Introduction

- Vestibulodynia, the most common type of chronic vulvovaginal pain, affects nearly 1 in 10 women at some point in their lifetime.
- Current clinical diagnostic criteria for vestibulodynia dates back to Friedrich's case series of 85 patients published in 1987 which include 1) entry dyspareunia (painful intercourse), 2) tenderness to pressure within the vestibule, and 3) physical findings limited to the pelvic floor and its constituent muscles (e.g. pubococcygeus muscle) has not been described.
- Although the body of literature on vestibulodynia has expanded, no revised criteria including beyond Friedrich's initial description to include pelvic floor dysfunction have been formulated.
- Our hypothesis is that vestibulodynia is a heterogeneous disorder and that mucosal and muscle pain sensitivities can be used to distinguish distinct subtypes.
- The purpose of this study was three fold: 1) to develop instrumentation and methodology for the objective assessment of vestibular mucosal and pelvic muscle sensitivities, 2) to establish a correlation between vestibular mucosal and pelvic muscle sensitivities, and 3) to relate these measures to patients’ clinical pain reports.

Methods

- 34 women with vestibulodynia and 21 pain free controls were recruited through an institutional review board-approved protocol at the University of North Carolina, Chapel Hill between March 2006 and August 2009.
- The exam consisted of a standardized pain sensitivity assessment of precisely located vulvar mucosal and pelvic muscle sites (Fig.1)
- Reliability was assessed by a repeat exam during the same session by a second examiner, or by one of two of the same examiners in a separate session approximately two weeks later.
- Instrument reliability was assessed by calculating Pearson correlations between the two examiners on each pair of measurements.
- The association between each measurement and vestibulodynia case status was evaluated using Cox proportional hazards models.
- Some measurements were terminated by the examiner before the appropriate threshold was reached, resulting in right censored data which necessitated the use of the Cox model.
- A random effect for each subject was included in the models to account for repeated measurements.

Results

- In collaboration with the biomedical engineering core at the Center for Neurosensory Disorders at the University of North Carolina in Chapel Hill, an algometer for pressure pain sensitivity of the vestibular vestibule and the underlying pelvic muscle (Fig.2)
- For the assessment of the vestibule a digital algometer (Wagner instrument#9) was used to apply cotton swab and a custom built computer interface for real time data acquisition (Fig.2A).
- Upon initiation of contact with the vestibular mucosa, the examiner(s) began application of pressure at an approximate rate of 1 N per second.
- Subjects were instructed to click a computer mouse upon the first sensation of pain, at which point the pressure was immediately terminated and automatically recorded as the "mucosal pressure pain threshold" (Fig.2B).
- Each mucosal site was examined three times with an inter-stimulus interval (ISI) of 2 seconds.
- A verbal command via a computer interface announced the order of sites, number of repetitions (3 per site), and the interval between the palpations of individual sites and repetitions within each site.
- A typical exam consisted of a verbal command to start at site 2, and after obtaining three threshold values (with an ISI of 2 seconds) the examiner was prompted to move to sites 10, 12, 5, 7, and 6 sequentially.

Conclusions

- Overall, women with vestibulodynia showed significantly lower mucosal pressure pain thresholds compared to their pain-free counterparts.
- This was particularly robust at the three sites on the lower vestibule (HR=17.46), although the upper vestibule measurements were also strongly associated with vestibulodynia (HR=6.7).
- Similarly, compared to pain-free participants, patients with vestibulodynia showed lower pelvic muscle pressure pain threshold and tolerance measurements.
- A significant association was noted between vestibulodynia case status and muscle threshold measures when measurements were combined across all three sites (HR=2.9, P=0.047).
- Individually, sites 5 (HR=4.9) and 7 (HR=9.3) were significantly associated with case status, although no sites were seen at the 7 o'clock position, likely attributed to the right-handed examiner's ability to apply pressure in an anatomically congruent manner (right handed examination of the patient's right pelvic muscle).
- As muscle tolerance measures are a reflection of examiner's maximal force, lower correlation between the two examiners was observed for pain tolerance than for pain detection thresholds.
- The lower examiners' reliability, particularly for mucosal assessment, highlights the importance of training and calibrating the examiners.

Bibliography