

New Combination Boosts Immune Response in Triple Negative Breast Cancer

By Annette M. Boyle

SAN ANTONIO, TEXAS—A team led by researchers at the San Antonio Military Medical Center at Fort Sam Houston discovered that adding nelipecimut-S to trastuzumab significantly increases immune response in women with triple negative breast cancer. The result potentially explains earlier findings of markedly improved disease-free survival with the combination in this aggressive form of breast cancer.

The study was presented June 2 at the 2019 American Society of Clinical Oncology Annual Meeting in Chicago.¹

The investigators enrolled 275 disease-free women with either triple negative breast cancer (97) or nonamplified breast cancer that expressed low levels of human epidermal growth factor receptor 2 (HER2). Participants were randomized 1:1 to receive granulocyte-macrophage-colony stimulating factor (GM-CSF) or nelipecimut-S plus GM-CSF every three weeks for six cycles, followed by four boosters every six months. All patients also received trastuzumab for one year.

Of the 97 participants with triple negative breast cancer, 60 had four timepoints available for analysis. Thirty-seven had received the combination therapy and 23 received trastuzumab monotherapy.

Patients in the combination therapy arm experienced substantial and steadily increasing cytotoxic T lymphocyte (CTL) frequency, with rates more than doubling at 18 months, tripling at 24 months and at 379% of baseline at 30 months. Mean CTL frequency increased from 0.029 to 0.112 at 30 months.

Patients on trastuzumab monotherapy, on the other hand, saw an increase from 0.027 at baseline to 0.057 at 30 months.

Among those on the combination therapy, only four patients experienced disease recurrence compared to 13 in the trastuzumab monotherapy group. The patients who recurred on nelipecimut-S plus trastuzumab did not mount an immune response, as measured by both *ex vivo* assessment and delayed type hypersensitivity reactions. Those who did not have a recurrence had substantial clonal CTL expansion and enhanced delayed type hypersensitivity reactions.

Based on the *ex vivo* and *in vivo* measurements, the researchers concluded that immune response to nelipecimut-S was attenuated in triple negative breast cancer patients who experienced recurrence. They are continuing to study the relationship

between immune response and clinical effect to the combination therapy in triple negative breast cancer.

1. Campf J, Clifton GT, Hale DF, Vreeland TJ, Hickerson A, et al. Immunologic responses in triple-negative breast cancer patients in a randomized phase IIb trial of nelipepimut-S plus trastuzumab versus trastuzumab alone to prevent recurrence. Presented at the 2019 American Society of Clinical Oncology Annual Meeting in Chicago. May 31 to June 4, 2019.