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Young Women with Breast Cancer: A Distinct Population Characterized by More Aggressive Disease and a Need for More Targeted Care

2020 Virtual Scientific Session Abstract:

A National Cancer Database Analysis of Women with Breast Cancer under Age 40

Columbia, MD, May 22, 2020--Breast cancer patients under age 40 generally present with a characteristic profile—later stage, more aggressive tumors with poorer prognosis—found a new study analyzing one of the largest patient datasets compiled to investigate age-related breast cancer differences, particularly for HER2 status. The research, which also found that these patients receive more aggressive therapies compared to older patients, will be published on May 22 online in the American Society of Breast Surgeon (ASBrS) 2020 Virtual Scientific Session Official Proceedings* and in the Annals of Surgical Oncology. Investigators concluded that younger patients should be viewed as a unique breast cancer population with many common characteristics and emphasize the importance of developing individualized treatments to meet this group's needs.

“In today's age of precision medicine and ever-evolving breast cancer treatments, understanding tumor biology and optimizing therapeutic interventions based on this is a reality and critical to improving outcomes,” says resident researcher Kelly Krupa, MD, Allegheny General Hospital. “A consistent body of research finds breast cancers in younger patients share many common attributes. With its large patient sampling and comprehensive examination of tumor features, treatments and outcomes, this study adds to the growing body of research on tumors characteristic of a younger population.”

Researchers analyzed data in the National Cancer Database from 26,262 women under age 40 and 28,537 women 40 years of age or older. Younger patients presented with a higher clinical stage cancer compared to older patients with 37.16% vs. 61.78% at stage 1, 45.92% vs. 29.50% at stage 2, 12.79% vs.

6.17% at stage 3 and 4.13% vs. 2.55% at stage 4. Pathologic stages for these women were also significantly higher.

In the study, 44.48% of women under 40 and 68.95% of older patients had grade I and II tumors, while 55.52% of those under age 40 and 31.06% of older patients had grade III and IV tumors, meaning that significantly more young women had poorly differentiated cancer cells correlating with more aggressive disease.

Of the 26,262 cases examined, 22.63% of younger women were HER2 positive compared to 13.41% of older women. HER2 positive also signals more aggressive disease. Likewise, 19.82% of younger women had difficult-to-treat triple negative breast cancer, compared with approximately half that number in older patients.

In a comparison of therapeutic intervention, patients under 40 were more likely to have been treated with chemotherapy, while radiation therapy was more common among those ages 40 and over. Rates of surgical treatments showed no statistical difference.

“Breast cancer presents physicians and patients with a host of challenges and choices,” says Dr. Krupa. She points out that these patients also are at a very different point in their lives than older patients. For example, some therapies may come with difficult side effects that younger women will have to manage for years to come. Patients in this age group may suffer from pregnancy-related cancer or they may be concerned with family planning after treatment. They may be more focused than older patients on the implication of their disease on siblings and young relatives.

Dr. Krupa notes that typically women under 40 do not undergo screening mammography, which may account in part for their later stage at presentation. Given this and the more aggressive nature of their disease, young women with a family history of breast cancer or other risk factors should talk to their doctors about cancer risk assessment. Risk assessment profiles may suggest a need for earlier breast cancer screening. This, in turn, can potentially lead to earlier disease diagnosis, as well as more precise therapies and better outcomes.

“The more data available about the nature of a woman’s breast cancer and the impact of specific treatment of their tumor type, the better a physician’s clinical decision-making and the more they can empower patients to make informed choices about disease management and survivorship.”

***The Official Proceedings is a comprehensive online compilation of peer-reviewed research selected for presentation at the 2020 Annual Meeting of the American Society of Breast Surgeons. The Meeting was cancelled due to caution surrounding the coronavirus.**

Abstract, Official Proceedings

A National Cancer Database Analysis of Women with Breast Cancer under Age 40

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Objective: Breast cancer diagnosed in patients under age 40 represents approximately 7% of cases. There is an overall worse outcome for this group of patients despite having access to the same treatment options as the patients older than age 40. Breast cancer in young women is more likely to present at a higher stage with more aggressive features including HER 2 overexpression. Our goal with this study was to analyze the stage at presentation, tumor biology (including HER 2 status which has not been analyzed in a large data set), treatments performed, and outcomes of patients under age 40 with breast cancer compared to patients older than age 40. We hypothesized patients under age 40 presented at a later stage with worse features and overall are more likely to receive aggressive therapy. We sought to answer if this patient population benefited from more aggressive treatment.

Methods: The National Cancer Database was queried to identify female breast cancer patients from 2010-2014 with known HER 2 receptor status. Among 54,799 women diagnosed with breast cancer who were eligible for analysis, 26,262 were < 40 years of age and 28,537 were aged ≥ 40 years. Statistical methods used were Pearson's Chi-square test and logistic regression.

Results: Across the three staging systems (AJCC Clinical Stage Group, AJCC Pathologic Stage Group, and NCDDB Analytic Stage Group), there were statistically significant associations between age and presenting stage ($p < .0001$); women under the age of 40 had greater odds of presenting at a later stage compared to those who were ≥ 40 years [(OR=2.13; 95% CI: 2.03 – 2.25), (OR=2.01; 95% CI: 1.95 – 2.08), and (OR=1.76; 95% CI: 1.68 – 1.84) respectively]. In comparing tumor grades between the two age groups, the likelihood of having: (i) moderately differentiated (Grade II) tumors; (ii) poorly differentiated (Grade III) tumors; and (iii) undifferentiated (Grade IV) tumors vs well-differentiated tumors is significantly greater for patients under the age of 40 years [(OR=1.95; 95% CI: 1.85 – 2.07), (OR=4.55; 95% CI: 4.30 – 4.81) and (OR=5.72; 95% CI: 4.06 – 8.04) respectively]. Women in the younger age group were also less likely to have ER-positive breast cancer and to have received hormone therapy [(OR=0.49; 95% CI: 0.47 – 0.51) and (OR=0.64; 95% CI: 0.61 – 0.67) respectively]. However, patients under the age of 40 were significantly more likely to have HER2-positive breast cancer (OR=1.89; 95% CI: 1.81 – 1.98). Furthermore, the results showed that the proportion of patients who received chemotherapy and radiation treatments differs significantly by age. Patients < 40 years had a significantly greater likelihood of receiving chemotherapy relative to patients ≥ 40 years (OR=6.93; 95% CI: 6.65 – 7.22). Conversely, patients ≥ 40 years had greater odds of receiving radiation therapy (OR=1.15; 95% CI: 1.11 – 1.19).

However, there was no significant association between age and surgical treatment of breast cancer. Additionally, there was no significant difference in mortality between the two age groups.

Conclusions: Our database has one of the largest number of patients and also includes HER 2 receptor status. Our data is consistent with other reports that patients under the age of 40 present at a later stage with more aggressive features including hormone receptor negative, HER 2 positivity and with a higher grade compared to patients over the age of 40. Patients under the age of 40 years with breast cancer did not have an overall worse survival despite presenting at a later stage. These unique features suggest this patient population should be treated as its own entity. Limitations include the lack of information regarding genetics and knowledge of other risk factors which is important in the development of breast cancer in this patient population.