide whether to use Herceptin based on a test that measures the amount of HER2 protein or the number of extra ("amplified") genes in a patient's tumor tissue sample. The goal of this sub-study was to see if patients with more than two chromosome 17s (known as polysomy 17) had a different outcome from use of

Herceptin.

“Some oncologists thought that patients with non-amplified HER2 gene in polysomy 17 tumors may respond to Herceptin because they may have that many extra HER2 genes resulting in HER2 protein over expression. Others thought they might not benefit because they had far too many HER2 genes from the extra chromosomes, producing too much HER2 protein, which may overwhelm Herceptin’s effectiveness,” says the study’s lead investigator, Monica M. Reinholz, Ph.D., an assistant professor at Mayo Clinic’s campus in Rochester, Minn. “No one knew if they would respond, in general, or not.”

The research team, led by Edith A. Perez, M.D., from the Mayo Clinic campus in Jacksonville, Fla., specifically found that 865 patients had HER2 gene amplified tumors with polysomy 17 and 685 women had amplification with two copies (normal) of chromosome 17 did equally well using Herceptin. Their disease-free survival was about 89 percent three years after treatment and between 88 percent and 89 percent five years after therapy, Dr. Reinholz says. “These results of this new analysis suggest that chromosome 17 number status is not predictive of Herceptin response in patients with HER2 amplified tumors,” she says.

Also, they found that women with HER2 gene amplification and polysomy 17 who were treated only with chemotherapy seemed to have had a better outcome than patients treated with chemotherapy who did not have the extra chromosomes. Three-year disease-free survival was 83 percent and 75 percent, respectively, and five-year disease-free survival was 78 percent and 68 percent. “This is an interesting and unexpected finding,” Dr. Reinholz says.

Researchers also found that 37 patients had HER2 non-amplified and polysomy 17 tumors, and 67 patients had HER2 non-amplified and normal chromosome 17 tumors. There was no apparent influence of

polysomy 17 in predicting Herceptin benefit in women with HER2 non-amplified tumors, they say. However, due to the small number of cases in this study, additional patients will be needed to determine whether Herceptin is beneficial in patients with non-amplified HER2 tumors, the researchers say.

Source: Mayo Clinic