

Clinical characteristics of transgender patients with breast cancer: a single institution experience

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Abstract

Breast cancer presents unique complexities for transgender individuals. This retrospective study characterized breast cancers in 14 transgender and nonbinary patients treated at a specialized transgender health center from 2016 to 2023. Patients with a median age of 53 (31–65 years) were identified using international classification of disease-10 codes. Most (86%) were aged 40 or older and eligible for screening mammography. The cohort included 6 trans men, 7 trans women, and one genderqueer individual. Diagnoses included ductal carcinoma in situ (36%), lobular carcinoma in situ (7%), stage 1 (29%), stage 2 (21%), and breast implant-associated anaplastic large cell lymphoma (7%). Screening mammography diagnosed 29%, 43% presented with a mass, and 29% were detected during pre-surgical imaging. Half had estrogen-based gender-affirming hormone therapy (GAHT) and half testosterone-based, with mean GAHT durations of 16.6 years. Biomarker profiles revealed 67% estrogen receptor (ER)-positive and 33% ER-negative cancers. This study highlights underutilized screening mammography and diverse cancer subtypes in this underserved population.

Key words: transgender; breast cancer; screening; GAHT; biomarker.

Introduction

Breast cancer presents unique complexities for transgender people, who encounter multifaceted barriers, including limited screening guidelines and gendered health practices.¹ We aimed to characterize breast cancers in our transgender patients, focusing on biomarkers, diagnostic methods, stages, subtypes, and gender-affirming hormone therapy (GAHT) details.

Methods

This institutional review board–approved study identified patients using electronic records (Jan 2016–Mar 2023), using Epic SlicerDicer to search for international classification of disease codes for breast cancer (D-05, C-50)² and gender identity disorders (F-64)² or transgender health-related complaints ($N = 10\,260$). Inclusion criteria were patients who identified as transgender, gender nonbinary, or genderqueer and presented with breast cancer either in situ or malignant neoplasm of the breast. We identified 42 patients, 25 did not meet inclusion criteria, and 3 were excluded for incomplete records. Chart reviews were performed on the 14 patients who met the inclusion criteria.

Patient demographics

Fourteen patients were identified, of whom 6 were trans men, 7 were trans women, and one was genderqueer (recorded

female at birth). Four patients self-identified as African-American, 8 as white, 1 as Hispanic, and 1 as unknown (Table 1). The median age at diagnosis was 53 (31–65 years) and 86% (12/14) were at or above 40 years of age at diagnosis and eligible for routine screening mammography. Two patients had a first-degree relative with breast cancer, but tested negative for cancer-associated mutations.

GAHT use

Fifty percent (7/14) of patients had an active or past prescription for testosterone-based GAHT, and 50% (7/14) of patients had estrogen-based GAHT. The mean duration of all GAHT at the time of analysis was 16.6 years (3–40 years), while the mean duration of feminizing GAHT was 27.6 years (10–40 years), and for masculinizing GAHT was 5.7 years (3–10 years). Eleven patients (79%) were on GAHT before their cancer diagnosis, and 3 (21%) started GAHT after their diagnosis (all on masculinizing GAHT).

Cancer diagnosis

Four patients (29%) were diagnosed via screening mammography; 6 patients (43%) self-palpated a breast or axillary mass; and 4 patients (29%) had not undergone screening but were diagnosed via breast imaging mandated before planned chest masculinization surgery.

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Table 1. Clinical characteristics and demographic data.

Characteristic	Number of patients (N = 14)
Gender identity	
Trans female	7 (50.0%)
Trans male	6 (42.9%)
Gender queer	1 (7.1%)
Gender-affirming hormone therapy (GAHT)	
Masculinizing	7 (50%)
Feminizing	7 (50%)
Race/Ethnicity	
African-American	4/14 (29%)
White	8/14 (57%)
Hispanic	1/14 (7%)
Unknown	1/14 (7%)
Age at cancer diagnosis	
Median age (range)	53 (31-65) years
≥40 years	86% (12/14)
<40 years	14% (2/14)
Duration of hormone therapy	
Feminizing GAHT	27.6 years (10-40)
Masculinizing GAHT	5.7 years (3-10)
All GAHT	16.6 years (3-40)
Means of detection	
Screening mammography	4/14 (29%)
Self-palpating a breast or axillary mass	6/14 (43%)
Breast imaging prior to chest masculinization surgery	4/14 (29%)
Cancer type	
DCIS	5/14 (36%)
LCIS	1/14 (7%)
Stage 1	4/14 (29%)
Stage 2	3/14 (21%)
Breast implant-associated anaplastic large cell lymphoma	1/14 (7%)
Biomarker profiles^a	
Estrogen positive	8/14 (57%)
Estrogen negative	4/14 (29%)
Unknown	2/14 (14%)
Treatment	
Chemotherapy	6/14 (43%)
Endocrine therapy	3/14 (21%)
Surgical	
Bilateral mastectomy	11/14 (79%)
Lumpectomy	3/14 (21%)
Radiation	5/14 (36%)

^aEstrogen receptor status was not indicated for LCIS/breast implant-associated anaplastic large cell lymphoma.

Staging

At presentation, diagnoses were ductal carcinoma in situ (DCIS) (36%), lobular carcinoma in situ (LCIS) (7%), stage I breast cancer (29%), stage II breast cancer (21%), and implant-associated anaplastic large cell lymphoma (7%).

Biomarker profiles

Biomarker profiles were available for 12 patients; on feminizing GAHT (trans women), 3/7 (43%) patients were diagnosed with estrogen receptor (ER) positive cancer, 3/7 (29%) with ER-negative cancers. Of patients on masculinizing GAHT (trans men and genderqueer), 5/6 (83%) presented with ER-positive, and 1/6 (17%) with ER-negative cancers. Biomarker profiles were not indicated in the case of LCIS and breast implant-associated anaplastic large cell lymphoma.

Treatment

Eleven (79%) patients underwent bilateral mastectomies, while 3/14 (21%) had breast conservation. A total of 6 out of 14 individuals (43%) underwent chemotherapy. Radiation therapy was part of 5 patients' (36%) adjuvant treatment plan. Three patients received endocrine therapy (Tamoxifen/aromatase inhibitors) as adjuvant treatment.

Discussion

There is limited information on the clinical presentation of breast cancer in transgender individuals. The effects of GAHT on breast cancer development are further complicated by a lack of long-term follow-up and variations in treatment approaches.³ We present the clinicopathologic trajectory of 14 transgender individuals, the majority of whom were diagnosed by self-palpation rather than screening mammography. Despite the cohort's median age being over 40, an age-eligible for breast mammography, screening tests were underutilized in our study population.⁴

Of note, one patient had breast implant-associated anaplastic large cell lymphoma, which we included to highlight diverse breast cancers in transgender patients.⁵

A systematic review of breast cancer in transgender women indicated minimal literature on the incidence and clinical features while alluding to a younger age at diagnosis (median 51.5 years) and the most common presentation as a self-palpated breast or axillary mass (43%).⁶ A similar review of breast cancer in transgender men revealed a median age of 44.5 and also commonly presenting as a lump.⁷ Our data provide additional evidence that the majority of breast cancer among transgender patients are diagnosed not through screening mammography but with self-palpation.

A Dutch study of 2260 trans women and 1229 trans men receiving gender-affirming hormone treatment between 1972 and 2016 concluded that breast cancer risk for transgender women was less than that of cisgender women and screening should be performed as for cisgender women.⁸

For transgender men, the performance of breast imaging before chest masculinization surgery is left to the surgeon's discretion. Screening recommendations are not uniform, but advise following the guidelines for cisgender women without increased risk.⁹ The effects of testosterone administration on breast cancer risk are also not established and may be confounded by the risk reduction offered by chest masculinization surgery.³

Although about 0.6% of adults in the United States identify as transgender, there are no established guidelines for breast cancer screenings, and many encounter harassment,

denials of care, and struggle to find primary care providers. The World Professional Association for Transgender Health (WPATH) recommends annual screening is recommended for trans women ≥ 50 ; trans men without chest surgery follow cisgender women's guidelines, and screening for trans men after chest masculinization surgery should be individualized.⁹ However, healthcare inequities play a role in screening rates. According to 2022 Centers for Disease Control data, 77% of women aged 50-74 in the United States reported undergoing mammography within the previous 2 years, while the rates for trans men and women are much lower.^{1,10} Physicians need to be aware of these healthcare disparities and proactively screen per WPATH guidelines in this vulnerable population.

Limitations include the small number of breast cancer cases in this population which limits the ability to perform statistical tests.

Conclusions

Screening mammography is underutilized among transgender and gender-diverse patients who use GAHT, with the most common presentation as a self-palpated mass. This represents a significant healthcare disparity involving a vulnerable patient population. Future long-term studies are needed to assess risk and optimal screening guidelines for transgender individuals.

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Author contributions

Ethan Ravetch (Conceptualization, Investigation, Project administration, Writing—review and editing), Nithya Krishnamurthy (Conceptualization, Data curation, Investigation, Formal Analysis, Project administration, Writing—original writing and review & editing), Christina Wertz (Methodology; Resources; Writing—review & editing), and Joshua Safer (Data curation; Investigation; Resources; Supervision; Writing—review & editing)

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Conflicts of interest

The authors have no conflicts of interest to disclose.

Data availability

The data underlying this article cannot be shared publicly due to its sensitive nature and to protect patient privacy. The data will be shared on reasonable request to the corresponding author.

References

1. Tabac AR, Sutter ME, Wall CS, Baker KE. Gender identity disparities in cancer screening behaviors. *Am J Prev Med*. 2018;54:385-393.
2. International Classification of Diseases (ICD) for oncology. https://iris.who.int/bitstream/handle/10665/96612/9789241548496_eng.pdf
3. Deutsch MB, Radix A, Wesp L. Breast cancer screening, management, and a review of case study literature in transgender populations. *Semin Reprod Med*. 2017;35:434-441. <https://doi.org/10.1055/s-0037-1606103>
4. Brown A, Lourenco AP, Niell BL, et al; Expert Panel on Breast Imaging. ACR appropriateness criteria® transgender breast cancer screening. *J Am Coll Radiol*. 2021;18:S502-S515. <https://doi.org/10.1016/j.jacr.2021.09.005>
5. De Boer M, Van Der Sluis WB, De Boer JP, et al. Breast implant-associated anaplastic large-cell lymphoma in a transgender woman. *Aesthet Surg J*. 2017;37:NP83-NP87. <https://doi.org/10.1093/asj/sjx098>
6. Hartley RL, Stone JP, Temple-Oberle C. Breast cancer in transgender patients: a systematic review. Part 1: male to female. *Eur J Surg Oncol*. 2018;44:1455-1462. <https://doi.org/10.1016/j.ejso.2018.06.035>
7. Stone JP, Hartley RL, Temple-Oberle C. Breast cancer in transgender patients: a systematic review. Part 2: female to male. *Eur J Surg Oncol*. 2018;44:1463-1468. <https://doi.org/10.1016/j.ejso.2018.06.021>
8. de Blok CJ, Dijkman BA, Wiepjes CM, et al. Frequency and outcomes of benign breast biopsies in trans women: a nationwide cohort study. *Breast*. 2021;57:118-122. <https://doi.org/10.1016/j.breast.2021.03.007>
9. Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, version 8. *Int J Transgender Health*. 2022;23:S1-259.
10. Miller JW, King JA, Trivers KF, et al. Vital signs: mammography use and association with social determinants of health and health-related social needs among women—United States, 2022. *MMWR Morb Mortal Wkly Rep*. 2024;73:351-357. <https://doi.org/10.15585/mmwr.mm7315e1>