ASSOCIATION BETWEEN PHYSIOTHERAPY TREATMENT OF PELVIC FLOOR MUSCLE INCREASED TONE AND LOWER URINARY TRACT SYMPTOMS

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Introduction

Physiotherapy is a widely accepted first line treatment for women diagnosed with urinary incontinence (UI) (1). However, while support for physiotherapy treatment of stress urinary incontinence (SUI) utilizing pelvic floor muscle (PFM) strengthening for decreased PFM tone is well published, there is minimal data evaluating appropriate treatment strategies for PFMs increased tone on the improving of UI. Conversely, increase in PFM tone is well documented in women with overactive bladder (OAB) and urgency urinary incontinence (UUI). Rapid PFM contractions are required to overcome vesical pressure during increased intra-abdominal pressure to maintain continence. However, when increased tone is present, the PFMs are biomechanically unable to respond quickly to create the required urethral coaptation. As a result, any normal or strong urge can lead to urinary leakage. PFM incresead tone may be viewed as a physiopathologic mechanism leading to SUI as well as for other lower urinary tract symptoms (LUTS) associated with OAB and UUI. This study's hypothesis suggests that normalizing PFM tone is directly correlated to decreased reports of LUTS. In this context, the aim of this study was to retrospectively evaluate how improvement of PFM tone normalization of women diagnosed with either SUI, OAB, or UUI with increased PFM tone in LUTS symptoms.

Methods

Medical records of women who received physiotherapy care from January 2017 till July 2021 for symptoms of SUI, OAB, or UUI and who presented with increased PFM tone upon digital palpation were included in this retrospective, cohort study. Exclusion criteria included those with previous pelvic surgeries, previous physiotherapy treatment for PFM dysfunction, history of cancer, neuromuscular diseases, lichen sclerosus et atrophicus, and those with missing data regarding the main variables. Women were assessed at pre and post-treatment for LUTS and PFM tone and mobility. Pelvic floor muscle tone was evaluated utilizing the Reissing Scale (2) which suggests assessing tone via digital palpation using grading score where -3 describes decreased tone in the PFM, 0 identifies normal tone, and +3 suggests PFM increased tone in the PFM. In addition, the mean pain intensity rating was calculated by adding the reported Numerical Rate Scale (NRS) of 0 (no pain) to 10 (worst possible pain) ratings for each identified trigger point and dividing that by the total number of trigger points found; the highest NRS rating was also used for the pain intensity analysis. Functional improvement of the PFMs was evaluated using a portion of the PERFECT scale which identifies the power of PFM maximum voluntary contractions, endurance, repetitions and number of fast contractions leading to fatigue. Voiding diaries that were used to monitor LUTS by reviewing recorded data on urinary frequency, number of episodes of SUI, urinary urgency and UUI, nocturia and enuresis. The Questionnaire for Urinary Incontinence Diagnosis (QUID) (3), which evaluates levels of symptomology using six questions that generate scores from 0-15 indicating no symptoms to maximum symptomatology, respectively, was used to assess symptoms of SUI and OAB. Women were treated by a trained, women`s wealth physiotherapist specialist who provided in office manual therapy (including myofascial release, manual stretching of the vaginal walls and perineal massage) twice weekly during the six-week treatment intervention. The treating physio also provided instruction in self-vaginal stretching and perineal massage that was to be done daily by the women over the duration of care.

Statistical Analysis

Student T-test (Minitab software, version 18.1, 2017) was used to compare women who presented improvement of PFM tone (Reissing =0) to those who maintained a level of increased tone (Reissing ≥1). A mean QUID score of urinary symptoms, deltas from frequencies of urinary symptoms assessed trough bladder diary, and use of P, E, R and F from PERFECT Scheme test were used to obtain comparison pre- to post-treatment. Effect size (Cohen's coefficient) measured the strength of comparisons between groups. Spearman's Correlation evaluated the relationship between increased tone and urinary symptoms. A 'p' value ≤ 0.05 indicated statistical significance with a Confidence Interval of 95%.

Results

One-hundred-twenty-seven women with LUTS and increased PFM tone were diagnosed with either SUI (35%), OAB (21%), or mixed UI (44%) and were included in the analysis. Mean age was 52 (±13.4) with more than half being overweight or obese (75%), married (65%), menopausal (55%), and multiparous (84%). Of the 61% experiencing at least one vaginal birth, 79% reported having had obstetric pelvic floor injuries, including episiotomy and/or perineal tear. Women with normal PFM tone (0 on Reissing Scale) following treatment showed a greater power of PFM contraction when compared to those who maintained tone (>1 on Reissing Scale) after physiotherapy (2.7±0.9 vs. 2.2±0.6 respectively; p=.01; d=0.6) as well as a reduction in SUI episodes (0.1±0.31 vs. 1±1.5 respectively; p=.01; d=0.8). =0.8). Of the women who experienced improved SUI symptoms at the post-treatment assessment (QUID-SUI score ≤1, from 0-15) compared to those who maintained SUI symptoms (QUID-SUI score >1), there was a significant decrease in pain intensity at the sum of all trigger points (0.88±1.77 vs. 2.59±2.78, respectively; p=.002; d=.73) as well as at any given PFM trigger point according to NRS (0.97±1.92 vs. 2.90± 3.26, respectively; p=.002; d=.72). =.72). With regard to symptoms of OAB, women who scored ≤1 from 0-15 on the QUID-OAB post-treatment compared to those who scored >1 also showed significant decrease in pain intensity at all trigger points (0.85±1.76 vs. 2.16±2.52; p=.009; d=.60), with maximum pain intensity (0.94±2 .00 vs. 2.42±2.92; p=.010; d=.59), and experienced decreased tone in the right vaginal wall (0.05±0.22 vs. 0.41±0.73; p=.019; d=.67). A mild correlation between increased tone and SUI (p=0.04; r=0.32), episodes of urinary urgency (p=0.02; r=0.37), and nocturia (p=0.007; r=0.43) were shown.

Conclusions

The findings of this study add to the paucity of knowledge regarding physiotherapy treatment for women with comorbid UI and increased PFM tone. The bidirectional association, both with the improvement of PFM function and urinary symptoms or with improvement of urinary symptoms, PFM symptoms, and pain intensity, highlights the importance of focusing physiotherapeutic techniques that work to normalize PFM tone. The study suggests the need for future randomized clinical trials with the aim of higher level of evidence to warrant conclusions.

References

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