Presenting Symptoms Among Black and White Women with Provoked Vulvodynia

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Abstract

Background: The prevalence of vulvodynia has been reported to be lower in black compared to white and Latina women. Use of different terminology to describe vulvar pain symptoms may play a role in lower prevalence. The objectives were to compare pain descriptors used by black and white women with provoked vulvodynia (PVD) to determine the effect of race on symptom reporting.

Methods: Ninety-two women, self-identified as black ($n=55$) and white ($n=37$) with clinically confirmed PVD completed a questionnaire containing demographic information and vulvar pain characteristics. Variables that were significant with race retained in the logistic regression model were included in multivariate analysis to determine the effect of race on reporting of vulvar pain symptoms.

Results: Of statistical significance, white women more often described their pain as burning as compared with black women (84% vs. 22%, $p \leq 0.0001$). White women more frequently reported their pain as stinging (51% vs. 29%, $p=0.03$) and itching (32% vs. 15%, $p=0.04$) as well, whereas there was a trend for black women to more often describe their pain as aching (67% vs. 49%, $p=0.07$). Overall, white women were 19 times as likely to report their pain as burning (adjusted odds ratio [aOR] 18.51, 99% confidence interval [CI] 4.46–76.86).

Conclusions: These data suggest that black women are less likely to self-report their vulvar pain as burning, the classic symptom of PVD. Cultural influences and different underlying pain mechanisms may contribute to differences in symptom reporting by race.

Introduction

THE GENERAL HEALTH OF WOMEN experiencing pain-related chronic conditions, such as vulvodynia, is a growing concern to not only the health care profession but also to society. As well, it is well documented that women are more likely to report pain-related chronic conditions (e.g., osteoarthritis, fibromyalgia, and migraines) than their male counterparts.¹ Chronic pain is of particular importance in black women because it appears to be associated with greater disability and depression,^{2,3} and data suggest these women are undertreated when compared with both men and white women.^{4,5}

Vulvodynia, an often unrecognized chronic pain condition, affects up to 8% of women by the age of 40 years.^{6,7} Provoked vulvodynia (PVD) is a subtype of vulvodynia characterized by pain at the entrance of the vagina that is commenced or exacerbated with activities such as sexual intercourse, introital

penetration, tampon insertion, and speculum insertion.⁸ Symptoms resemble neuropathic pain, with burning being the most prevalent description, but itching, stinging, stabbing and aching may also be present.^{8–11} PVD severely affects a woman's quality of life, and women often see multiple physicians before receiving appropriate treatment.^{6,10} The consequences of undiagnosed and inadequately treated vulvodynia have a global adverse impact on affected women, since women with a clinically confirmed diagnosis have been shown to report more compromised ability to enjoy life, more interference with relationships, and more missed days at work and school than women without vulvar pain.¹²

The prevalence of vulvodynia differs by ethnicity, with 4.3% of black women reporting symptoms as compared with 9.3% of white women and 15.6% of Latina women.⁷ These ethnic differences may reflect differences in symptom reporting of the pain or in interpretation of pain, which may be

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influenced by cultural beliefs,^{4,13} or by physiological differences in genetic polymorphisms, vaginal microbiomes or neuropathic mechanisms due to cultural practices.¹⁴

Ethnic differences in symptom presentation have been reported in women with other pain conditions. In a community population of 1334 young women, of which 553 were examined for fibromyalgia, white women had significantly increased tenderness (tender point count and pain intensity) while black women had more widespread pain.¹⁵ In a cohort of 830 young women with temporomandibular pain, white women reported significantly more crepitus (clicking/popping) and bruxism (teeth grinding/jaw clenching) than black women.¹⁶ Differences in symptom presentation also were observed in a cohort of 466 women undergoing coronary angiography, in which black women reported fewer chest-related and more stomach-related symptoms than white women, regardless of presence or severity of coronary artery disease.¹⁷ The difficulty in diagnosing vulvodynia, in general, the possible ethnic differences in pain perception and symptom description, and the lower levels of access to medical care,¹⁸ may increase the risk of poorer treatment of chronic vulvar pain in black women.

The purpose of this study was to use the baseline data from a multicenter clinical trial to compare presenting symptoms among black and white women with PVD and to determine the effect of race on pain symptom presentation.

Methods

Subjects

Women were recruited for a multicenter clinical trial studying the therapeutic effect of gabapentin, the results of which will be reported at a later date. Potential subjects were told that a research study was being conducted to determine whether a study medication was more effective than placebo in reducing pain with coital activity. They were recruited from ambulatory centers of the participating research sites, vulvovaginal specialty clinics, and through research study advertisements that were posted on university campuses, distributed by bulk mail and placed in local newspapers. Radio advertising was also used. All those signing an informed consent were asked to complete the study questionnaire.

Those eligible for participation had to be 18 years of age or older. They did not need a confirmed diagnosis of vulvodynia to be screened for study participation, but they did need to report having pain during sex (dyspareunia), with touch, or with tampon insertion and removal for at least 3 continuous months ("modified" Friedrich's criteria).¹⁹ They were excluded if they reported a prior vestibulectomy, were pregnant or at risk for pregnancy and not using a reliable birth control method for at least 3 months prior to entering the study, had any unstable medical or psychiatric condition, or used centrally acting medications with the exception of the use of selective serotonin reuptake inhibitors for the treatment of depression or anxiety. During the screening examination, they were required to demonstrate moderate to severe tenderness in the vulvar vestibule, which was greater than the score in the vulva or the score in the vagina on the cotton swab test on pelvic examination. Women were excluded from study participation if they were diagnosed with other vulvar conditions, including dermatoses, vulvitis, atrophic vaginitis, or active vaginal infection.

Four hundred seventy-nine women were prescreened by telephone interview, 143 were screened at the research sites, and 92 were found to be eligible and completed the questionnaire. Twenty-four subjects had vaginitis and were able to enter the study after treatment. Two subjects had ≥ 10 parabasal cells and vaginal atrophy at screening and entered the study after 6 weeks of topical hormone therapy. Three other subjects were receiving topical estrogen therapy at screening (Fig. 1).

Questionnaire

A 72-item self-administered questionnaire was completed, containing demographic information (age, degree of education, race, menopausal status) and vulvar pain characteristics (quality and duration of pain). Subjects were given five descriptors of their vulvar pain from which to choose: burning, itching, stinging, aching, and stabbing and could check all that applied.

Gynecologic examination

All women first had visual inspection of the vulva to determine whether dermatological conditions were present. Women with dermatological conditions were excluded from the study. Then a cotton-swab palpation of four vestibular sites at the 1-, 5-, 7- and 11-o'clock positions was performed. This evaluation, commonly referred to as the cotton swab test, constitutes the main diagnostic tool for PVD.¹⁹ The cotton-swab test has been shown to be a reliable measure of vestibular pain with appropriate discriminant validity.¹¹ Other areas of the external genitalia (i.e., labia minora, labia majora) were also palpated with a cotton swab, and a standard bimanual palpation of the vagina, uterus, and adnexa was performed to rule out vaginismus and other forms of vulvar and/or pelvic pain.

Vaginal specimens were collected to determine the presence of *Gardnerella*, *Candida*, and *Trichomonas* using Affirm™ VP88 microbial identification testing and to determine menopausal status using the Rakoff stain. Those diagnosed with vaginitis were allowed to be rescreened following antimicrobial treatment, and those with greater than 10% parabasal cells were allowed to be rescreened after 6 weeks of topical estrogen therapy.

Data analysis

The data were analyzed using SAS version 9.3 (SAS Institute Inc.). Differences between races in age were analyzed by a two-sample *t*-test and differences in the five symptoms (e.g., burning, stinging, itching, aching, and stabbing); menopausal status; duration of pain; and educational status were analyzed using chi-squared. Statistical significance was set at the 1% level.

Multivariate analysis was conducted in two stages. In the first stage, logistic regression was used to test for association of the demographic variables with the symptoms at 15% significance level adjusted for race. *P* value was set at 0.15 in the univariate analysis in order to avoid missing any potential variables significantly associated with the symptoms in the first stage toward multivariate analysis. Those found significant were all included in logistic regression in the final stage, in which statistical significance was set at the 1% level to adjust for multiple comparisons.

FIG. 1. Subject enrollment flow diagram. ^aOther exclusions include vulvar dermatoses, vestibulectomy, abnormal laboratory values, multiple allergies, previous use of study medication, and gastric bypass. ^bTwenty-four subjects had vaginitis and entered the study after treatment. ^cTwo subjects had ≥ 10 parabasal cells and vaginal atrophy at screening and entered the study after 6 weeks of topical estrogen therapy. Three other subjects were receiving topical estrogen therapy at screening.

Results

Ninety-two women, self-identified as black ($n=55$) and white ($n=37$) completed the questionnaire (Fig. 1). Twenty percent were referred from vulvovaginal and ambulatory clinics and 80% from research study advertisements. A similar number of black and white women were referred from outpatient settings (8 vs. 11, respectively). The average age of black women was 35 years compared with 37 years of age in white women. Black women were less likely to have completed college ($p<0.0001$) and were less likely to be menopausal ($p=0.02$), but only the former difference met the significance level set for multiple comparisons. There were no significant differences in age or duration of PVD pain (Table 1). The percentages of black versus white women having pain for at least 5 years was (60% vs. 46%), 2–5 years

(20% vs. 35%), 1–2 years (13% vs. 8%), 6 months–1 year (4% vs. 11%), and less than 6 months (4% vs 0%).

Univariate analysis

White women were significantly more likely to describe their pain as vulvar burning as compared with black women (84% vs. 22%, $p<0.0001$) (Table 2). White women more frequently reported their pain as vulvar stinging (51% vs. 29%, $p=0.03$) and itching (32% vs. 15%, $p=0.04$), but these differences did not meet the lowered significance level of .01. Black women were more likely to report their pain as aching (67% vs. 49%, $p=0.07$), but these differences only showed a trend. There were no differences in pain descriptions of stabbing pain on contact between black and white women (65% vs. 73%, $p=0.45$).

TABLE 1. DEMOGRAPHIC CHARACTERISTICS IN BLACK AND WHITE WOMEN WITH PROVOKED VULVODYNIA

	Black (n = 55)	White (n = 37)	Statistical analysis ^a	p
Mean age ($\pm$ SD)	34.73 $\pm$ 11.38	37.49 $\pm$ 14.62	-1.02	0.31
College educated (%)	29.09%	72.97%	17.11	<0.0001
Menopausal (%)	12.73%	32.43%	5.24	0.02
Pain duration >5 years	60.00%	45.95%	1.76	0.18

Results were not used to determine the inclusion of any variable in multivariate analyses.

^aTwo-sample *t*-test was used for mean age; chi-squared was used for degree of education, menopausal status, and pain duration. SD, standard deviation.

TABLE 2. PRESENTATION OF VULVAR PAIN DESCRIPTORS IN BLACK AND WHITE WOMEN WITH PROVOKED VULVODYNIA

Symptom	Black (n = 55)	White (n = 37)	Chi-squared	p
Burning	21.82%	83.78%	34.12	<0.0001
Stinging	29.09%	51.35%	4.65	0.03
Itching	14.55%	32.43%	4.16	0.04
Aching	67.27%	48.65%	3.19	0.07
Stabbing	65.45%	72.97%	0.58	0.45

Multivariate analysis

In the first stage, after adjusting for race, the only variables associated with each descriptor at the $p < 0.15$ level were duration of pain for the itching and stabbing descriptors, and hence those were included in the multivariable analysis for those two variables only.

Burning. White women were 19 times as likely to report vaginal burning as black women (adjusted odds ratio 18.51, 99% confidence interval [CI], 4.46–76.86, $p \leq 0.0001$; Table 3).

Stinging. Race was not significant at 1% level ($p = 0.03$).

Aching. Race was not significant at 1% level ($p = 0.08$).

Itching. Both duration of pain and race were not significant at 1% level ($p = 0.03$ and 0.08 , respectively).

Stabbing. Both duration of pain and race were not significant at 1% level ($p = 0.07$ and 0.31 , respectively).

Discussion

These data compared presenting self-reported descriptors of vulvar pain among black and white women with PVD and evaluated the effect of race on pain symptom presentation. Overall, white women significantly more often self-reported pain as vulvar burning as compared to black women. Although not statistically different at the 0.01 level, white women as compared with black women more frequently reported their pain as stinging and itching, whereas there was a trend for black women to more often describe their pain as aching when compared with white women. Multivariate analysis demon-

strated that race had a significant effect, while age, educational level, menopausal status, and pain duration did not contribute to the likelihood of different self-reporting of vulvodynia symptoms. Our findings are consistent with ethnic differences in reporting of pain shown in women with fibromyalgia, temporomandibular pain, and cardiac pain.^{15–17}

The fact that white women were 19 times as likely to report their vulvar pain as burning than black women is clinically important, since this symptom is often used by clinicians for diagnosing vulvodynia.⁸ Because vulvodynia is under recognized in the general population and black women do not appear to report the classic pain symptom of burning, it is possible that they may be less likely to be diagnosed with PVD and receive inappropriate treatment. The longer duration of symptoms reported among black women in our study may reflect delayed or prior noneffective treatment. Our findings are particularly significant because chronic pain conditions appear to be associated with greater disability and depression in black women,^{2,3} and there are pervasive disparities in treatment in chronic pain in these women.^{4,18}

Our findings suggest that cultural beliefs may influence pain perception, since other than describing their pain as aching, black women were less likely to report any of the other vulvar symptoms. Given the opportunity, black women may have selected more “pertinent” or culturally relevant descriptors.^{4,13} It is also possible that the white women, who generally had more years of formal education than the black women, may have been more likely to read about vulvodynia and know that burning is the pain descriptor most reported in the literature. However, multivariate analysis demonstrated that education did not contribute to the likelihood of reporting symptoms.

In addition, these data did not include differences in intensity of the quality of the pain (e.g., hot vs. burning) or affective descriptors (e.g., unbearable); and the descriptors, selected from questionnaires developed by others,^{20,21} were not part of the screening criteria used to predict vulvodynia, which may have affected the findings. Menopausal status also may have influenced symptom presentation, as more white women were menopausal (27% vs. 13%). However, all subjects had a normal maturation index and demonstrated no clinical signs of atrophic vaginitis.

An alternative explanation for differing symptom reports may be due to different underlying pain mechanisms, a the more localized symptoms of burning and stinging described by

TABLE 3. PREDICTORS OF VULVAR PAIN DESCRIPTORS IN WOMEN WITH PVD: MULTIVARIATE ANALYSIS

	Variables	Odds ratio (99% CI)	p
Regression 1: burning	White race	18.51 (4.46–76.86)	<0.0001
Regression 2: stinging	White race	2.57 (0.82–8.05)	0.03
Regression 3: aching	Black race	2.17 (0.70–6.68)	0.08
Regression 4: itching	Pain duration <5 years	3.36 (0.81–14.01)	0.03
	White race	2.52 (.64–10.02)	0.08
Regression 5: stabbing	Pain duration <5 years	0.43 (0.13–1.43)	0.07
	White race	1.63 (0.47–5.64)	0.31

Multivariate analysis was conducted in two stages. In the first stage, logistic regression was used to test for association of the demographic variables with the symptoms at 15% significance level adjusted for race. Those found significant were included in logistic regression in the final stage in which statistical significance was set at the 1% level to adjust for multiple comparisons.

Pain duration was kept as a covariate for itching and stabbing.

CI, confidence interval.

white women is characteristic of neuropathic pain, whereas the aching or dull pain reported by black women is more suggestive of a somatic or visceral pain.²² However, this explanation should be viewed with caution, since the incidence of aching in black women showed only a trend when compared to white women. Nevertheless our findings are consistent with a review of over 100,000 electronic medical records in a primary care clinic where black patients were less likely to be diagnosed with neuropathic pain than their white counterparts.²³ Again, these findings should be interpreted cautiously, since data were not separated by gender and the prevalence of neuropathic pain was low in both the black and white groups. Quantitative sensory testing, which has been performed in women with PVD,²⁴ should be further studied by evaluating ethnic differences in pain perception.

Important limitations of our study include significant differences based upon length of formal education and the small sample size. Other limitations include failure to use a validated instrument to measure pain descriptors, potential selection bias due to eligibility criteria that were part of the clinical trial and restriction of subjects to two ethnic groups. Research evaluating symptom reports in Latina women is of particular importance, since they have been shown to have the highest prevalence of vulvodynia.^{6,7}

From these data, it is possible that the use of different word descriptors for pain may play a role in the lower prevalence of PVD reported in black women. In addition to items on vulvar pain duration and pain on contact, word descriptors, which are culturally and linguistically sensitive, should be incorporated into future epidemiological surveys.

Conclusions

These data suggest that black women are less likely to present with a complaint of vulvar burning, the classic symptom of PVD. It is important that primary care physicians and specialists recognize differences in the clinical pain presentation among subsets of women. More research is necessary to determine whether cultural beliefs and different underlying mechanisms may contribute to ethnic differences in the reported symptoms of chronic pain.

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Author Disclosure Statement

No competing financial interests exist.

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