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Disparities in endometrial cancer outcomes between non-Hispanic White and Hispanic women

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HIGHLIGHTS

- We compare non-Hispanic White and Hispanic women with endometrial cancer for differences in demographics, tumor characteristics, and treatment.
- Hispanic women have higher cancer-specific mortality and cancer characteristics (stage and lymph node involvement) mediate most disparity.
- More Hispanic women in 2006–2010 than in 2000–2005 were diagnosed at later stages.

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ABSTRACT

Objective. To compare demographics, tumor characteristics, the first course of treatment, and cancer-specific survival of non-Hispanic White and Hispanic women with endometrial cancer.

Methods. We used public-use data from the Surveillance, Epidemiology, and End Results (SEER) Program. The study included 69,764 non-Hispanic White and Hispanic women diagnosed with endometrial cancer between 2000 and 2010. Using Cox proportional hazards models, demographics, tumor characteristics, and treatment were assessed as potential explanatory variables for the survival disparity between non-Hispanic Whites and Hispanics.

Results. Kaplan–Meier estimation with Bonferroni correction showed statistically different cancer-specific survival for U.S.-born and foreign-born Hispanics compared to non-Hispanic Whites, but no difference between birthplace-unknown Hispanics and non-Hispanic Whites. In 2000–2005, U.S.-born and foreign-born Hispanics had a higher risk of endometrial cancer death compared to non-Hispanic Whites after full adjustment (hazard rate (HR) = 1.61, 95% Confidence Interval (CI):1.44–1.79 and 1.27, 95% CI:1.13–1.43). In 2006–2010, the risk of endometrial death was not statistically significant for U.S.-born Hispanics (HR = 1.16, 95% CI:0.99–1.36), but increased for foreign-born Hispanics (HR = 1.31, 95% CI:1.12–1.52). Most of the survival disparity between Hispanic and non-Hispanic White women was mediated by cancer characteristics, specifically, stage and node involvement.

Conclusions. Hispanic women have higher cancer-specific mortality compared to non-Hispanic Whites. Compared to 2000–2005, more Hispanics were diagnosed at later stages and fewer received combination therapy in 2006–2010. Early detection is vital to improving endometrial cancer survival as most of the disparity was mediated by stage. Increased efforts are needed to improve education and access to care for Hispanic women.

Introduction

Endometrial cancer is the most common malignancy of the female reproductive organs, with an estimated 49,560 new cases and 8190 deaths reported in 2013 [1]. While the incidence is higher in non-Hispanic White (NHW) women, minority patients tend to be diagnosed with more aggressive cancer [2]. Although known risk factors (i.e., socioeconomic status, obesity, reproductive history, and use of exogenous estrogens) are associated with racial/ethnic variation in endometrial cancer, the basis for racial/ethnic survival differences is not clearly defined [3,4].

To date, most research has focused on the comparisons of White and Black women with endometrial cancer [3–7]. Disparities in incidence and survival between Blacks and NHWs are well documented [3,5,8]. Black women are diagnosed at later stage, higher grade and with

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more lethal histologic types than NHWs. They also have less favorable survival for each stage, grade, and histologic type [3–5]. However, limited research examined the age distribution, disease presentation, and endometrial cancer outcomes among minority women, especially Hispanic women [2,4,9–14].

Hispanics are one of the largest and fastest growing demographic groups in the United States (U.S.) [15]. In 2010, Hispanics made up 50.5 million of the 310 million U.S. residents (16.3%) [16]. Hispanics differ from non-Hispanics in age, socioeconomic status, and immigration history [15]. Hispanics tend to be younger than the general U.S. population, with a median age of 27 years compared to 37 years [17]. One in ten Hispanics are 55 years and older, the age group when most cancers (77%) are diagnosed [15]. Compared to NHWs, Hispanics are more likely to be in poverty (26.6% versus 9.9%) and uninsured (30.7% versus 11.7%) [18]. More Hispanics are foreign-born compared to NHWs (~37% versus 3.9%) [15].

The Hispanic population has substantial heterogeneity. For example, the socioeconomic profile of Cuban Americans is more similar to NHWs than to Mexican Americans. More than one-third (34.7%) of foreign-born Hispanics have resided in the U.S. for <10 years [15]. Research has shown that birthplace influences breast cancer diagnosis and treatment in Hispanic women [19]. There has been one study looking at endometrial cancer outcomes among U.S.-born and foreign-born Hispanics [20]. However, they limited their comparison to NHWs and Hispanic Whites with serous, clear cell or grade 3 endometrioid EC (type II) or aggressive endometrial cancer [20]. Therefore, the objective of this study is to determine whether demographic factors, tumor characteristics, and treatment influence the endometrial cancer-specific survival of all Hispanic women compared with NHW women using Surveillance, Epidemiology, and End Results (SEER) Program data.

Materials and methods

Data source

This study used public-use data from the National Cancer Institute's SEER Program (1992–2010), including 18 population-based cancer registries covering approximately 28% of the U.S. population. The SEER Registries routinely collect data on demographics, primary tumor site, morphology, stage at diagnosis, treatment, and follow-up for vital status. Since the public-use SEER dataset contains only aggregated de-identified data, Institutional Review Board approval was not required.

Study cohort

NHW and Hispanic patients with a diagnosis of primary, invasive endometrial cancer (ICD-O-3) sites C54.0–C54.9 and C55.9 between 2000 and 2010 were included. The analysis was limited to cases diagnosed after 2000 to not bias our sample temporally since the number of registries varied. Additionally, including 1992–1999 data would only add 718 Hispanics. The exclusion criteria included other racial/ethnic groups, patients with unknown age, unknown first course of treatment, unknown lymphadenectomy or lymph node status, and a diagnosis by autopsy or death certificate. Migrant status may influence cancer differences [20,21]. Often, Hispanic SEER registry birthplace data is missing or unknown [22]. Since birthplace was unrecorded for 52% of 6548 Hispanic cases, this group was not excluded. Instead, Hispanics were divided into U.S.-born, foreign-born and birthplace-unknown. All endometrial cancer cases were included in order to compare the cancer-specific survival of Hispanics of any race and NHWs diagnosed with endometrial cancer.

Study variables

Data was extracted from the SEER database to compare the year of diagnosis, age at diagnosis, marital status, histology-based risk, grade, stage, and the first course treatment offered for endometrial cancer among U.S.-born Hispanic, foreign-born Hispanic, birthplace-unknown Hispanic and NHW women with endometrial cancer. The SEER variable for Hispanic origin uses the North American Association of Central Cancer Registries Hispanic Identification Algorithm (NHIA) for cases diagnosed since 1992. The NHIA variable is an algorithm that indirectly identifies Hispanic ethnicity based on birthplace, maiden or Spanish/Hispanic surname or Spanish origin, race and county of residence [19,23]. The NHIA variable was cross-referenced with the SEER race variable [23].

Hispanics included in this study were of any race (White, Black, etc.) Since birthplace was unknown for 52% of the Hispanic cohort, unknown birthplace was not excluded but instead included as a separate group. Using the methods described by Kouri et al.[19] and Clegg et al. [24], U.S.-born Hispanic women were classified as women born in one of the 50 states or the District of Columbia; foreign-born if their birthplace was outside of the 50 states or the District of Columbia or if the birthplace was unknown but not in the U.S.; and birthplace-unknown if the birthplace was not recorded. Previous research shows that cancer registry cases with missing birthplace data are more likely to be U.S.-born [22,24–27]. U.S.-born Hispanic women may be more assimilated and have characteristics similar to NHWs.

Year of diagnosis was categorized into 2000–2005 (Time Period 1) and 2006–2010 (Time Period 2). Age at diagnosis was used as both a continuous and a categorical variable (≤30, 31–40, 41–50, 51–60, 61–70 and ≥70 years). Marital status was categorized into single, married, other (separated, divorced, widowed, or living with an unmarried partner), and unknown.

As established by the National Cancer Institute [28] and Mahdi et al. [21], stage was determined using SEER information. SEER provides information on the stage of disease based on clinical, intra-operative and pathological findings. Based on the International Federation of Gynecology and Obstetrics (FIGO) 2009 recommendations, Stages III and IV represent the actual FIGO stage. Stages I and II contain a combination of actual FIGO stage (I and II) and "clinically apparent stage" (I and II) cases. Unknown stage was classified as cases where detailed information on the extent of disease was unavailable. Histology-based risk was categorized as low, high, and other [2]. Low histology-based risk included endometrioid and mucinous histology. High histology-based risk included serous or clear cell histology. Other histology-based risk included other adenocarcinomas not mentioned above and other histology.

Endometrial cancer is graded as low, high or unknown based on how much the cancer forms glands similar to those found in normal, healthy endometrium [29]. In lower-grade cancers, more of the cancerous tumors form glands while more of the cancer cells are arranged in a haphazard or disorganized way or do not form glands in higher-grade cancers. Low grade included Grade I (well differentiated; differentiated, not otherwise specified (NOS)) and Grade II (moderately differentiated; intermediate differentiation). High grade included Grade III (poorly differentiated; differentiated) and Grade IV (undifferentiated; anaplastic).

Patients were categorized into three groups based on the lymph nodes reported (0 nodes, <10 nodes, and ≥10 nodes). The 10 lymph node cutoff was chosen based on the Gynecologic Oncology Group criteria for adequate lymphadenectomy [3]. For those who received a lymphadenectomy, the number of positive nodes was broken into 1, 2–5, and ≥5 positive nodes. First course of treatment (radiation, surgery, combination or no treatment) was determined by combining two SEER variables (radiatn and no_surg). Radiation is receipt of any radiation: beam radiation, radioactive implants, radioisotopes, combination of 1 with 2 or 3, radiation, NOS or other radiation. Surgery is receipt of any surgery as part of their first course of treatment. Combination treatment is receipt of both radiation and surgery. No treatment is defined as not receiving any radiation or surgery.