# Pre-Surgery Hormone Therapy May Work Differently for Black and White Women with Breast Cancer

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Neoadjuvant Endocrine Therapy May Elicit Differential Responses in Black vs. White Women with Breast Cancer

Black women treated with neoadjuvant endocrine therapy for breast cancer were more likely to benefit than white women if treated at an earlier disease stage but less likely to benefit than white women if treated at a later disease stage, according to results presented at the 15th AACR Conference on the Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved, held September 16-19, 2022.

“Our findings suggest that neoadjuvant endocrine therapy alone may not be the best approach in Black women who present with more advanced tumors,” said Veronica Jones, MD, an assistant professor in the Department of Surgery, Division of Breast Surgery at City of Hope.

Breast tumors that express hormone receptors (HR), namely the estrogen and progesterone receptors, account for over 70% of all breast cancer cases, and are often treated with drugs that target the hormone receptors, known as endocrine therapy. Treatment can be given in the neoadjuvant setting (before surgery is attempted) or in the adjuvant setting (after surgery has been performed).

While nearly all patients with HR-positive breast cancer, regardless of race, are treated with endocrine therapy, Black women are four times more likely to die of HR-positive breast cancer than white women, Jones said. “Little is known about the contribution of endocrine therapy resistance to the mortality disparity seen in Black women,” she continued. “We need to better understand if universal endocrine therapy is the right approach, especially in a population that suffers a much higher mortality rate.”

To examine differences in outcomes between Black and white women treated with neoadjuvant endocrine therapy, Jones and colleagues identified a cohort of patients from the National Cancer

Database (NCDB) that included 3,521 white women and 365 Black women with stage 1 to 3 HR-positive breast cancer who received neoadjuvant endocrine therapy, and for whom tumor stage, nodal status, and presence of metastases were known following treatment.

At diagnosis, Black women were 1.6 times more likely to have cancer detected in lymph nodes and 1.5 times more likely to have stage 3 disease, as compared to white women. Black women also received neoadjuvant endocrine therapy longer than their white counterparts, with a median duration of 128 days and 114 days, respectively. Black women were 1.5 times more likely to receive neoadjuvant endocrine therapy for longer than 24 weeks.

Among both Black and white women, 0.8% of tumors were either downstaged to an in situ lesion or eliminated following neoadjuvant endocrine therapy. Overall, Black women were 2.9 times more likely to experience tumor downstaging or elimination than white women. All of the downstaged tumors were originally diagnosed as stage 1 or 2. However, 0.9% of tumors, all but two of which were diagnosed as stage 2 or 3, upstaged to stage 4. Black women were 2.6 times more likely to experience tumor upstaging than white women.

“While lower-stage cancers in Black women responded better to endocrine therapy compared to white women, higher-stage cancers in Black women did more poorly in response to endocrine therapy,” Jones said. “This suggests a different tumor biology that may impact the treatment we give.”

Moving forward, Jones and colleagues are working to investigate how mutations and gene expression profiles differ between breast tumors from Black and white women. These discoveries may help expand the repertoire of targeted therapies available to these patients, especially for Black women who have been historically underrepresented in clinical trials.

“This project is a critical step in unpacking the heterogeneity of hormone receptor tumor biology,” Jones said. “It brings into question how we can more effectively manage this disease to mitigate breast cancer racial disparities.”

One limitation of the study is that percentages of estrogen and progesterone receptor positivity, which can correlate with response to endocrine therapy, were unavailable. The NCDB also did not contain information about how well patients adhered to endocrine therapy or how clinical tumor stage was determined, which may vary based on differential access to advanced imaging techniques.

The study was a multidisciplinary effort with colleagues at the University of Iowa and Vanderbilt University and was funded by City of Hope. Jones declares no conflicts of interest.

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