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Responses to the McGill Pain Questionnaire Predict Neuropathic Pain Medication Use in Women in With Vulvar Lichen Sclerosus

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Abstract

Objective—The goal of this study was to test the hypothesis that responses to the McGill Pain Questionnaire are predictive of adjunctive neuropathic pain medication use by women with lichen sclerosus (LS).

Materials and Methods—This is a retrospective chart review of 430 women with vulvar LS treated at a tertiary referral vulvar care clinic. Demographics, responses to the McGill Pain Questionnaire, and use of neuropathic pain medications were collected. Bivariate and multivariable logistic regression analyses were performed to identify factors significantly associated with use of neuropathic pain medications.

Results—Of the 430 subjects, 119 (27.7%) used neuropathic pain medications for vulvar pain. Factors significantly associated with use of these medications include lower body mass index (odds ratio [OR] = 0.96, $p = .02$), non-White race (OR = 2.97, $p = .05$), and total McGill Pain Questionnaire score (OR = 1.05, $p < .001$).

Conclusions—Vulvar pain is a common presenting symptom in women with LS. Responses to the McGill Pain Questionnaire may be helpful in the long-term management of women with LS as a screen to identify those patients who might benefit from adjunctive neuropathic pain medication use.

Keywords

lichen sclerosus; pain; neuralgia; pain measurement; McGill Pain Questionnaire

Women with lichen sclerosus (LS) may present for care with a variety of complaints, including dyspareunia, dysuria, or constipation.¹ The most common complaint is pruritus, which is often amenable to treatment with topical steroids.² However, there is a subset of patients who develop vulvar pain, such that treatment with neuropathic pain medications (NPMs), such as antidepressants or anticonvulsants, is needed.³ In a recently published

retrospective chart review, we found that 83.1% of women with vulvar LS presenting for care at a tertiary referral vulvar care clinic reported vulvar pain (other than itching).⁴ Because the prevalence of vulvar pain in this population was higher than we expected, we wondered whether there were discrete differences between the women with and without pain, with a specific goal of identifying methods for predicting which patients might benefit from NPM. All of the patients presenting for care in our clinic are asked to complete the McGill Pain Questionnaire (MPQ).⁵ (see Figure 1) as part of their intake survey, so we sought to determine whether responses to the MPQ by women with vulvar LS help discriminate between those who use NPM and those who do not use these medications.

MATERIALS AND METHODS

This is a planned secondary analysis of an institutional review board–approved (University of Michigan IRBMED Number HUM00047402) retrospective chart review of women treated for LS at the University of Michigan Center for Vulvar Diseases between 2005 and 2012. New patients initiating care at the Center for Vulvar Diseases self-complete an intake questionnaire that includes demographic and health history information as well as standardized surveys, including the MPQ. Patients were included in this analysis if they were 18 years or older, and both medical records and intake questionnaires were available for analysis. Women with concomitant LS and lichen planus were excluded.

The MPQ consists of 20 sets of pain descriptors (see Figure 1). Patients are instructed to select the words that describe their vulvar pain, with only 1 word from each category. They are further instructed that they should not select any word in a group if none from that category describe their pain. When patients inappropriately selected 2 or more words in a group, the most severe choice was used for the final analysis. The score for each category was recorded for all of the subjects. The total score from the MPQ, described as the “pain rating index based on the rank value of the words ...”,⁵ is the sum of the scores for each category. These scores can therefore range from 0 (when no words are selected) to 78 (the most severe pain descriptor in each category is selected). Within the MPQ, there are also 4 pain dimension subscales (sensory corresponding to categories 1–10, affective corresponding to categories 11–15, evaluative corresponding to the score from category 16, and supplementary/miscellaneous corresponding to categories 17–20). The scores for these subscales are computed similarly to the total score, defined as the sum of the scores for each word selected from the included categories.

Use of antidepressants and/or anticonvulsants to treat neuropathic pain was evaluated through chart review. All charts were evaluated by 2 authors (M.B.B. and N.J.D.) to identify which subjects used NPM. Only those patients who reported using the medications were included in this analysis; if NPM were prescribed but were quickly discontinued, for example, because of the side effects or lack of efficacy, the subject was classified as a non-user.

Three general groups of patients were compared in this study: (1) patients who did and did not complete the MPQ; (2) within the entire study population, patients using NPM and those not using these medications; and (3) within the subset of patients who completed the MPQ,

patients using NPM and those not using these medications. Continuous variables were compared using independent *t* tests or the Mann–Whitney *U* test; proportions were compared using Fisher exact tests. Multivariable logistic regression models were built using forward stepwise logistic regression using likelihood ratio tests for variable inclusion. SPSS version 19.0 (SPSS, Inc., Chicago, IL) was used for all analyses. $p < .05$ were considered significant.

RESULTS

Charts and questionnaires were available for 430 patients with vulvar LS. Demographic characteristics of this patient population are similar to those previously reported.⁴ Of all the subjects, 93.3% were White; all had a mean $\pm$ standard deviation (SD) age of 54.3 ± 15.7 years, mean $\pm$ SD body mass index (BMI) of 28.5 ± 6.5 kg/m², and median parity of 2 (range = 0–10). Of all the patients, 80.7% ($n = 347$) completed the MPQ. As shown in Table 1, demographics were similar comparing women who completed the MPQ and those who did not, with the exception that completers had higher mean BMI than noncompleters.

Standard therapy for vulvar LS in our clinic includes use of topical steroids. Adjunctive NPMs were used by 27.7% of the patients ($n = 119$). There were no significant demographic differences noted when comparing patients who used NPM and non-users (see Table 2). However, the proportion of patients completing the MPQ was significantly higher among women using NPMs compared to those not using these medications (96.6% [$n = 115$] vs 74.6% [$n = 232$], $p < .001$). Furthermore, when examining only the 347 patients who completed the MPQ, the total MPQ score, the scores for each of the pain dimension subscales, and the total number of categories selected were all significantly higher from the patients taking NPMs than those from the patients not using neuropathic medications (see Table 3).

Of the 347 patients who completed the MPQ, the proportion selecting a word from each category was similar for half of the categories, regardless of medication use. By contrast, categories 2, 3, 4, 5, 7, 10, 11, 14, 16, and 20 were all selected more frequently by women who used NPMs than by those who did not use these medications (see Figure 2). There were no categories selected significantly more often by women who did not use NPMs. The mean scores for each category are presented in Figure 3. The scores were significantly different when comparing women who did and did not use NPM for all categories except categories 1, 6, 12, 13, 15, 17, and 19. The only category for which non-users had a higher mean score than patients using NPM was category 19, but this was not statistically significant (non-users 0.05 ± 0.41 vs NPM users 0.01 ± 0.09 [mean $\pm$ SD], $p = .32$).

Logistic regressions were then performed to predict which women would use NPM. In bivariate analyses of demographics, only lower BMI was significantly associated with NPM use, whereas age and parity were not. There was a suggestion that non-White race was also associated with NPM use, with $p = .06$. Higher total MPQ scores and number of categories selected from the MPQ were also significantly associated with the use of these medications. Forward stepwise multivariable logistic regression based on likelihood ratios was then used to construct a model predicting NPM use, including all of the independent variables found to

be significant in bivariate analysis as the starting point for the model. The final model includes BMI, race, and total MPQ score (see Table 4A).

Similar logistic regression analyses were performed to examine whether selection of particular categories within the MPQ was predictive of NPM use. Bivariate analyses identified categories 2, 3, 4, 5, 7, 11, 14, 16, and 20 as significantly associated with the use of these medications. There was also a suggestion that selection of category 10 might be associated with NPM use, with $p = .06$. Forward stepwise multivariable logistic regression based on likelihood ratios was then used to build the final model, which includes categories 4, 7, and 20 (see Table 4B).

DISCUSSION

The goal of the present study was to examine whether responses to the MPQ were predictive of NPM use. We found that the MPQ may indeed be a useful tool for identifying women who would use these medications. All standard analyses of the MPQ result in higher scores for patients who use NPM compared to women not using these medications.

In previous studies, a large proportion of women with vulvar LS have been noted to have vulvar pain.^{4,6} Mean MPQ scores in this study were similar to those in previous reports of women with chronic vulvovaginal candidiasis or vulvodynia.⁷ In fact, the patients who used NPM had total MPQ scores in a relatively similar range as women with chronic pelvic pain.⁸ These data therefore highlight the need to address pain as a prominent component of the complex of symptoms associated with vulvar LS.

Neuropathic pain is associated with multiple comorbidities, including depression, poor sleep quality, and decreased health-related quality of life.^{9,10} Analgesic effects and reduction of neuropathic pain have been shown to lead to improvements in mood and health-related quality of life.¹¹ We therefore postulate that early identification and treatment of women with vulvar pain in the setting of LS will improve patient satisfaction and increase quality of life.

Neuropathic pain is often described as having, "...a burning and/or shooting quality with numbness, tingling, crawling or electrical sensations...".¹² It is therefore not surprising that patients using NPMs were more likely to select, among other categories, MPQ categories 4 and/or 7 (see Figure 1 and Table 4B). Of the patients selecting a word from category 20, nagging was the most frequently chosen word (25.4%). We therefore hypothesize that selection of this category is predictive of NPM use as it relates to the chronicity of the pain associated with LS. One might suppose that selection of MPQ category 8 would be different between the 2 groups. This was not found to be significant, however, in multivariable logistic regression, likely because of topical steroid use effectively treating the itching component.

The results from our logistic regression modeling suggest that obese women with LS are less likely to use NPM than their thinner counterparts. Because this is a retrospective chart review rather than a prospective trial, our study design does not allow us to determine the cause of this finding. Because LS is most commonly seen in hypoestrogenic women,¹³ it is

possible that women of lower BMI, and hence less peripheral estrogen production, may have more severe manifestations of their disease. Conversely, this trend might reflect providers' reluctance to prescribe NPM to more obese patients.

The predictive model built from our data also suggests that non-White women are more likely to use NPM than White women with LS. This finding is especially interesting given that White patients have generally been shown to experience neuropathic pain more frequently than other races.¹⁴ As noted above, our study design precludes our ability to identify specific causative factors for this finding. It is certainly possible that non-White women have more pain associated with LS than White women do, but our results must be interpreted with caution because the total number of non-White subjects in our database was quite low, representing less than 10% of the total study population.

There are various limitations to this study that need to be acknowledged. All of the patients in this study were treated at a tertiary referral center for women with vulvovaginal conditions, so they may have more severe or refractory disease than seen in the general population. The demographic characteristics, especially with regard to race, although reflective of our referral population, may limit generalizability to other populations. This is a retrospective observational study, so we cannot draw conclusions about cause-and-effect relationships. Furthermore, we characterized NPM use as continued use, whereas patients not able to tolerate adverse effects or those who chose not to take the medications despite receiving prescriptions for them were categorized as NPM non-users. This may have biased our results towards identification of patients with more severe pain or long-standing disease. In addition, our study design precludes knowledge about whether or not NPM might have benefited those patients who were not prescribed these medications. Patients seen at our vulvar care clinic complete the new patient survey, including the MPQ, before their first visit, and the document is reviewed by the provider only at that initial visit. Therefore, their responses to the MPQ only reflect the state of their vulvar pain at the time of entering their information into the survey, whereas our analysis involved chart review spanning the course of the patients' treatments in our system.

There are several strengths to this study as well, including the use of a validated pain questionnaire, the large sample size, and the inclusion of patients seen by multiple care providers, which may increase the generalizability of our findings.

CONCLUSIONS

Vulvar pain is a common complaint from women with vulvar LS. Given the ease and rapidity with which patients can complete the MPQ, this questionnaire can be a helpful addition to long-term care for patients with vulvar LS. Early identification of those patients who might benefit from the addition of NPM to a traditional LS treatment regimen including topical steroids may lead to lower pain and improved quality of life.

Acknowledgments

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(1) Flickering Quivering Pulsing Throbbing Beating Pounding	(2) Jumping Flashing Shooting	(3) Pricking Boring Drilling Stabbing Lancinating	(4) Sharp Cutting Lacerating
(5) Pinching Pressing Gnawing Cramping Crushing	(6) Tugging Pulling Wrenching	(7) Hot Burning Scalding Searing	(8) Tingling Itchy Smarting Stinging
(9) Dull Sore Hurting Aching Heavy	(10) Tender Taut Rasping Splitting	(11) Tiring Exhausting	(12) Sickening Suffocating
(13) Fearful Frightful Terrifying	(14) Punishing Grueling Cruel Vicious Killing	(15) Wretched Blinding	(16) Annoying Troublesome Miserable Intense Unbearable
(17) Spreading Radiating Penetrating Piercing	(18) Tight Numb Drawing Squeezing Tearing	(19) Cool Cold Freezing	(20) Nagging Nauseating Agonizing Dreadful Torturing

FIGURE 1.
McGill Pain Questionnaire.

FIGURE 2.
Percentage of patients selecting each category from the McGill Pain Questionnaire, stratified by neuropathic pain medication use.

FIGURE 3.

Mean score for each category of the McGill Pain Questionnaire, stratified by neuropathic pain medication use. Data are presented as mean, with error bars representing the standard error of the mean.

TABLE 1

Demographic Comparisons of Women Who Did and Did Not Complete the McGill Pain Questionnaire

Demographic	Did not complete MPQ (<i>n</i> = 83)	Completed MPQ (<i>n</i> = 347)	<i>p</i>
Age (y)	54.6 ± 17.3	53.7 ± 15.2	.67
BMI (kg/m ²)	26.7 ± 4.9	28.4 ± 6.7	.04
Parity	2 (1–3, 0–7)	2 (1–3, 0–10)	.46
Race			.18
White	91.6 (76)	95.3 (325)	
Non-White	8.4 (7)	4.7 (16)	

Data are presented as mean ± standard deviation, median (interquartile range, total range), or percentage (n). *p* values were calculated using independent *t* test, Mann–Whitney *U* test, or Fisher exact test.

BMI indicates body mass index; MPQ, McGill Pain Questionnaire.

TABLE 2

Demographic Comparisons of Women Who Did and Did Not Use Neuropathic Pain Medications

Demographic	Did not use neuropathic pain medications (<i>n</i> = 311)	Used neuropathic pain medications (<i>n</i> = 119)	<i>p</i>
Age (y)	54.2 ± 15.7	53.1 ± 15.5	.50
BMI (kg/m ²)	28.4 ± 6.5	27.1 ± 6.3	.07
Parity	2 (1–3, 0–7)	2 (1–3, 0–10)	.59
Race			.13
White	95.4 (292)	92.4 (109)	
Non-White	4.6 (14)	7.6 (9)	

Data are presented as mean ± standard deviation, median (interquartile range, total range), or percentage (n). *p* values were calculated using independent *t* test, Mann–Whitney *U* test, or Fisher exact test.

BMI indicates body mass index.

TABLE 3

Comparisons of MPQ Responses From Women Who Used and Did Not Use Neuropathic Pain Medications

Demographic	Did not use neuropathic pain medications (<i>n</i> = 232)	Used neuropathic pain medications (<i>n</i> = 115)	<i>p</i>
Total McGill score	18.0 ± 11.0	24.8 ± 12.5	<.001
Sensory score	10.6 ± 6.1	14.1 ± 7.1	<.001
Affective score	1.2 ± 2.2	2.1 ± 2.8	.001
Evaluative score	2.3 ± 1.5	3.1 ± 1.4	<.001
Supplementary/miscellaneous score	4.0 ± 3.7	5.5 ± 4.0	.001
No. categories selected	7.7 ± 4.1	9.6 ± 3.9	<.001

Data are presented as mean ± standard deviation. *p* values were calculated using independent *t* tests.

MPQ indicates McGill Pain Questionnaire.

TABLE 4

Multivariable Logistic Regressions Predicting Use of Neuropathic Pain Medications

	Odds ratio	95% confidence interval	Regression coefficient	Standard error	p
(A) Model based on demographics and basic MPQ response characteristics					
Independent variable					
Intercept	—	—	−0.50	0.59	.40
BMI	0.96	0.92–0.99	−0.04	0.02	.02
Non-White race	2.97	1.02–8.60	1.09	0.54	0.05
Total MPQ score	1.05	1.03–.07	0.05	0.01	<.001
(B) Model based on which categories from the MPQ were selected					
Category					
Intercept	—	—	−1.66	0.26	<.001
4	1.68	1.05–2.68	0.52	0.24	.03
7	1.72	1.03–2.88	0.54	0.26	.04
20	1.79	1.11–2.87	0.58	0.24	.02

BMI indicates body mass index; MPQ, McGill Pain Questionnaire.