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Racial-Ethnic Variations in Phyllodes Tumors among a Multi-Center United States Cohort

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Abstract

Background and objectives: Previous studies have identified racial-ethnic differences in the diagnostic patterns and recurrence outcomes of women with phyllodes tumors. However, these studies are generally limited in size and generalizability. We therefore sought to explore racial-ethnic differences in age, tumor size, subtype, and recurrence in a large US cohort of women with phyllodes tumors.

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Methods: We performed an 11-institution retrospective review of women with PT from 2007–2017. Differences in age at diagnosis, tumor size and subtype, and recurrence-free survival according to race-ethnicity.

Results: Women of non-White race or Hispanic ethnicity were younger at the time of diagnosis with phyllodes tumor. Non-Hispanic Other women had a larger proportion of malignant phyllodes tumors. There were no differences in recurrence-free survival in our cohort.

Conclusions: Differences in age, tumor size, and subtype were small. Therefore, the workup of young women with breast masses and the treatment of women with phyllodes tumors should not differ according to race-ethnicity. These conclusions are supported by our finding that there were no differences in recurrence-free survival.

Keywords

breast; disparity; diagnosis; recurrence

Introduction

Multiple epidemiologic studies have demonstrated differences in the presentation and outcomes of phyllodes tumors (PT) by various racial/ethnic backgrounds.[1–7] Race- and ethnicity-related differences have been identified for (1) age and (2) size at diagnosis, (3) PT subtype (grade), and a single study identifying differences in local recurrence (LR).[1–7] Our objective was to evaluate for any racial-ethnic differences in PT presentation in a large, contemporary, multi-institutional cohort.

Multiple previous series identify a significantly *younger age* at presentation in minority women, including Hispanic, non-Hispanic African Americans, and Asian women, as compared to non-Hispanic White women.[1,3–5] Additionally, Black/African American, Asian, and Hispanic women tend to present with *larger* PT than their White counterparts.[2–5] Lastly, multiple series identify a higher proportion of malignant PT in Latina Whites[1,2], Black/African Americans[3, 6], and Asians[1], as compared to non-Hispanic Whites.[1–3, 6]

Only a single published study has reported differences in LR rates according to race or ethnicity. This study also observed a higher proportion of malignant PT and higher LR rates in Black women, though was severely limited by sample size (N=12).[6] Multiple larger studies with follow up ranging from 13–64 months have reported no relationship between LR or survival by race or ethnicity.[2–4, 8] Using one of the largest US cohorts of women with PT to date, we sought to determine differences in (1) age and (2) tumor size at diagnosis, (3) PT subtype, and (4) recurrence according to race and ethnicity.

Materials and Methods

Data collection procedures for this cohort have been previously reported.[9] In brief, we performed an 11-institution retrospective review of women with PT from 2007–2017. Patient demographic and phyllodes tumor data were abstracted from the electronic health records at each participating institution. Phyllodes tumor subtype (benign/borderline/malignant), patient age at diagnosis, and tumor size were summarized with N (%) and

median (IQR), respectively, by race and/or ethnicity. Fisher's exact or chi-square tests were used to compare PT subtype and Kruskal-Wallis, Wilcoxon rank sum, or t-tests were used to compare age at diagnosis and tumor size across groups. Patients with Not Specified or missing race/ethnicity were excluded from the respective race/ethnicity analyses. The Kaplan-Meier method was used to estimate recurrence-free survival according to race/ethnicity, and the log-rank test was used to compare groups.

Results

In our series (N=550), 59.3% of patients were White (N=326), 15.5% were Black/African American (N=85), 8.6% were Asian (N=47), 7.1% were specifically classified as "Other" (N=39), 0.9% were American Indian (N=5), 0.2% Native Hawaiian/Pacific Islander (N=1) and the remaining 8.5% were either "not specified" in the EHR (N=43) or missing (N=4). Additionally, 72.0% were Non-Hispanic (N=396), 6.7% identified as Hispanic or Latina (N=37), and 21.3% were not specified (N=115) or missing (N=2) (Table I).

Our cohort included 69.5% benign, 19.8% borderline, and 10.6% malignant PT (5 missing PT subtype). The age at diagnosis differed by race/ethnicity, with women of non-White race (Black/African American or "Other") being diagnosed at a younger age than White women (p=0.002; Table I). Similarly, Hispanic/Latina women were also diagnosed at a younger age than Non-Hispanic/Latina women (median 39 vs. 46 years, p=0.001).

There was no difference in *tumor size* at diagnosis between Black or Asian women compared to White women, and no difference in size according to ethnicity. Women of Other race, however, had larger PT at the time of diagnosis than White women (40 vs. 28.5cm, p=0.002) (Table II).

There were no differences in the *distribution of PT subtype* according to race or ethnicity (Table III). However, when race and ethnicity were combined, Non-Hispanic Other women had a higher proportion of malignant PT than Non-Hispanic White women (p=0.002). There was a strong trend toward fewer malignant PT in Asian women and Non-Hispanic Asian women compared to White and Non-Hispanic White (p=0.05, p=0.05; Table III).

Lastly, there were 15 local and 3 distant recurrences in our cohort. We did not identify differences in recurrence-free survival according to race (log-rank test, p=0.52) or ethnicity (p=0.93), or the combination or race/ethnicity (p=0.67). Tumor factors associated with recurrence have been previously reported.[9]

Discussion

The existing literature suggests that Black/African American and Hispanic women tend to present younger, and with larger and more aggressive PT than White women.[1–7] However, this has not translated into definitive evidence of higher LR rates or inferior survival. In this multi-institutional cohort, we have confirmed that Black/African American and Hispanic/Latina women are diagnosed with PT at a significantly younger age than White or Non-Hispanic/Latina women. However, this difference was only 4–8 years, and the subtype distribution was similar across these groups. Lastly, there was no difference in local

recurrence by race, ethnicity, or the combination, therefore all women should be similarly treated and followed post-operatively.

While this is one of the largest cohorts of PT reported in the literature, our results may have been limited by Not Specified or missing classifications, and the limited number of racial categories included, highlighted by the significant findings noted in the Other racial category. The classification of “Other” was directly abstracted from the EHR and “Not Specified” was abstracted as an absence of a racial category listed. This highlights the need for accurate race/ethnicity classification in the EHR to support ongoing epidemiologic research and to facilitate a more in depth understanding of tumor biology and epidemiology.

Conclusion:

Neither the evaluation of a young patient with a breast mass nor the management of young women with PT should change according to the patient’s race or ethnicity. This conclusion is supported by our findings that racial-ethnic differences were small and did not translate into differences in recurrence-free survival.

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Abbreviations

PT	phyllodes tumor
LR	local recurrence
IQR	interquartile range
NH	non-Hispanic

References

1. Bernstein L, Deapen D, and Ross RK, The descriptive epidemiology of malignant cystosarcome phyllodes tumors of the breast. Cancer, 1993. 71(10): p. 3020–3024. [PubMed: 8387873]
2. Pimiento JM, et al. , Phyllodes tumors: race-related differences. J Am Coll Surg, 2011. 213(4): p. 537–42. [PubMed: 21856184]
3. Pezner RD, Schultheiss TE, and Paz IB, Malignant phyllodes tumor of the breast: local control rates with surgery alone. Int J Radiat Oncol Biol Phys, 2008. 71(3): p. 710–3. [PubMed: 18234448]
4. Moten AS and Goldberg AJ, Malignant Phyllodes Tumors of the Breast: Association Between Race, Clinical Features, and Outcomes. J Surg Res, 2019. 239: p. 278–283. [PubMed: 30897515]
5. Chua CL, Thomas A, and Ng BK, Cystosarcoma phyllodes--Asian variations. Aust N Z J Surg, 1988. 58(4): p. 301–5. [PubMed: 2855393]
6. Johnson HM, et al. , Race-Related Differences in the Clinical Presentation and Histopathologic Features of Phyllodes Tumor. Am Surg, 2021: p. 31348211029841.
7. Bumpers HL, et al. , Phyllodes tumors in African American women. Am J Surg, 2015. 210(1): p. 74–9. [PubMed: 25873163]

8. Tan PH, et al. , Predicting clinical behaviour of breast phyllodes tumours: a nomogram based on histological criteria and surgical margins. J Clin Pathol, 2012. 65(1): p. 69–76. [PubMed: 22049216]

9. Rosenberger LH, et al. , Contemporary Multi-Institutional Cohort of 550 Cases of Phyllodes Tumors (2007–2017) Demonstrates a Need for More Individualized Margin Guidelines. J Clin Oncol, 2021. 39(3): p. 178–189. [PubMed: 33301374]

Synopsis:

Differences in phyllodes tumor characteristics and recurrence-free survival were explored in a cohort of 550 US women. Despite differences in age at diagnosis, tumor size, and tumor subtype according to race-ethnicity, there were no differences in recurrence-free survival.

Table I.

Age at Diagnosis by Race and Ethnicity

	All Patients (N=550)	Median Age (IQR)	P[1]	P[2]	P[3]	P[4]
Race			**0.002**			
White	326 (59.3%)	46.0 (38–56)				
Black/African American	85 (15.5%)	42.0 (32–52)		**0.003**		
Asian	47 (8.6%)	42.5 (34–50)		0.06		
Other	45 (8.2%)	38.0 (30–50)		**0.005**		
Ethnicity						**0.001**
Hispanic/Latina	37 (6.7%)	39.0 (33–43)				
Not Hispanic/Latina	396 (72.0%)	46.0 (37–55)				
Race/Ethnicity			**0.001**			
NH White	264 (48.0%)	46.0 (39–56)				
NH Black/African American	70 (12.7%)	43.5 (31–52)			**0.009**	
NH Asian	38 (6.9%)	44.0 (36–50)			0.19	
NH Other	18 (3.3%)	39.0 (29–53)			0.08	
Hispanic/Latina	37 (6.7%)	39.0 (33–43)			**<0.001**	

[1] Kruskal-Wallis p-value for any differences across all races or *all* race/ethnicity groups.

[2] Pairwise T-test or Wilcoxon rank sum p-value for difference in specified race vs. White.

[3] Pairwise T-test or Wilcoxon rank sum p-value for difference in specified race/ethnicity vs. NH White.

[4] Wilcoxon rank sum p-value for difference in Hispanic/Latina vs. Not Hispanic/Latina.

NH=Non-Hispanic, IQR=interquartile range.

Table II.

Tumor Size by Race and Ethnicity

	Median (IQR)	p[1]	p[2]	p[3]	p[4]
Race		**0.02**			
White	28.5 (19–45)				
Black/African American	29.0 (20–47)		0.33		
Asian	31.0 (20–53)		0.32		
Other	40.0 (28–60)		**0.002**		
Ethnicity					0.86
Hispanic/Latina	28.0 (20–44)				
Not Hispanic/Latina	30.0 (20–48)				
Race/Ethnicity		**0.001**			
NH White	28.5 (19–45)				
NH Black/African American	28.0 (18–47)			0.41	
NH Asian	36.5 (21–74)			0.09	
NH Other	59.0 (42–105)			<**0.001**	
Hispanic/Latina	28.0 (20–44)			0.79	

[1]Kruskal-Wallis p-value for any differences across all races or all race/ethnicity groups.

[2]Pairwise T-test or Wilcoxon rank sum p-value for difference in specified race vs. White.

[3]Pairwise T-test or Wilcoxon rank sum p-value for difference in specified race/ethnicity vs. NH White.

[4]Wilcoxon rank sum p-value for difference in Hispanic/Latina vs. Not Hispanic/Latina.

NH=Non-Hispanic, IQR=interquartile range.

Table III.

Distribution of PT Subtype According to Race and Ethnicity.

	All Patients (N=550)	Benign (N=379)	Borderline (N=108)	Malignant (N=58)	P[1]	P[2]	P[3]	P[4]
Race					0.06			
White	326 (59.3%)	227 (69.6%)	64 (19.6%)	34 (10.4%)				
Black/African American	85 (15.5%)	61 (71.8%)	13 (15.3%)	10 (11.8%)		0.66		
Asian	47 (8.6%)	28 (59.6%)	16 (34.0%)	2 (4.3%)		0.05		
Other	45 (8.2%)	27 (60.0%)	9 (20.0%)	9 (20.0%)		0.16		
Not specified/Missing	47 (8.6%)	36 (76.7%)	6 (12.8%)	3 (6.4%)				
Ethnicity								0.19
Hispanic/Latina	37 (6.7%)	28 (75.7%)	8 (21.6%)	1 (2.7%)				
Not Hispanic/Latina	396 (72.0%)	258 (65.2%)	84 (21.2%)	50 (12.6%)				
Not specified/Missing	117 (21.3%)	93 (79.5%)	16 (13.7%)	7 (6.0%)				
Race/Ethnicity					**<0.001**			
NH White	264 (48.0%)	179 (67.8%)	53 (20.1%)	31 (11.7%)				
NH Black/African American	70 (12.7%)	47 (67.1%)	13 (18.6%)	9 (12.9%)			0.94	
NH Asian	38 (6.9%)	21 (55.3%)	14 (36.8%)	2 (5.3%)			0.05	
NH Other	18 (3.3%)	8 (44.4%)	2 (11.1%)	8 (44.4%)			**0.002**	
Hispanic/Latina	37 (6.7%)	28 (75.7%)	8 (21.6%)	1 (2.7%)			0.26	
Not specified/Missing	123 (22.4%)	96 (78.1%)	18 (14.6%)	7 (5.7%)				

[1] Chi-square test p-value for any differences across all races or all race/ethnicity groups.

[2] Pairwise Chi-square or Fisher's exact test p-value for difference in specified race vs. White.

[3] Pairwise Chi-square or Fisher's exact test p-value for difference in specified race/ethnicity vs. NH White.

[4] Fisher's exact test p-value for difference in Hispanic/Latina vs. Not Hispanic/Latina.

Data presented as N (%) with column percentages for All Patients and row percentages for all other data.

Percentages may not add up to 100 due to rounding or missing values.

NH=Non-Hispanic.