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RESEARCH ARTICLE

EFFECTIVENESS OF MANUAL THERAPY FOR PELVIC FLOOR MUSCLE TRIGGER POINTS IN FEMALE PATIENTS WITH INTERSTITIAL CYSTITIS AND PELVIC PAIN

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ABSTRACT

Introduction: Interstitial cystitis is an odd, chronic and progressive disease of the lower urinary tract distinguished by urinary urgency, frequency and chronic pelvic pain in the absence of previous aetiology and poorly understood pathogenesis. It is well established that dysfunctional pelvic floor muscles contribute significantly to the symptom of Interstitial cystitis.

Objective: To determine the efficacy of pelvic floor myofascial trigger release in female patients with Interstitial cystitis and pelvic pain.

Methods: The study was performed and conducted among female patients with Interstitial cystitis who attended urology department at SRM Hospital. Female patients who demonstrated pelvic floor tenderness on physical examination are recruited. The outcome measures include PUF(Pelvic Pain, Urgency and Frequency) Questionnaire for disease symptom and bother score, VAS (Visual Analogue Scale) for pain and MOS(Modified Oxford Scale) for pelvic floor muscle tenderness measurement.

Results: Within group analysis and between groups analysis was performed using paired t-test and student t-test. A total of 30 female patients were systematically allotted into two groups (experimental and control) who had similar baseline values. Pain, tenderness, urgency and frequency symptom score decreased in both the groups over a 4 week period of treatment and was also significantly different between the groups (p=0.000).

Conclusion: Myofascial trigger release therapy along with conventional medical therapy has better effect in reduction of symptom (Pain, tenderness, urgency and frequency) than conventional medical therapy alone among female patients with interstitial cystitis and pelvic pain.

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INTRODUCTION

Interstitial Cystitis is an odd, chronic and progressive disease of the lower urinary tract distinguished by urinary urgency, frequency and chronic pelvic pain in the absence of clear pathology. (Satpathy Hemant, 2008; Peters *et al*., 2007) The symptoms are generalized pelvic pain, voiding symptoms (frequency, urgency, nocturia), dyspareunia, premenstrual and menstrual exacerbation, worsening pain with bladder filling and relieved with voiding, waxing and waning of symptoms and duration more than 3-6 months. (Lilius *et al*., 1973) In 2002, International survey on Interstitial Cystitis proved that it is a global disease. Women make up 90 percent of patients with interstitial cystitis (IC), while men comprise the remaining 10%. The exact prevalence of IC in India is unknown. In 2007, Indian survey among Urologist, registered the prevalence of Interstitial Cystitis in Indian male and female ratio to be 1:2.

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(Kaplan and Firlit, 1980) It is well established that dysfunctional pelvic floor muscles contribute significantly to the symptom of Interstitial Cystitis and the so-called urethral syndrome, that is urgency-frequency with or without chronic pelvic pain. (Schmidt and Vapnek, 1991; Mary *et al*., 2009) However, these muscles not only acts as a source of symptoms, but also as a trigger for neurogenic inflammation of the bladder wall, which is a source of the urothelial permeability characteristic of Interstitial Cystitis. (Oyama *et al*., 2004) Travell, Simons and Simons, (1998) suggest that "a Trigger point is a neuromuscular dysfunction of the motor endplate resulting in referred pain and local twich responses. (Oyama *et al*., 2004; Anderson *et al*., 2005) As noted by Schmidt and Vapnek, (FitzGerald and Kotarinos, 2003) in patients with interstitial cystitis, pelvic floor findings on palpation are consistent with those of a myofascial trigger point, created by injury at the motor end plate as a result of acute, repetitive or sustained muscle overloading. (Anderson *et al*., 2005) Therefore on examination, tension and tenderness of the pelvic floor muscles and other somatic tissues are commonly present

in patients with Interstitial Cystitis. (Holzberg *et al*., 2001) Thereby, eradicating the trigger point and re-educating the pelvic floor muscle with manual pelvic floor physical therapy (myofascial trigger release, stretching and post isometric relaxation exercise) for normalising these muscles will be our integral part of the treatment regime in these patients. Importantly only fewer studies reported that along with conventional pharmacological treatment, physical therapy interventions, which includes hot packs, ice packs, TENS, high pulsed galvanic stimulation, biofeedback, myofascial trigger release, massage etc., directed to those muscular abnormalities provided symptomatic relief in patients with Interstitial Cystitis. (Oyama *et al*., 2004; Holzberg *et al*., 2001; Lukban *et al*., 2001; Lukban and Whitmore, 2002; Rosenbaum and Owens, 2008; Linda *et al*., 2010; Parsons *et al*., 2002; Rosenberg and Hazzard, 2005; Matt *et al*., 2007; Butrick, 2003) To assess the effectiveness of myofascial trigger release on pelvic floor muscle trigger points in female patients with Interstitial Cystitis, thereby to analyze the pain, tenderness and PUF(Pelvic Pain Urgency and Frequency) score readings measured before and after treatment.

MATERIALS AND METHODS

30 Subjects who had diagnosed with Interstitial Cystitis, having symptoms of discomfort or pain in the pelvic region for at least 3months period within the last 6 months, aged 21-55 years were recruited from SRM Medical College Hospital and Research Centre – Urology Department. Participant unable to tolerate insertion of one or two vaginal examining fingers, Participant who had prior course of physical therapy for interstitial cystitis and who have neurological disorders that affects the bladder, Participants having active urethral calculi, bladder cancer, tuberculous cystitis, uterine prolapse and gynecological infection, Pregnant women were excluded from the study. Clinically identified potential patients were counselled about the study procedure and from those who are willing to participate in the study, a informed consent was taken. After detailed history collection, patients completed the symptom scales including horizontal VAS and PUF scale. After emptying the bladder, they underwent a pelvic examination in lithotomy position including the transvaginal examination of the soft tissues of the pelvic floor (levatorani, obturatorinternus, piriformis and urogenital diaphragm) for myofascial trigger points by the examiner. Patients were eligible to continue with study participation only if some pelvic floor tenderness was elicited during this baseline pelvic examination. After finding trigger points, Tenderness is graded according to Modified Oxford Scale. Patients were systematically allotted into two groups after completing the pre-test: Group A (Experimental) and Group B (Control). Both the groups received conventional medical treatment (medications).Only group A (Experimental) received both medical and physical therapy (Myofascial trigger point release) and group B (control) received conventional medical treatment alone. Pelvic floor examination and myofascial trigger point release therapy was done by the same examiner. After four weeks, post-test values were taken from both the groups.

Myofascial trigger point release (MFTR) protocol for experimental group a

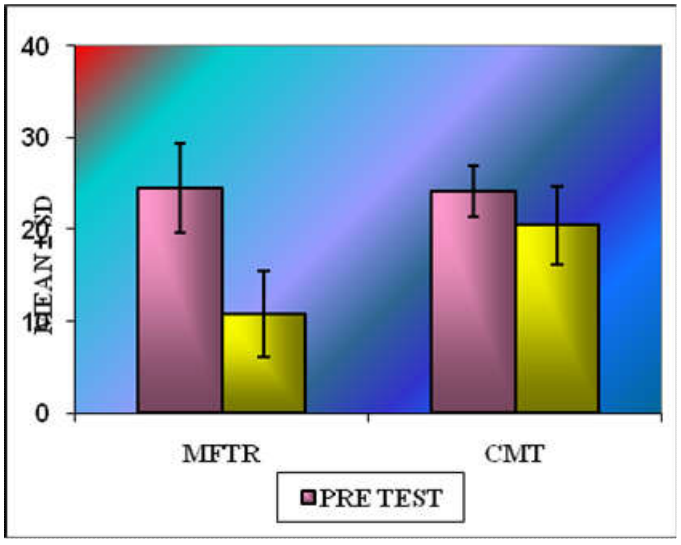
For group A patients, after the pre-test, women were placed in lithotomy position with pillow under her head. They were palpated for the trigger points in the following (paired) muscles: Pubococcygeus, Urethrovaginal Sphincter, Coccygeus, Obturatorinternus and Piriformis. Then apply compression over the trigger points followed by stretching at right angles to the affected muscle bundles, allowing the finger to glide between the fibres to seek the direction of least resistance. Compression is applied for 10 to 15 seconds and stretching for 2 to 3 times, followed by isometric contraction against resistance, which is held for 5: 10 seconds (Hold:Relax), 4 to 5 times for each muscle. Home exercise – double void two or three times after each void. Treatment session is twice a week for four weeks. After 4 weeks post-test values were taken.

Control group b

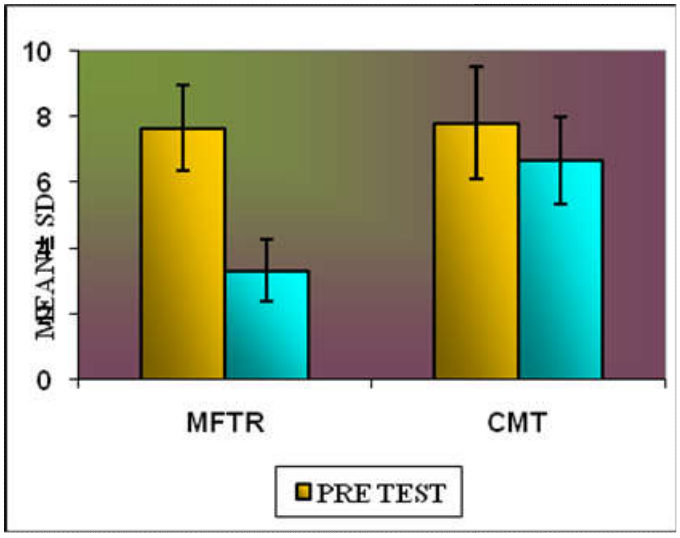
For group B patients, after the pre-test, they were treated only with conventional medical treatment (CMT) and after a four week period post-test values were taken.

RESULTS

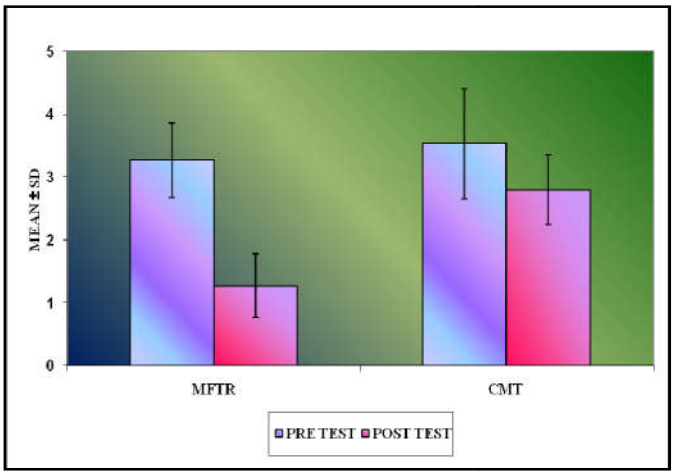
According to graph 1, with no significant difference in the baseline PUF (pelvic pain, urgency and frequency) scores, both the groups achieved decline in their urinary symptoms. Comparison between these within group changes in PUF (pelvic pain, urgency and frequency) scores revealed that group A (MFTR) reported a greater decline in urinary symptoms than group B (CMT). According to graph 2, with no significant difference in the baseline VAS (visual analogue scale) scores, both the groups achieved decline in their pain levels. Comparison between these within group changes in VAS (visual analogue scale) scores revealed that group A (MFTR) reported a greater decline in pain level than group B (CMT). According to graph 3, with no significant difference in the baseline MOS (modified oxford scale for tenderness) scores, both the groups achieved decline in their tenderness levels. Comparison between these within group changes in MOS (modified oxford scale for tenderness) scores revealed that group A (MFTR) reported a greater decline in tenderness level than group B (CMT).



Graph 1. Comparison of PUF (pelvic pain, urgency and frequency) scores within group a (MFTR) and group b (CMT) patients



Graph 2. Comparison of vas (visual analogue scale for pain) scores within group a (MFTR) and group b (CMT) patients



Graph 3. Comparison of mos (modified oxford scale for tenderness) scores within group a (MFTR) and group b (CMT) patients

Table 1. Post-test PUF (pelvic pain, urgency and frequency) scores between group a (MFTR) and group b (CMT) patients

Symptom score	Group	N	Mean	SD	t value	P* value
Post-PUF	A (MFTR)	15	10.80	2.9	7.382	0.000*
	B (CMT)	15	20.47	4.2		

In this table, p<0.001, there is a significant lowering of post-test PUF (pelvic pain, urgency and frequency) scores in group A(MFTR) compared to group B(CMT).

Table 2. Post-test vas (visual analogue scale) scores between group a (MFTR) and group b (CMT) patients

Symptom score	Group	N	Mean	SD	t value	p* value
Post-vas	A (MFTR)	15	3.33	1.7	5.916	0.000*
	B (CMT)	15	6.67	1.3		

In this table, p<0.001, there is a significant lowering of post-test VAS (visual analogue scale) scores in group A(MFTR) compared to group B(CMT).

Table 3. Post-test mos (modified oxford scale for tenderness) scores between group a (MFTR) and group b (CMT) patients

Symptom score	Group	N	Mean	SD	t value	p* value
Post-MOS	A (MFTR)	15	1.27	0.9	5.675	0.000*
	B (CMT)	15	2.80	0.5		

In this table, p<0.001, there is a significant lowering of post-test MOS (modified oxford scale for tenderness) scores in group A (MFTR) compared to group B (CMT).

DISCUSSION

This study is focused on evaluating the effectiveness of Myofascial Trigger Release Therapy on pelvic floor muscle trigger points to the benefit of female patients with interstitial cystitis. The pelvic floor is particularly vulnerable to myofascial trigger points because of its central location, transmitting force between the upper body and legs, constant supportive Sphincteric and sexual activity, characteristic eccentric or elongated type of contraction that places more stress on myofascial tissue (Oyama *et al*., 2004) and significant response to stress. The anatomical reason that these pelvic floor trigger points can influence the bladder lies in the close proximity within the spinal cord of the afferent nerve endings from the pudental (pelvic floor) and bladder parasympathetic nerves. With enough painful input to the sacral spinal cord, spinal dorsal horn neurons may possibly trigger antidromic transmission into the adjacent bladder nerves. Lilius *et al* (1973), reported that out of 31 subjects diagnosed with Interstitial Cystitis, 25 had spasm and tenderness of the levatorani musculature, bladder symptoms and dyspareunia. (Schmidt and Vapnek, 1991) Kenneth M Peter *et al* (2007), concluded that myofascial pain and hypertonic pelvic floor dysfunction are present in as many as 85% of patients with interstitial cystitis. (Travell and Simons, 1983) In this study, the more severe pre-treatment symptom scores of patients with Interstitial Cystitis also represent evidence of the painful consequences of bladder involvement. Recently the symptomatic benefit of manual physical therapy as an indirect method of pelvic floor muscle rehabilitation in patients with interstitial cystitis was reported. Lukban *et al*. (2001), reported on 16 subjects diagnosed with interstitial cystitis, who were treated with a combination of direct myofascial release, joint mobilization, muscle energy techniques, strengthening, stretching, and neuromuscular re-education showed a 94% improvement in both irritative bladder symptoms and dyspareunia. (Parsons *et al*., 2002) Weiss *et al*. (2001), used manual therapy for the pelvic floor trigger points and myofascial release in interstitial cystitis patients and found that 70% had marked or moderate improvement in symptoms after treatment. (Oyama *et al*., 2004) The statistical result of our study shows that there is significant difference in symptom scores measured by PUF (pelvic pain, urgency and frequency scale), VAS (visual analogue scale) and MOS (modified oxford scale for tenderness) between the pre and post treatment of both the myofascial trigger point release therapy group and control

group. It is possible that treatment (medications) directed to the bladder for decreasing the effect of noxious stimuli can convert an adjacent active painful trigger point in the pelvic floor to an asymptomatic one, the latent point still represents a risk and can flare-up later. (Oyama *et al*., 2004) It was found that treatment (manual therapy) directed to the pelvic floor dysfunction in patients with interstitial cystitis produced symptomatic benefit. Theoretical understanding of myofascial trigger release physiology led to the prediction that eradicating the painful myofascial trigger points in the pelvic floor muscle can benefit the patient more apparently. The statistical result of the study also inferred a significant decrease in post treatment symptom scores measured by PUF (pelvic pain, urgency and frequency scale), VAS (visual analogue scale) and MOS (modified oxford scale for tenderness) in the myofascial trigger point release therapy group A than the control group B. Jeffery R Dell *et al* (2006), concluded that the benefits of medications can be enhanced with non-pharmacological approaches such as physical therapy and dietary changes. From the statistical analysis, it is found from this study that after myofascial trigger point release therapy, symptom scores such as PUF (pelvic pain, urgency and frequency scale) scores, VAS (visual analogue scale) scores and MOS (modified oxford scale for tenderness) scores exhibited a statistically significant decrease compared to the symptom scores of control group which supports the view of, Linda S Van Alstyne *et al* (2010), who concluded that manual therapy techniques applied to the pelvic floor, appeared to be beneficial to both patients in reducing pain and improving sexual function. (Butrick, 2003) Finally, according to the results, group A patients who received myofascial trigger release therapy along with conventional medical therapy has better effect in reduction of symptoms (pain, tenderness, urgency and frequency) than the patients in group B who received conventional medical therapy alone.

Long term effect of the treatment can be assessed by taking repeated PUF (pelvic pain, urgency and frequency) scale readings. Vaginal algometers can be used as objective measurement for pelvic floor pain sensitivity. Future studies can relate to the effect of demographic datas like age, ethnicity and chronicity of symptoms.

Conclusion

Myofascial trigger release therapy was found to be effective in producing significant improvement in female patients with interstitial cystitis and pelvic pain.

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