The Immutable Burden of Racial Disparities in Breast Cancer

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We recently published our finding from an investigation of ongoing racial disparities from breast cancer (J Cancer 2020; doi: 10.7150/jca.39091). We noted that, while breast cancer mortality rates have been declining over the past 30 years, disparities in death rates between African-American and Caucasian women have not decreased. In fact, they have increased, according to some reports.

We noted that these disparities had been attributed to a cadre of well-documented social-, screening-, patient-, disease-, and treatment-related factors, all well known to the oncology community. However, while overall differences in survival have not narrowed, we pointed to some data in published reports, which were neither discussed nor analyzed in the publications, denoting an opposite effect.

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Head & Neck Cancers: Novel Biomarkers in Sinonasal Cancers

BY DIBASH KUMAR DAS, PHD

Head and neck cancers account for 5 percent of all malignant tumors and are responsible for approximately 600,000 new cases and 300,000 deaths per year globally (Front Oncol 2020; doi: 10.3389/fonc.2020.01020).

Head and neck neoplasms are defined as tumors above the clavicles, with exception of tumors of the esophagus, brain, and spinal cord. Sinonasal cancers are a heterogeneous group of tumors arising in the sinonasal region; their histopathology differs from site to site. These neoplasms are more prevalent in men than women and survival is negatively impacted by increasing age at diagnosis, AJCC TNM stage, and grade.

Although rare, sinonasal cancers have a poor prognosis. Recent analysis of the SEER database (1973-2015) demonstrated 5-, 10- and 20-year survival at 45.7 percent, 32.2 percent, and 16.4 percent, respectively (BMC Ear Nose Throat Disord 2018; https://doi.org/10.1186/s12901-018-0061-4). Poor survival is mainly because clinical mani-

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Chemotherapy Plus Blinatumomab Improves Survival for B-Cell ALL Patients

A study led by The University of Texas MD Anderson Cancer Center showed that first-line treatment with a regimen of chemotherapy combined with the monoclonal antibody blinatumomab resulted in increased survival and achieved a high rate of measurable residual disease (MRD) negativity for patients who were newly diagnosed with a high-risk form of acute lymphoblastic leukemia (ALL) known as Philadelphia chromosome-negative B-cell ALL (Ph-negative B-ALL).

Findings from the study were presented by Nicholas Short, MD, Assistant Professor of Leukemia, at the virtual 2020 Annual Meeting of the American Society of Hematology. The study was led by Elias Jabbour, MD, Professor of Leukemia.

“The best opportunity to cure any acute leukemia is by giving the most effective therapy in the frontline setting,” Short said. “We are very encouraged that every patient on the study achieved a complete remission and 97 percent achieved MRD negativity, which is highly associated with better outcomes.”

Standard treatment for patients with Ph-negative B-ALL is combination chemotherapy, which has a high rate of treatment failure and complications. Current therapies for ALL have high remission rates of up to about 90 percent. However, many patients relapse, leading to long-term survival rates of 50 percent or less. Finding new treatment options that can improve response and survival for these patients is critical.

Immunotherapy using monoclonal antibodies, such as blinatumomab, encourages changes in the body’s im-

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The data suggested that there may be subpopulations of African-American women with specific categories of breast cancer whose survival may have improved more than that of Caucasian patients in the past decades. This prompted us to compare systematically changes in survival differences over time between stratified subpopulations of African-American women with breast cancer to their corresponding categories of Caucasian women.

**Approach to Looking for Bright Spots**

Our study analyzed the Surveillance, Epidemiology, and End Results (SEER) database to compare differences in survival between African-American and Caucasian women between the decades saddling the turn of the century while controlling for tumor and patient characteristics.

Our report analyzed 395,170 patients with breast adenocarcinoma from 1990 to 2011 who had a recorded race, age, stage, grade, ER and PR status, marital status, and laterality as control. We grouped patients into two time periods, 1990-2000 and 2001-2011; three age categories: under 40, 40-69, and >70 years; and two stage categories: I-III and IV. Our study used the Kaplan-Meier and log-rank tests to compare survival curves. The publication stratified data by patient- and tumor-associated variables to determine co-variation among confounding factors. We used the Pearson Chi-square test and Cox proportional hazards regression to determine hazard ratios to compare survival.

**Survival Improvement**

Our findings showed that both Caucasian and African-American patients with stage I-III and stage IV breast cancer had significantly lower Cox hazard ratios in the 2001-2011 time period than in the 1990-2000 time period, with a few exceptions in some of the stratified categories. Overall, differences between African-American and Caucasian survival curves persisted, and population-averaged data did not show differences between rates of improvement between the two groups, in agreement with the published literature.

After stratifying the data, however, our results demonstrated a clear and significantly greater improvement in survival in African-American women with ER- (Cox HR 0.70 [95% CI 0.65-0.76]) and PR- (Cox HR 0.67 [95% CI 0.62-0.72]) stage I-III breast cancer in 2001-2011 than in Caucasian women with ER- (Cox HR 0.81 [95% CI 0.78-0.84]) and PR- disease (Cox HR 0.75 [95% CI 0.73-0.78]). This improvement in survival in African-American women was not associated with changes in the distribution of tumor or patient attributes.

We further stratified patients with ER- and PR- stage I-III tumors to additional patient- and tumor-associated variables. The results then showed that African-American women with ER- cancer who had stage I tumors, PR- tumors, or were married had greater improvement in survival than Caucasian women in the same categories. Similarly, African-American women with PR- tumors who were >70 years old, had stage I cancer, had ER- tumors, or were married had greater improvement in survival than their Caucasian counterparts.

The study also revealed that some subgroups of patients with stage I-III disease had less improvement in survival than other patients in their respective stratification categories. This included ER- and PR- Caucasian patients compared to ER+ and PR+ Caucasian patients, Caucasian and African-American patients >70 years old compared to their respective younger subgroups, and widowed African-American patients compared to single or married African-American patients.

**Implications & the Path Forward**

Our study was the first to report an improvement in racial disparities in survival in a subset of breast cancer patients. Because further stratification of the ER- and PR- patients by tumor- and patient-associated variables did not support a role for these co-variables in our findings, we proposed that perhaps treatment-associated variables might have played a role.

ER-/PR- Caucasian patients improved less in the decade after the century than ER+/PR+ Caucasian patients. This suggested that a relative lack of progress in effective novel therapies for hormone receptor-negative breast cancer resulted in a limit to improving survival with available treatments.

In the manuscript, we pointed out that the data suggest that perhaps African-American patients are catching up to these limits due to a general improvement in the rate of standard treatment for localized breast cancer. A greater national focus on awareness in disparities in the treatment of and clinical trial participation by African Americans through programmatic efforts may have also raised the general awareness to provide appropriate treatment and cancer control.

We concluded that we might not, therefore, be witnessing an improved survival in appropriately treated patients. Instead, we may be seeing the effects of an increase in the fraction of African-American women receiving standard treatment.

The implication that the rate of administering standard-of-care treatment for breast cancer to African-American women has started to improve is a small step, albeit a significant one. Much has been written and communicated about the immense disparities in all breast cancer areas, including prevention, detection, diagnosis, treatment, clinical trial participation, follow-up, and survival care. Yet, African-American women lag in all of these areas. Efforts by the National Cancer Institute, governments at all levels, foundations, non-government groups, and academic institutions remain ongoing. Still, we must do much more to close the remaining gap in disparate survival from this disease.