

## SHORT COMMUNICATION

# Screening for Neuropathic Pain, Anxiety and Other Associated Chronic Pain Conditions in Vulvodynia: A Pilot Study

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Vulvodynia has been defined by the International Society for the Study of Vulvovaginal Diseases (ISSVD) as vulvar discomfort, which is most often described as a burning pain, occurring in the absence of relevant visible findings or a specific, clinically identifiable, neurological disorder (1).

Much remains to be understood regarding the pathogenesis, natural history, and management of this distressing condition. As postulated for many chronic pain syndromes, the involvement of both peripheral and central sensitization mechanisms in the pathogenesis of vulvodynia has been suggested (2, 3).

The characteristics of the pain experienced by patients with vulvodynia suggests the involvement of a neuropathic component in vulvodynia; this includes: hyperalgesia, paraesthesia, dysesthesia and allodynia. In addition, the ineffectiveness of common pain-killers, the effectiveness of certain anticonvulsants (4), anti-depressants and transcutaneous electrical nerve stimulation (TENS) (5) are occasionally reported in association with vulvodynia.

The primary objective of the present study was to generate further evidence in support of the existence of a neuropathic component underlying the pathogenesis of vulvodynia. An additional aim was to determine the presence of anxiety, depression and other chronic pain conditions in patients with vulvodynia.

## MATERIALS AND METHODS

The local ethics committee approved the study (CPP 433/A4 Brest University Hospital).

The inclusion criteria were as follows: (i) vulvar discomfort, which was most often described as a burning pain, occurring in the absence of relevant visible findings or a specific, clinically identifiable, neurological disorder; and (ii) vulvar discomfort lasting for at least 6 months (1). The exclusion criteria were as follows: (i) active vaginal infection (e.g. herpes, candidiasis); (ii) inflammatory diseases of the vulva (for example lichen sclerosus); (iii) neoplastic vulvar diseases; (iv) ongoing local treatment inducing vulvar pain; and (v) pudendal neuralgia.

Socio-demographic information and a gynaecological history were collected from all subjects during a structured interview. Subjects were asked whether they suffered from any other pain disorders other than vulvodynia (e.g. interstitial cystitis, stomatodynia, irritable bowel syndrome).

A cotton-swab palpation touching 6 vestibular sites was carried out in a clockwise fashion. This is commonly referred to as the cotton-swab test, which constitutes the main diagnostic tool for

vulvodynia (6). Allodynia was tested by friction using a brush, which was applied to the most painful vestibule area. Tactile and pain tests were carried out with a filament. Patients rated their pain at each site on a scale of 0 (no pain) to 10 (worst pain ever).

The Neuropathic pain diagnostic questionnaire (DN4) was used to detect neuropathic pain. It consists of both sensory descriptors and signs related to sensory examination. The total score is calculated as the sum of the 10 items, and the cut-off value for the diagnosis of neuropathic pain is a total score of 4 out of 10, which results in a sensitivity of 83% and a specificity of 90% (7). The face validity of this questionnaire is considered as being good (i.e. 90–95%) as is the inter-rater reliability. Neuropathic pain is recognized in individuals with scores of 4 or above on the DN4, and is accompanied by at least one painful sensory test.

The Hospital Anxiety and Depression (HAD) scale was used to detect anxiety disorders and depression. The maximum score for anxiety and depression is 21, with a score of 8–10 indicating mood disturbance, and a score of 11 and above suggesting the presence of a mood disorder. We used the cut-off of “8” to consider the presence of anxiety or depression of any intensity (8).

A global multidimensional measure of pain was provided by a French adaptation of the McGill Pain Questionnaire (MPQ). The “Questionnaire de Douleur de Saint-Antoine” consists of a checklist of 58 characteristics to describe pain quality (sensory and affective aspects) and intensity. Overall scores (total pain score, emotional score and sensory scores) were prepared by adding the scores given by the patients in association with their selected characteristics (9).

The prevalence of the neuropathic component was calculated in our population with vulvodynia. Fisher’s exact test was used to compare qualitative variables with normal distributions. We used a Student’s *t*-test for independent samples for the comparison of DN4<sup>+</sup> and DN4<sup>-</sup> women. A value of  $p < 0.05$  was considered to be significant.

## RESULTS

Sixteen women were included in the study. The mean age of the patients was 44 years (age range 20–74 years). The characteristics of the patients are summarized in Tables SI and SII<sup>1</sup>.

One patient did not complete the questionnaires. The results are therefore for 15 patients only, whereas the results of the clinical tests are presented for 16 patients.

Ten out of 15 (66%) patients scored above 4 (maximum 10) on the DN4 questionnaire (95% confidence interval (95% CI); 0.43–0.90). The numbers of 5 (DN4<sup>-</sup>)

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and 10 (DN4<sup>+</sup>) are much too small to detect significant differences.

Ten of 15 women showed a positive score for anxiety of any intensity (66%; 95% CI, 0.43–0.90). Of the 10 patients with a positive score (DN4<sup>+</sup>), 8 were anxious, and 2 of 5 with a negative score (DN4<sup>-</sup>) were anxious ( $p=0.25$ ).

Two of 15 women had depression according to the HAD (12%; 95% CI; 0.03–0.37). In the DN4<sup>+</sup> group 2/10 had depression, whereas no depression was detected in the DN4<sup>-</sup> group ( $p=0.52$ ). Six of 10 (60%) patients in the DN4<sup>+</sup> group had other chronic pain disorders, which affected only 2 of 5 (40%) of those in the DN4<sup>-</sup> group ( $p=0.6$ ). Fifteen of 16 women (93%) patients experienced pain during the cotton swab test. The brush test led to pain in 9 of 16 patients (56%) patients. None of the patients exhibited hypoesthesia, but 14 (87%) reported pain, during the filament test.

Using the French version of the MPQ, the following pain descriptors most commonly used were: burning (12/15), itching (9/15) and depressing (9/15).

## DISCUSSION

Our results suggest the presence of a neuropathic component underlying vulvodynia, which was observed in 66% of the patients, as assessed by the DN4 questionnaire and sensory tests. Our results also emphasize the psychological distress experienced by these patients. They show a high prevalence of anxiety of any intensity (66%), which was most frequently observed in the DN4<sup>+</sup> group. A vicious circle of self-aggravation may be the reason because anxiety reduces the pain thresholds (10), and pain induces anxiety. Our study also confirms the high association between vulvodynia and other chronic comorbid pain conditions, suggesting similarities in their sensitivities (11).

A weakness of this study is the small sample size, which limits the statistical significance of some results.

To our knowledge, this is the first study using the DN4 questionnaire to assess patients with vulvodynia. Some previous studies have focused on the possibility of a neuropathic component of vulvodynia. Pukall et al. (2) examined tactile and pain thresholds in the genital regions of 13 women with vulvodynia comparing it with age- and contraceptive-matched pain-free controls. They showed that women with vulvodynia have reduced tactile and pain thresholds surrounding the genital area compared with controls. They observed the same phenomenon over the deltoid muscle, suggesting that generalized systemic hypersensitivity may contribute to this condition in some women.

Previous studies have used the McGill Pain Questionnaire (MPQ) to evaluate pain in association with vulvodynia (5, 2). However, none of these studies can be compared with our study because we used the

French version of the MPQ. In these studies, the MPQ scores indicated that vulvar pain was a relatively severe condition compared with certain other types of pain (menstrual pain, acute low-back pain) (12).

Our results confirm the previously reported data in the literature with regard to anxiety (13). However, in our study only 12% of the women had depressive symptoms of any intensity as identified by the HAD score, reports in the literature vary greatly between 15 and 52% (13).

We found an association between vulvodynia and other chronic pain disorders in 50% of patients. Similarly, Masheb et al. (14) describe that 78% of patients with vulvodynia have additional other chronic pain disorders. We did not compare our results with those of the general population. A recent study tested the validity of the use of the DN4 questionnaire for stomatodynia and found that 59% of the patients had DN4 scores  $\geq 4$ , indicating the presence of a neuropathic component of this disorder similar to our results regarding vulvodynia (15).

The neuropathic component demonstrated in our study may be part of the broader framework of central hypersensitivity, which is being increasingly associated with chronic pelvic pain in the literature (3). DN4<sup>+</sup> patients may benefit from treatments used in neuropathic disorders.

*Conflicts of interest.* Pfizer laboratory provided filaments.

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