

# ICS Physiotherapy Round Table Abstract

October 20<sup>th</sup> 2014, Rio de Janeiro, Brazil.

## Title

Correlation between Muscle Stiffness and Pain in Women with Vulvodynia

## Aim of Investigation

Previous research has demonstrated the reliability of a myotonometer (MyotonPro™) to measure stiffness of the perineal muscles in women with and without vulvodynia [1]. Higher levels of perineal muscle stiffness were observed in women with, compared to without, vulvodynia – a finding that may be attributed to pain-related symptoms. Hence, the aim of this study was to investigate the relationship between perineal muscle stiffness and the presence and severity of vulval pain in women with vulvodynia.

## Methods

This was a cross-sectional exploratory study. A convenience sample of thirty-two women aged 18–50 years, symptomatic of vulvodynia, was recruited. Perineal muscle stiffness values were taken at rest, and measured on both the right (R) and left (L) sides using the MyotonPro™. Pain data included the Short Form McGill Pain Questionnaire (SFMPQ) collected prior to testing, Numeric Rating Scale (NRS) pain scores taken during vulval assessment (Q-tip examination test, a vulval pain provocation test), and NRS scores taken before, during and after the muscle stiffness measures (non-provocation for vulval pain tests). Preliminary analysis using a multivariate repeated measures test determined the non-provocation NRS scores were not different from each other so were averaged for further analysis. Q-tip scores were compared with averaged non-provocation scores using a Wilcoxon Signed Rank test and found to be significantly different, hence were analysed independently for association with stiffness. Associations between stiffness and pain were tested with correlation. The study received local institutional ethics approval.

## Results

All participants presented with localised provoked vulvodynia, were predominately European-Caucasian (82%), nulliparous (75%), with a mean age of 30.9 years (*SD*9.2), and an average pain duration of 10.39 years (range 0.42–30 years). The mean (*SD*) stiffness values were (R) side = 142.85 (25.65), (L) side = 155.05 (28.99); mean (*SD*) of the SFMPQ was 12.34 (7.06); median (IQR) of the Q-tip NRS was 3.00 (2) and averaged NRS was 0.40 (1). Correlation analyses revealed small, non-significant, negative correlations between stiffness values and SFMPQ values (R side  $r=-0.26$ ,  $p=0.14$ ; L side  $r=-0.26$ ,  $p=0.16$ ); Q-Tip NRS scores (R side  $r=-0.15$ ,  $p=0.40$ ; L side  $r=-0.25$ ,  $p=0.16$ ); and averaged NRS scores (R side  $r=-0.19$ ,  $p=0.30$ ; L side  $r=-0.21$ ,  $p=0.25$ ). These results suggested higher stiffness scores were associated with lower pain scores.

## Conclusions

This study showed no correlations between perineal muscle stiffness scores and vulval pain, using either the SFMPQ or the NRS scores. In this cohort, pain duration was prolonged and pain severity scores were moderately - very low. The cluster of low severity pain scores may have created insufficient spread in the data to detect an association between stiffness and pain. Another interpretation of the lack of association is that the increased stiffness levels

characteristic of this cohort were independent of their provoked or non-provoked pain status. This raises the question that if pain levels were not correlated with stiffness levels, what is the explanation for higher stiffness values in women with vulvodynia? The findings from this study do not support the notion that altering stiffness levels attenuates symptoms of pain.

Future research to investigate associations between muscle stiffness and pain in a vulvodynia cohort with a greater distribution of pain scores is recommended, as well as research to provide further confirmation of the construct validity of the MyotonPro™ in measuring small, centrally located perineal muscles using 4D ultrasound imaging in combination with fine wire EMG and Myoton measurements.

### **Acknowledgments/Disclosures**

Financial support for this research was provided by the Physiotherapy New Zealand Scholarship Trust Fund (Grant received in 2012) and the Australian Physiotherapy Research Foundation (T12-CWH001 received 2013). No financial relationship exists between the author and the manufacturer of the MyotonPro™.

1. Davidson, M., A. Bryant, and H. Frawley, *Perineal muscle stiffness in women with and without vulvodynia: Reliability of measurement and differences in muscle stiffness*. *Neurourology & Urodynamics*, 2014. **33**(6): p. 709-710.