Breast Cancer Staging and Presentation in HIV-Positive Patients: A multi-institutional retrospective review

Cassandra L. Baker, MS2; Patricia B. Wehner, MD2

1Georgetown University School of Medicine, Washington DC; 2Department of Breast Surgery, Washington Hospital Center, Washington DC

Abstract

The presentation of breast cancer in HIV-positive patients is not well-defined. Given the immune compromising effects of HIV, we hypothesized that the presence of HIV infection would lead to an advanced breast cancer stage at diagnosis. Using data from four MedStar Hospitals in the Baltimore-Washington Metropolitan area, the stage of breast cancer, receptor status, and treatment for 43 HIV-positive patients diagnosed between 2004-2014 were analyzed and compared with a control of all patients diagnosed at the Washington Cancer Institute during those years. The average age of breast cancer diagnosis was found to be significantly younger in those patients with HIV (p<0.001), while there was no significant difference in breast cancer stage at diagnosis (p=0.42). Further exploration of confounding variables and statistical significances is recommended.

Introduction

Breast cancer incidence rates have increased in human immunodeficiency virus (HIV) positive patients. As patients infected with HIV continue to live longer as a result of highly active antiretroviral therapy (HAART) and other treatments, the incidence of breast cancer in HIV-positive patients continues to increase, approaching that of the general population. However, there is limited data on the presentation or stage of breast cancer in HIV-positive patients. A recent study, which compared the cancer incidence in immune-compromised HIV and transplant patients, found that HIV patients were more likely to present with late-stage cancers than other immune compromised patients.

Washington, D.C. has one of the highest incidence rates of HIV/AIDS, with approximately 2.5% of the population infected. Additionally, Washington has one of the highest rates of breast cancer mortality; available data from 2008 shows that breast cancer mortality in Washington is approximately 27.6 per 100,000 persons compared to the national average of 23.5 per 100,000 persons.

The purpose of this multi-institutional study is to analyze the staging, presentation, and recurrence of breast cancer in HIV-positive patients treated at MedStar hospitals in the Washington area from 2004 to 2014.

Methods

This study retrospectively analyzed all breast cancer cases in HIV-positive patients at MedStar Washington Hospital Center, MedStar Georgetown University Hospital, MedStar Franklin Square Hospital Center, and MedStar Good Samaritan Hospital from January 1, 2004 through December 31, 2014. An electronic medical record search was conducted from the hospital repository – Infomart – and the outpatient repository – Centricity or Aria – at each of the four MedStar hospitals in the Washington, DC area. Female patients were identified using the diagnosis code of malignant breast cancer (ICD-9 233, 174) and the diagnosis code of HIV (ICD-9 042, V08). The electronic medical records were reviewed for the following data: gender, race, age, BMI, family history, social history, breast cancer stage, tumor markers, surgical and adjuvant treatment, and recurrence information. The HIV status of each patient was either self-reported or retrieved from a past medical record. No HIV testing was performed upon admittance of each patient to her respective Breast Surgery Department.

Results

HIV Positive Patients Compared to Washington Cancer Institute Population

<table>
<thead>
<tr>
<th>Stage</th>
<th>HIV-Positive</th>
<th>Control</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3 (6.9)</td>
<td>5 (11.6)</td>
<td>0.415</td>
</tr>
<tr>
<td>I</td>
<td>12 (26.0)</td>
<td>19 (44.2)</td>
<td>0.05</td>
</tr>
<tr>
<td>II</td>
<td>12 (26.0)</td>
<td>10 (23.3)</td>
<td>1.00</td>
</tr>
<tr>
<td>III</td>
<td>8 (17.4)</td>
<td>15 (35.3)</td>
<td>0.02</td>
</tr>
<tr>
<td>IV</td>
<td>2 (4.4)</td>
<td>7 (16.3)</td>
<td>0.15</td>
</tr>
<tr>
<td>Unknown</td>
<td>5 (11.6)</td>
<td>4 (9.3)</td>
<td>0.78</td>
</tr>
</tbody>
</table>

Table 1: Comparison of Study Population and Washington Cancer Institute Population

The patients in each group were compared using statistical tests for age, race, and surgical treatment. The average age at breast cancer diagnosis was significantly lower (p<0.001) than the age of diagnosis for all patients diagnosed between 2004-2014 at Washington Cancer Institute (WCI). Additionally, HIV-positive patients were significantly more likely (p=0.013) to have chemotherapy than all patients seen at WCI. The stage at diagnosis was analyzed using a Mann-Whitney U test, and no significant differences were found.

Breast Cancer Staging, BMI, and Age at Diagnosis in HIV-positive Patients

• BMI, average of 32.18 ± 9.17, did not have a statistically significant correlation with breast cancer stage, r(40)=0.075, p=0.64 initial and r(40)=0.033, p=0.84 final.
• No statistically significant correlation between age at diagnosis and staging, r(40)=0.034, p=0.86 initial and r(40)=0.073, p=0.64 final. The average age of diagnosis was 53.19 ± 9.7 years old in the HIV-positive patients.
• Of those with documented HIV diagnosis dates (n=18), the average age of HIV diagnosis was 46.78 ± 11.45 years old, more than 6 years before the breast cancer diagnosis.

Discussion

The initial breast cancer staging was compared between groups. Higher percentages of those who were positive for HIV presented at later stages of breast cancer, with no statistical significance when analyzed with a Mann-Whitney U test (U=58854, p=0.415). The median stage for Control is Stage I, while the median for the Study is Stage II. A statistically significant difference, however, was observed in age at breast cancer diagnosis between the HIV-positive group and the control population, p<0.001 (Table 1). Together, the lack of significance of stage presentation and the younger age of diagnosis could suggest that (1) HIV-positive patients are progressing more quickly or presenting to a provider sooner and/or (2) there are confounding variables that have not yet been controlled for in the statistical analysis.

Conclusions

As HIV patients continue to live longer, their risk for developing breast cancer continues to increase. In this study, HIV-positive patients presented at a significantly lower age and may be at a higher risk for presenting at an advanced breast cancer stage. This suggests that it is imperative that HIV-positive female patients start screening mammograms at age 40 and are dedicated to their annual mammogram. Although no significant correlation was found between stage and BMI and age, treatment, etc., earlier presentation can be viewed as a way to more aggressively combat breast cancer. Further research is recommended to account for potential confounding variables and evaluate longer follow-up in larger populations.

References


Acknowledgments

This study was approved by the Georgetown University Institutional Review Board and the MedStar Washington Hospital Center Institutional Review Board.