IMPORTANCE More than 1 million people in the US identify as transgender; however, few studies have examined the experiences and outcomes of transgender patients with cancer.

OBJECTIVE To examine clinical characteristics, experiences, and outcomes of transgender patients with cancer.

DESIGN, SETTING, AND PARTICIPANTS This retrospective case series assessed transgender patients with at least 1 cancer diagnosis who were evaluated at Dana-Farber Cancer Institute or Brigham and Women’s Hospital in Boston, Massachusetts, between January 1, 2005, and December 31, 2019.

MAIN OUTCOMES AND MEASURES Demographic, clinical, and treatment characteristics for all patients and documentation by oncologic practitioners of important aspects of providing gender-affirming care, including pronouns used by the patient, were recorded.

RESULTS A total of 37 transgender patients with cancer were assessed (mean [SD] age, 38.9 [21.8] years at first cancer diagnosis). Fifteen patients (40.5%) had hematologic malignant cancers, and 25 patients (67.6%) had solid malignant tumors. Sixteen patients (43.2%) initiated gender-affirming hormone therapy or surgery after their cancer diagnosis. Cancer treatment was frequently multimodal, with 24 patients (64.9%) receiving systemic therapy, 24 (64.9%) receiving surgery, and 20 (54.1%) receiving radiation therapy along with other cancer-directed treatment, such as cryoablation. Five patients (13.5%) had documentation from an oncologic practitioner that addressed a potential interaction between their gender-affirming care and their cancer treatment. Thirty-three patients had follow-up visits with oncologic practitioners after starting their transition. Of those patients, pronouns used were documented by a member of the oncologic team for 4 patients (12.1%). However, for 3 of the 4 patients, documentation did not consistently use patient-reported information. At the last follow-up, 5 patients (13.5%) had died of their disease, and 26 (70.3%) were living without disease.

CONCLUSIONS AND RELEVANCE This case series study found that transgender patients were diagnosed with diverse cancers, and many initiated gender-affirming hormone therapy or surgery after their diagnosis. Documentation by oncologic practitioners infrequently included pronouns used by the patient or discussion surrounding the interactions between cancer treatment and gender-affirming care, signifying that urgent improvements are needed in cancer care for transgender patients.
Approximately 0.5% to 0.6% of the US population identify as transgender, defined broadly as having a gender identity or expression that does not align with the sex assigned at birth (SAB). Several studies have characterized incidence of cancers in transgender patients, but data regarding experiences and outcomes for transgender patients with cancer remain limited. Currently, some recommendations exist regarding the approach to delivering high-quality cancer care for transgender patients; however, improvements are needed from diagnosis to treatment and long-term follow-up. Thus, we conducted a retrospective medical record review to investigate characteristics, experiences, and outcomes for transgender patients with cancer.

Methods

For this retrospective case series study, medical records at Dana-Farber Cancer Institute and Brigham and Women’s Hospital were searched for patients with cancer diagnoses between January 1, 2005, and December 31, 2019, using International Classification of Diseases, 10th Revision codes and notes that contained terms that may be used to document transgender identity: transgender, male-to-female, female-to-male, mtf, ftm, genderfluid, genderqueer, and nonbinary. We reviewed medical records for all 288 patients who fit the query criteria and found 37 patients for analysis who self-identified as transgender (Figure in the Supplement). Demographic, clinical, and treatment characteristics and outcomes, including survival, and follow-up dates, were recorded. Race/ethnicity was included to assess racial/ethnic diversity of the cohort and was reported as noted in the medical record. The study was approved and a waiver of patient informed consent was granted by the institutional review board at Dana-Farber Cancer Institute. Data were deidentified before statistical analysis. This study followed the reporting guideline for case series.

Data analyses were performed using Stata statistical software, version 15 (StataCorp LLC). Comparisons between groups were performed using the Fisher exact test for proportions. Two-sided P were used; P < .05 was deemed significant.

Results

A total of 37 transgender patients with cancer were assessed (mean [SD] age, 49.4 [17.2] years at last clinical follow-up). Mean (SD) age at first cancer diagnosis was 38.9 (21.8) years, and the median follow-up time from diagnosis was 5.4 years (range, 0.1-60.5 years). Cohort demographics, clinical characteristics, and outcomes are presented in Table 1. Twenty-eight patients (75.7%) received any gender-affirming hormone therapy, and 16 (43.2%) underwent at least 1 gender-affirming operation (GAO) (Table 2). Sixteen patients (43.2%) underwent gender-affirming care (GAC) after their cancer diagnosis, and 14 (37.8%) received GAC during cancer treatment (Table 2).

Of the 33 patients with oncologic follow-up after starting their transition, 4 (12.1%) had pronouns used documented by an oncologic practitioner and 1 had consistent pronoun usage. Notably, 1 patient’s pronouns aligned with SAB. For patients with no documentation regarding pronouns used, 7 (24.1%) had documentation by oncologic practitioners using only pronouns aligned with SAB, 12 (41.4%) with a mixture of gender-specific pronoun usage, and 10 (35.5%) with only pronouns aligned with documented gender identity. Only prior GAO was significantly associated with documented pronoun usage (Table 3).

The most common cancer-directed therapies were systemic therapy (24 [64.9%]), surgery (24 [64.9%]), and radiation (20 [54.1%]) (Table 1). Only 5 patients (13.5%) had documentation regarding a conversation with oncologic practitioners about potential interactions between their GAC and cancer treatment. A surgeon discussed reusing an infra mammary scar from prior prophylactic gender-affirming bilateral mastectomies for planned breast cancer surgery and inquired about pelvic GAO before describing the Foley catheter insertion process. Other discussions included elective gender-affirming contralateral mastectomy at the time of mastectomy for breast cancer, impact of elective gender-affirming orchietomy on prostate cancer treatment, potential effect of radiation therapy to a breast implant, and potential impact of estrogen hormone therapy on levothyroxine dosing for hypothyroidism secondary to hematopoietic stem cell transplant. One female-to-male transgender patient intermittently used estrogen replacement therapy for premature ovarian failure resulting from the patient’s wish to transition with gender-affirming hormone therapy, which required interdisciplinary discussion with an endocrinologist. Another patient reported a brief break in gender-affirming estrogen hormone therapy, during which the patient required testosterone supplementation to aid in physical recovery from chemotherapy.

At last follow-up, 5 patients (13.5%) had died of their disease, and 26 patients (70.3%) had no evidence of disease. One patient who died of disease had prior gender-affirming bilateral mastectomies and subsequently noticed a chest wall mass but was reportedly told by a physician outside Dana-Farber Cancer Institute and Brigham and Women’s Hospital that the mass was consistent with fat redistribution after surgery. The

Key Points

Question: What are the clinical characteristics, experiences, and outcomes of transgender patients with cancer?

Findings: In this case series study of 37 transgender patients with cancer, most required multimodal therapy, and 16 patients received gender-affirming hormone therapy or surgery after their cancer diagnosis. Pronouns used were documented by only 4 oncologic practitioners; the medical records of 5 patients contained documented discussion that acknowledged the interaction between cancer treatment and their gender-affirming care.

Meaning: Transgender patients develop a wide range of cancers, and many of them occur before gender-affirming care; however, documentation by oncologic practitioners suggests a need for acknowledgment of pronouns used by the patient and discussion surrounding the association of cancer treatment with gender-affirming care.
patient's diagnosis was delayed by more than 1 year, at which point the patient presented with metastatic breast cancer.

**Discussion**

To our knowledge, this study presents 1 of the largest retrospective case series of transgender patients with cancer. The study found that transgender patients develop diverse types of cancers, and many undergo treatment for their cancer before any GAC. Despite this, documentation of conversations about transgender identity and interactions with cancer care was rare.

Multiple studies have examined the risks of cancers in patients undergoing hormone therapy, but few have examined GAC in cancer survivors. This study work suggests areas for improvement, including better discussion regarding the overlap between cancer treatment and GAC. Only 5 patients (13.5%)
had documented discussions regarding the interactions between cancer therapy and GAC, including radiotherapy affecting cosmesis of prior gender-affirming breast augmentation and consideration of prophylactic contralateral mastectomy for gender affirmation at the time of oncologic surgery.

These data suggest that there may be specific concerns for GAC in cancer survivors. For example, cancer therapy–induced early menopause may affect decisions regarding gender-affirming hormone therapy. It is of paramount importance for there to be shared decision-making discussions between oncologic practitioners and patients about these issues. In addition, gender-neutral cancer support groups may also support transgender patient decision-making and advocacy for such discussions.\(^2,11\)

The present study found that oncologic practitioners infrequently documented pronouns used, and 12 patients (41.4%) had notes with mixed pronoun use. Patients frequently required multimodal therapy, and these results demonstrate oncologic practitioners across disciplines misgendered patients. Prior GAO was significantly associated with consistent usage of pronouns aligned with patients’ gender identity, suggesting that implicit bias of physical appearance may play a role. Importantly, one patient’s pronouns aligned with SAB, further indicating the importance of asking patients their pronouns rather than making assumptions. Misgendering has negative psychological effects, and proper pronoun usage is essential for oncologic practitioners to provide holistic cancer care.\(^2,13,14\)

Overall, 26 patients (70.3%) had no evidence of disease at last follow-up; however, definitive conclusions cannot be drawn regarding oncologic outcomes, especially given the diversity of cancers and small sample size. Notably, 1 patient had a significant delay in diagnosis after noting a chest wall mass after prior GAO and had metastatic breast cancer at diagnosis and died of disease. This finding suggests that practitioners should continue to screen and consider diagnoses that may be associated with patients’ SAB.\(^35\)

Limitations
This study has limitations, including the small cohort spanning 14 years and the retrospective design. Moreover, all patients were seen at a large tertiary referral cancer center; thus, these findings may not be representative of experiences at smaller community cancer centers. Not all patient-practitioner conversations are documented, and patients might experience undocumented misgendering or bias from any medical staff member participating in their cancer treatment. Moreover, no patients were interviewed, and the ability of this study to more fully capture transgender patients’ experiences was therefore limited.

Conclusions
Transgender patients develop a wide range of cancers, and many are cancer survivors at the time of GAC initiation. For ethical and pragmatic reasons, provision of high-quality cancer care to transgender patients requires provision of GAC. The present study found specific areas for improvement, including the need for discussions regarding pronouns used and interactions between cancer treatments and gender-affirming therapies. Inclusion of the transgender community will be important in developing standards of care. Prospective studies with patient-centered metrics and larger cohorts are needed to further characterize the experiences and outcomes of transgender patients with cancer.

ARTICLE INFORMATION
Accepted for Publication: September 1, 2020.

Table 3. Pronoun Usage in Documentation by Oncologic Practitioners for Patients Without Documented Pronouns Used

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Only pronouns aligned with sex assigned at birth</th>
<th>Mixed pronoun usage</th>
<th>Only pronouns aligned with documented gender identity</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex assigned at birth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1 (11.1)</td>
<td>3 (33.3)</td>
<td>5 (55.6)</td>
<td>.46</td>
</tr>
<tr>
<td>Male</td>
<td>6 (30.0)</td>
<td>7 (35.0)</td>
<td>7 (35.0)</td>
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</tr>
<tr>
<td><strong>Timing of gender-affirming hormone therapy or surgery</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before cancer diagnosis</td>
<td>4 (26.7)</td>
<td>2 (13.3)</td>
<td>9 (60.0)</td>
<td>.09</td>
</tr>
<tr>
<td>After cancer diagnosis</td>
<td>3 (25.0)</td>
<td>6 (50.0)</td>
<td>3 (25.0)</td>
<td></td>
</tr>
<tr>
<td><strong>Gender-affirming hormone therapy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6 (26.1)</td>
<td>8 (34.8)</td>
<td>9 (39.1)</td>
<td>&gt;.99</td>
</tr>
<tr>
<td>No</td>
<td>1 (16.7)</td>
<td>2 (33.3)</td>
<td>3 (50.0)</td>
<td></td>
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<tr>
<td><strong>Gender-affirming surgery</strong></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>1 (7.7)</td>
<td>3 (23.1)</td>
<td>9 (69.2)</td>
<td>.03</td>
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<td>No</td>
<td>6 (37.5)</td>
<td>7 (43.8)</td>
<td>3 (18.8)</td>
<td></td>
</tr>
</tbody>
</table>
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Author Contributions: Drs Liu and Haas-Kogan had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: Burns, Bitterman, Guss.

Acquisition, analysis, or interpretation of data: Burns, Bitterman, Perini, Boyle, Haas-Kogan, Liu.

Drafting of the manuscript: Burns, Liu.

Critical revision of the manuscript for important intellectual content: All authors.

Obtained funding: Haas-Kogan.

Administrative, technical, or material support: Perini, Haas-Kogan.

Supervision: Perini, Haas-Kogan, Liu.

Conflict of Interest Disclosures: Dr Bitterman reported personal fees from Agios Pharmaceuticals outside the submitted work. No other disclosures were reported.

REFERENCES


