GYNECOLOGY

The influence of comorbid conditions on racial disparities in endometrial cancer survival

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OBJECTIVE: There are known disparities in endometrial cancer survival with black women who experience a greater risk of death compared with white women. The purpose of this investigation was to evaluate the role of comorbid conditions as modifiers of endometrial cancer survival by race.

STUDY DESIGN: Two hundred seventy-one black women and 356 white women who had been diagnosed with endometrial cancer from 1990-2005 were identified from a large urban integrated health center. A retrospective chart review was conducted to gather information on comorbid conditions and other known demographic and clinical predictors of survival.

RESULTS: Black women experienced a higher hazard of death from any cause (hazard ratio [HR] 1.51; 95% confidence interval [CI], 1.22—1.87) and from endometrial cancer (HR, 2.42; 95% CI, 1.63—3.60). After adjustment for known clinical prognostic factors and comorbid conditions, the hazard of death for black women was elevated but no longer statistically significant for overall survival (HR, 1.22; 95% CI, 0.94—1.57), and the hazard of death from endometrial cancer remained significantly increased (HR, 2.27; 95% CI, 1.39—3.68). Both black and white women with a history of hypertension experienced a lower hazard of death from endometrial cancer (HR, 0.47; 95% CI, 0.23—0.98; and HR, 0.35; 95% CI, 0.19—0.67, respectively).

CONCLUSION: The higher prevalence of comorbid conditions among black women does not explain fully the racial disparities that are seen in endometrial cancer survival. The association between hypertension and a lower hazard of death from endometrial cancer is intriguing, and further investigation into the underlying mechanism is needed.

Key words: comorbid condition, disease-specific survival, endometrial cancer, hypertension, racial disparity

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Endometrial cancer is the most common malignancy of the female genital tract and is the fourth leading cancer diagnosed in women, after breast, lung, and colon cancers.[1] Incidence of endometrial cancer in the United States had been decreasing over the past 3 decades, but recent data show a reversal of that trend, with a 3.0% annual percentage increase from 2006-2010, compared with a negative 0.4% annual percentage change from 1997-2006.[2] White women are at greater risk of the development of endometrial cancer than black women; however, black women are more likely to die of this disease. The lower survival rate among black women was identified decades ago, and this disparity has persisted over time.[3,4] The mortality rate from endometrial cancer from 2006-2010 for black women was nearly twice the mortality rate of white women (7.4 vs 4.0 per 100,000).[2] Although black women are diagnosed with less favorable histologic types, at more advanced stages, and with higher grade tumors than white women,[5-8] poorer survival rates are still seen in black women for all stages, grades, and histologic types when compared with their white counterparts.[8,9]

Reasons for these survival differences are likely due to a combination of factors that include differences in socioeconomic resources, environmental and behavioral risk factors, and tumor biology.[5,7,10-12] One factor that has not been evaluated fully is the role comorbid conditions play in the racial disparity in endometrial cancer survival. Black

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TABLE 1
Select clinical, demographic, and treatment variables of women diagnosed with endometrial cancer from a single institution by race

Variable	White (n = 356) n	%	Black (n = 271) n	%	*P* value[a]
Age at diagnosis, y					.204
<50	49	14	32	12	
50-59	71	20	39	14	
60-69	112	31	99	37	
70+	124	35	101	37	
International Federation of Gynecologists and Obstetricians stage					< .001
I	246	69	142	52	
II	40	11	32	12	
III	40	11	37	14	
IV	19	5	45	17	
Unknown	11	3	15	6	
Grade					< .001
I	189	53	79	29	
II	67	19	35	13	
III	91	26	135	50	
Unknown	9	3	22	8	
Histologic group					< .001
Type I	260	73	148	55	
Type II	67	19	84	31	
Type III	24	7	33	12	
Other	5	1	6	2	
Modified Charlson comorbidity score					.305
None	208	58	140	52	
1	64	18	55	20	
≥2	84	24	73	27	
Unknown	0	0	3	1	
Hypertension					< .001
No	151	42	65	24	
Yes	205	58	206	76	
Diabetes mellitus					.086
No	275	77	193	71	
Yes	81	23	78	29	

Ruterbusch. Race, comorbidities, and endometrial cancer survival. Am J Obstet Gynecol 2014. (continued)

women have a higher prevalence of obesity, diabetes mellitus, and hypertension.[13] Although these conditions have been associated with poorer survival rates,[14] a recent report with the use of Surveillance, Epidemiology, and End Results (SEER) Medicare data illustrated that comorbid conditions do not account fully for the racial disparity that is seen in endometrial cancer survival in a Medicare population.[15] We sought to further evaluate the relationship between comorbid conditions and the racial disparity in endometrial cancer survival among women of all ages at a single institution.

Materials and Methods

After institutional review board approval was obtained, a case-only retrospective analysis of incident endometrial cancer cases (International Classification of Diseases [ICD]-O3 codes of C54.0-55.9) was conducted. Black and white women who were diagnosed from 1990-2005 were identified from the Henry Ford Health System (HFHS) tumor registry. The HFHS is a large, integrated health system in Detroit, MI. The HFHS currently consists of 5 hospitals, 36 ambulatory care facilities, and clinics (that offer free or low-cost care and are located throughout the metropolitan Detroit area) and serves patients of varying levels of socioeconomic and insurance status for both races. Clinical, demographic, risk factor, and survival data were obtained from 3 sources: the HFHS database, medical record abstraction, and the Metropolitan Detroit Cancer Surveillance System (MDCSS) registry, which is part of the National Cancer Institute's Surveillance, Epidemiology and End Results program. The MDCSS ascertainment area encompasses the 3 county (Wayne, Oakland, and Macomb) metropolitan Detroit area, where the majority of patients at HFHS reside.

To standardize data collection, variables were abstracted from the medical record up to 5 years before the endometrial cancer diagnosis. Race information was self-reported and abstracted from the medical record. Comorbid conditions of interest included diabetes mellitus, hypertension, obesity (body mass index [BMI], ≥30 kg/m^2), morbid obesity (BMI, ≥40 kg/m^2), and a modified Charlson Comorbidity Index (CCI). The CCI is a weighed score of comorbid conditions that have been shown to predict death[16] and was modified in this analysis to exclude