Healthcare Disparities in Genetic Evaluation of Women with Endometrial Cancer in New Orleans

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INTRODUCTION

- Health disparities are preventable differences in the burden of disease, injury, violence or in opportunities to achieve optimal health experienced by socially disadvantaged racial, ethnic and other population groups and communities.
- Disparate access to high quality care and health outcomes have been reported for a variety of marginalized populations including but not limited to racial and ethnic minority groups, rural populations, and women who are underinsured or of low socioeconomic status.
- Endometrial cancer is the most common female gynecologic malignancy.
- Lynch syndrome makes up 5% of all colorectal cancer cases and 2-3% of all endometrial cancer cases.
- The diagnosis of Lynch Syndrome is established by germline mutations in mismatch repair genes MLH1, MSH2, MSH6, PMS2 and EPCAM.
- Immunohistochemistry (IHC) or microsatellite instability (MSI) analysis of endometrial cancer tumors can identify patients who may benefit from genetic counseling and germline testing, thereby to identify patients with Lynch Syndrome.
- Our objective is to determine if there are disparities in the genetic evaluation of women with endometrial cancer at a safety net hospital in New Orleans.
- Specifically, we sought to determine if age, race, BMI, or insurance status were associated with differences in rates of tumor genetic testing, genetic counseling, and germline testing.

METHODS

- Using ICD9 and 10 codes for endometrial cancer, women who received care for endometrial cancer at University Medical Center in New Orleans from 1/1/2013 to 12/31/2017 were identified.
- Retrospective chart review was performed, and data was compiled into a REDCap Database.
- Information collected included demographics, insurance status, personal and family history, endometrial cancer diagnosis and treatment course, and details of tumor and germline genetic testing and genetic counseling.
- Univariate analysis was performed.

Table 1: Demographic and Health Information

Demographic	Overall Cohort (%)	Demographic	Overall Cohort (%)	Median (95% CI)
Total	147	BMI (kg/m^2)		36.33 (23.5-55.0)
Race		Underweight	2 (1.4%)	
Black	64 (43.5%)	Normal	11 (7.5%)	
White	75 (51.0%)	Overweight	27 (18.4%)	
Hispanic	5 (3.4%)	Class I Obese	28 (19.0%)	
Other	3 (2.0%)	Class II Obese	20 (13.6%)	
Insurance Status		Class III Obese	59 (40.1%)	
Private	20 (13.6%)	Charlson Comorbidity index		4 (2.0-9.0)
Medicare	40 (27.2%)	1-3	54 (36.7%)	
Medicaid	52 (35.4%)	4-6	69 (46.9%)	
Uninsured	35 (23.8%)	>6	24 (16.3%)	

Table 2: Personal and Family History

Personal and Family History	Overall Cohort (%)
Total	147
Family history of Lynch spectrum cancer	18 (12.2%)
Prior personal history of Lynch spectrum cancer	3 (2.0%)
Synchronous Lynch spectrum cancer	5 (3.4%)

Table 3: Endometrial Cancer Diagnosis and Treatment

Endometrial Cancer Diagnosis and Treatment	Overall Cohort (%)
Total	147
Age at diagnosis (years)	
Median (95% CI)	57.39 (36.8-67.8)
Stage	
IA	69 (46.9%)
IB	16 (10.9%)
II	14 (9.5%)
IIIA	4 (2.7%)
IIIB	3 (2.0%)
IIIC1	7 (4.8%)
IIIC2	5 (3.4%)
IVA	2 (1.4%)
IVB	13 (8.8%)
Unclear	15 (10.2%)
Tumor Grade	
1	62 (44.9%)
2	32 (23.2%)
3	44 (31.9%)
Initial Treatment	
Surgery	128 (87.1%)
Radiation	58 (39.5%)
Chemotherapy	39 (26.5%)
Hormonal therapy	3 (2.0%)
No therapy	10 (6.8%)
Time from diagnosis to the date of last follow up (months)	
Median (95% CI)	13.44 (1.1-54.6)
Status at last follow up	
Alive with no evidence of disease	101 (69.7%)
Alive with disease	37 (25.5%)
Died of endometrial cancer	4 (2.8%)
Died of other causes	3 (2.1%)

RESULTS AND CONCLUSIONS

- 31 women (21.1%) had genetic testing (IHC for MMR or PCR for MSI) performed on their tumors.
- 11 women were offered genetic counseling, and 7 of these women attended a meeting with a genetic counselor.
- 4 had germline testing performed; none revealed germline mutations suggestive of Lynch syndrome.
- There were no significant differences in rates of tumor genetic testing based on the following:
  - Age (20.1% if <65 vs. 28.6% if ≥65, p=0.51)
  - Race (25.0% black vs. 19.7% white, p=0.46)
  - BMI (23.1% if BMI ≥30 kg/m^2 vs. 17.9% if BMI <30 kg/m^2, p=0.51)
  - Insurance status (30.0% privately insured vs. 20.0% public or uninsured, p=0.33)
- There were no significant differences in rates of genetic counseling based on the following:
  - Age (7.8% if <65 vs. 7.1% if ≥65, p=0.94)
  - Race (10.9% black vs. 5.6% white, p=0.26)
  - BMI (7.7% if BMI ≥30 kg/m^2 vs. 7.7% if BMI <30 kg/m^2, p=1.00)
  - Insurance status (10.0% privately insured vs. 7.3% public or uninsured, p=0.68)
- There were no significant differences in rates of germline testing based on the following:
  - BMI (2.9% if BMI ≥30 kg/m^2 vs. 2.6% if BMI <30 kg/m^2, p=0.92)
  - Race (4.7% black vs. 1.4% white, p=0.26)
  - All 4 women were <65 years old and were publicly insured or uninsured.

DISCUSSION

- The Society of Gynecologic Oncology and National Comprehensive Cancer Network recently recommended genetic tumor testing for all women with endometrial cancer, regardless of family history.
- Young women, women with abnormal tumor testing results, and women with a strong personal or family history of cancer may benefit from genetic counseling and additional testing.
- Although there were no significant differences in rates of tumor genetic testing or genetic counseling based on age, race, BMI, or insurance status, only 21.1% of the women in our study had IHC or MSI analysis of their tumors, suggesting an overall underutilization of tumor testing.
- Furthermore, rates of genetic counseling and germline testing were extremely low.
- Genetic counseling can identify risk factors for the patient and the patient's family, and germline testing can identify patients with Lynch syndrome.
- Given the high incidence rate in the Acadian population, more of the women in our study should have been offered genetic counseling.
- In the future, we plan to expand the study to include more endometrial cancer patients in South Louisiana to observe the trends of genetic evaluation with a larger sample size and broader patient population.

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