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Complementary and Alternative (CAM) Treatment Options for Women with Pelvic pain

Malathy Srinivasan, MD, FAAPMR,
Department of Physical Medicine and Rehabilitation, Sidney Kimmel Medical College at Thomas Jefferson University

Joseph E. Torres, M.D,
UT Health San Antonio, Department of Anesthesiology

Donald McGeary, PhD, ABPP,
Associate Professor and Vice Chair for Research, Rehabilitation Medicine; Associate Professor, Psychiatry, UT Health San Antonio

Ameet S. Nagpal, M.D., M.S., M.Ed.
UT Health San Antonio, Department of Anesthesiology, Associate Professor, Department of Anesthesiology, Medical Director, UT Health San Antonio Pain Consultants, Associate Program Director, UT Health San Antonio Pain Medicine Fellowship

Abstract

I. Purpose of review: To provide an overview of the current complementary and alternative (CAM) treatment options for women with chronic pelvic pain (CPP).

II. Recent findings: Recent studies on chronic pain at cellular, molecular and network level and their interaction with the immune system has unfolded several mechanisms for pain making it promising to explore the alternative paradigm to manage the incredibly complex chronic pelvic pain condition where multifactorial etiology often limits successful outcomes.

III. Summary: The multifactorial nature and complexity in establishing the underlying diagnosis in CPP limits predictable response to traditional medical and interventional options. Complementary and alternative options have been studied to improve outcomes. Incorporation of exercise-based CAM, pelvic floor physical therapy, acupuncture and cognitive behavioral therapy are suggested to show promising results but well powered randomized studies are needed to draw

Corresponding Author: Ameet Nagpal, UT Health San Antonio, 7703 Floyd Curl Drive MC 7838, San Antonio, TX 78229, Office: 210-567-6137 Fax: 210-450-6095, NagpalA@uthscsa.edu.

Conflict of Interest

Donald McGeary reports grants from the National Center for Complementary and Integrative Health during the conduct of the study. Malathy Srinivasan, Joseph Torres and Ameet Nagpal declare no conflicts of interest relevant to this manuscript.

Human and Animal Rights and Informed Consent

This article does not contain any studies with human or animal subjects performed by any of the authors.

conclusions on their efficacy. Evidence for non-opioid alternatives such as oral cannabinoids are preliminary and may emerge to be safe and effective.

Keywords

Female pelvic pain; CAM; acupuncture in pelvic pain; pelvic floor physical therapy; cognitive behavioral therapy; cannabinoids in pelvic pain; alternative therapy; complimentary therapy

INTRODUCTION

Chronic pelvic pain (CPP) is a complex pain syndrome involving multiple domains that could include the pelvic organs such as lower urinary tract, female genital organs and gastrointestinal system. Pelvic pain may also emanate from musculoskeletal, neurologic, or psychological etiologies (1). Direct nerve injury, inflammation or entrapment can cause pelvic pain localized to the pelvic organs. After the initial tissue damage has healed, pain can still persist due to the afferent nociceptive plasticity and long-term plasticity caused at the dorsal horn of the spinal cord and the brain that can result in pain amplification or maintenance. This theory of neuroplasticity is being investigated at the cellular and molecular level in several basic science research studies and may explain additional pain components such as spontaneous pain, hyperalgesia and allodynia (2,3,4). The recent advances in characterization of the molecular, cellular and network changes and interaction with the immune system involved in the development of chronic pain are key factors that might determine future treatment approaches for this incredibly complex condition that causes significant functional disabilities and economic consequences. Due to the complexity of this condition involving multiple domains, it is crucial to explore the complementary and alternative paradigms and an integrated approach to improve outcomes of conventional treatments. There are no specific guidelines or algorithms for complementary and alternative therapy for management of pelvic pain. In this section, we will provide the evidence behind the various Complementary and Alternative Medicine (CAM) treatment options studied in the treatment of pelvic pain.

The Cochrane Collaboration defines CAM as “a broad domain of healing resources that encompasses all health systems, modalities, and practices and their accompanying theories and beliefs, other than those intrinsic to the politically dominant health systems of a particular society or culture in a given historical period”. Most of the evidence behind the effectiveness of CAM is derived from their applications in treatment of chronic pain including chronic low back pain (5,6,7) and pelvic girdle pain during pregnancy and postpartum (8).

This section will include evidences for physical interventions, acupuncture, manipulative treatment, mobilization, massage therapy, biofeedback, cognitive behavioral treatment (CBT) and natural or herbal supplements. Other emerging chronic pain management options including the role of cannabinoids will be explored.

1 Physical Interventions

1.1 Physical therapy

Pelvic floor myofascial physical therapy has been studied in management of pelvic floor disorders caused by urological and gynecological conditions and has shown superior results compared to global therapeutic massage and has shown to be feasible in a randomized study (9••, 10••). It is based on the concept of functional retraining of the pelvic floor muscles to improve relaxation, endurance and strength and has been shown to improve or cure chronic urinary and fecal incontinence, pelvic organ prolapses, postpartum pelvic floor weakness, and pelvic floor dysfunction (11,12••). Individualized programs based on the underlying primary trigger and examination findings are critical and should include kinetic chain assessment and lumbopelvic stabilization (13). Biofeedback helps patients to learn how to appropriately contract and relax the muscles with visual and auditory feedback (14). Biofeedback combined with pelvic floor muscle therapy has shown to produce superior results compared to pelvic floor muscle therapy alone in a summary of literature review over a five-year period prior to 2017 on complementary options for pelvic floor disorders (14). The authors also stated that some studies showed an augmented effect when surface electromyography-assisted feedback was used.

Manual techniques such as myofascial release, trigger point massage, strain-counter strain, and spine-hip-pelvis joint mobilization are suggested to be incorporated treatment options (12,13). A recent RCT showed pelvic floor rehabilitation incorporating manual techniques such as myofascial release, intravaginal massage techniques in addition to modalities such as transcutaneous electrical stimulation (TENS), functional electrical stimulation (FES), heat, cold and biofeedback showed improvement in sexual function, pelvic floor muscle strength and endurance in patients with dyspareunia from pelvic floor muscle dysfunction (15•). Of the 64 patients randomized, the experimental group who received electrotherapy, manual therapy and pelvic floor exercises showed statistically significant improvement in the pelvic floor muscle strength, endurance and female sexual function index score compared to the no treatment group (15•).

Pelvic floor physical therapy has shown to be effective in the treatment of pelvic pain conditions such as coccydynia (16•). This retrospective analysis of 124 patients treated for coccydynia with pelvic floor physical therapy as a primary intervention showed that of the 79 patients who completed an average of 9 sessions of pelvic floor physical therapy had mean average pain ratings decreased from 5.08 to 1.91 and mean global pain improvement was 71.9% (16•). There is robust evidence-based support and clear benefit to suggest that pelvic floor physical therapy is beneficial in a wide variety of pelvic floor disorders such as vulvodynia, dyspareunia, vaginismus and pelvic myofascial pain (17••). There is wide variation in the study size and methodology of the manual techniques used in pelvic floor physical therapy and long-term results remains to be studied.

Currently there is no consensus on the recommended modalities, duration, frequency, length or intensity of physical therapy sessions but with the available studies, the current literature suggests there is robust evidence-based support to be considered as a safe, non-invasive and

effective approach (17•). However, patient education is critical to improve compliance and adherence to treatment protocols.

1.2 ACUPUNCTURE

Acupuncture is a form of traditional Chinese medicine that is based on the concept of regulating the balance of qi and blood. Its role has been studied in chronic pelvic pain inflammatory conditions where there is disruption of the blood microcirculation such as chronic prostatitis and pelvic inflammatory disease and has shown to improve chronic pain and tissue fibrosis (18,19,20). Other mechanisms include stimulation of relevant 'acupoints' and receptors which can enhance production of endogenous opioid peptides from the CNS and also lead to anti-inflammatory effects by increasing beta-Ep levels in the serum and tissues (21,22). These changes are helpful to produce peripheral analgesia.

Case reports on acupuncture and electro-acupuncture has shown that it can be very helpful in suppressing chronic neuropathic components and myofascial components of pain through release of endorphins, enkephalins, dynorphins, prostaglandins, serotonin and ACTH at the central nervous system (23,24•). Activation of the autonomous sympathetic system and the gate mechanism at the substantia gelatinosa is thought to cancel propagation of painful stimuli to the sensory cortex.

The location of 'acupoints' are described by the World Health Organization as standard acupuncture point locations (25). Very few studies have been done to evaluate the role of acupuncture in female pelvic pain and studies done on endometriosis related pain have shown some benefit (26,27). A small randomized study with 14 participants showed a 62% pain reduction in the Acupuncture group at 4 weeks for endometriosis related pain that was statistically significant but the difference decreased after 4 weeks (26). The trials on the efficacy of this modality as treatment for chronic pelvic pain have used different assessment modes and outcome timeframes. The methodological differences make it difficult to recommend acupuncture as a standard of care alternative treatment modality for this patient population. More RCT's with large sample sizes and more time points to assess outcomes using standardized acupoints and modes are needed.

1.3 MASSAGE

A majority of patients with pelvic pain have pelvic floor dysfunction and myofascial trigger points (28•). Transvaginal massage using the 'Thiele' technique (29), that involves massage from the origin to insertion along the direction of the muscle fibers with the amount of pressure tolerable to the subject over 5 minutes, has shown to reduce pelvic pain and dyspareunia caused by pelvic floor muscles (30,31). The study on 18 women who had perineal massage for dyspareunia caused by tender pelvic floor muscles and CPP showed significant differences in the VAS and Me Gill pain index but not anxiety/depression scale (31). Studies where trigger point therapy and Thiele massage were used in conjunction with physical therapy showed significant reductions in pelvic pain. However, these studies were limited by methodological flaws making evidence-based recommendations difficult (29).

1.4 OSTEOPATHIC TREATMENT

Osteopathic manipulative treatment (OMT) is based on a holistic approach that includes a variety of manual techniques that includes soft tissue stretching, spinal manipulation, resting muscle energy stretches and visceral technique (32). Most of the literature evidence in support of manipulative treatment for pelvic pain is in pelvic girdle pain during and after childbirth, making extrapolation of results controversial for the pelvic myofascial pain population. A meta-analysis on the efficacy of OMT in pregnancy and postpartum identified 8 studies that showed clinically relevant benefits for pregnant and postpartum women with low back pain (33). A recent case report on osteopathic manipulative treatment for pudendal neuralgia has shown reduced pain and disability indexes without any complications and maintained results at 6-month follow-up (34).

2. Mind-body interventions

2.1 Movement based therapy (Yoga, Tai-chi, Reiki, Qigong)

Yoga as a movement-based CAM treatment option has been proposed as a potential treatment of chronic non-malignant pain as it helps to target both physical and psychological aspects of pain (35*). Yoga techniques are based on various types including physical postures, breathing techniques, relaxation, and meditation. There is growing body of literature to support biopsychological approach including yoga to treat chronic pain as it can not only improve flexibility, muscle strength and balance but can also improve mood, increase pain acceptance and decrease pain catastrophizing all of which can reduce pain related disability in chronic pain conditions (35•,36,37). One RCT that was of low quality concluded that Yoga with conventional treatment with analgesics was effective for reducing chronic pelvic pain, while conventional treatment with analgesics alone was not (38•). In this study, 60 patients with CPP were randomized to Yogic interventions (asanas, pranayama, and relaxation) along with the conventional therapy (NSAIDs) or conventional therapy for 8 weeks. Yoga intervention had significant improvements in all domains of the quality of life (physical, social, psychological and social). There is currently no evidence regarding its cost-effectiveness (39•). And, the authors identified seven guidelines of moderate to high methodological quality that were in favor of yoga for the treatment of non-malignant chronic pain (39•). Although little is known about other movement-based therapy such as Tai-chi and Qigong, a few studies have shown a positive effect on reduction of back pain, anxiety, depression and improved functional abilities in patients with back pain. The effects of these modalities in pelvic pain treatment have not been not studied (40).

Reiki is a complementary treatment based on the ‘energy approach’ and is considered to be safe and without adverse effects. Reiki points out a structure filled with spiritual wisdom waiting to be woken up in human as well as universal energy. A meta-analysis on the effectiveness of Reiki in pain identified four RCT’s that showed statistically significant reduction in the VAS score and concluded that it is an effective approach in treating pain (41). Studies on specific patient groups such as pelvic pain are needed before it can be recommended for this patient population.

2.2 Mindfulness based stress reduction- Cognitive Behavioral therapy (CBT)

Chronic pelvic pain is a disorder that involves central sensitization with adaptation of the central nervous system that causes amplification of the peripheral input. This may lead to comorbid psychiatric disorders, and so it is imperative to address these central mechanisms to improve functional outcomes and quality of life. Other mechanisms in central pain syndromes include abnormal regulation of the hypothalamic-pituitary axis (HPA) that results in dysregulation of cortisol and immune responses resulting in mast cell infiltration and activation and sensitization of nearby nociceptive receptors causing pain even in the absence of peripheral nociceptive input (42••). All patients with chronic pelvic pain have evidence of increased downstream activation of the HPA axis in the peripheral tissues as seen by inflammatory markers in tissue biopsy studies (• 42,43,44,45). The goal of CBT is to decrease the central sensitization that could potentially stop the dysregulation of HPA and improve long term outcomes (46).

CBT is a non-pharmacological interventional approach that produces pain management through alterations in pain coping (i.e., restructuring alarming or unrealistic thoughts about pain), activity pacing, mood management, stress reduction and social support. The prevalence of ‘psychosocial dysfunction’ is higher in the CPP population compared to pain free controls (47,48,49••), so integrating CBT into a CPP treatment plan is important to manage comorbid pain and psychiatric comorbidity. The role of CBT in reducing anxiety and depression is well established, and CBT is particularly useful as a CPP intervention because of its minimal side effect profile (50,51).

CBT has been shown to reduce chronic pelvic pain and symptom severity as well as improve quality of life (52•). In endometriosis-associated chronic pelvic pain, CBT with somatosensory stimulation (acupuncture) has been shown to reduce global pain, pelvic pain, and dyschezia and improve quality of life and improvements remained stable at 6 and 24 months (53). 70% of patients with vulvodynia who received CBT as treatment in a randomized trial showed >30% clinically significant reduction in pain (54). The body of research testing CBT for chronic pelvic pain is relatively small, though the few high-quality studies that exist show small to moderate effects of CBT on pelvic pain outcomes with no adverse effects. Combining CBT with other interventions (e.g., physical therapy) may be helpful (52•).

3. Herbal medicines and non-opioid alternative treatment options for chronic pelvic pain

3.1 Natural and Herbal supplements

The role of the non-prescription medicines such as Vitamin and mineral supplements, phytoestrogens and herbal supplements have been studied to treat women’s health conditions such as dysmenorrhea, premenstrual syndrome, infertility and menopause (56). The utility of some of the herbal supplements such as Saw Palmetto, Cemilton (pollen extract) and Quercetin has been studied to show positive effects in men with chronic prostatitis and chronic pelvic pain syndrome (55, 56).

A Cochrane database review on herbal supplements for low back pain identified 14 RCT's that showed Capsicum frutescens (Cayenne) to be more effective for pain than placebo. Other herbs that also showed some effectiveness were Harpagophytum procumbens (devil's claw), Salix alba (white willow bark), Symphytum officinale L. (comfrey), Solidago chilensis (Brazilian arnica), and lavender essential oil but these studies were moderate quality with no consistently reported outcome data (56). Curcumin and calendula were shown to be effective in CPPS in a phase 2 single blinded placebo controlled randomized clinical trial (57•). In a small crossover study on patients with pelvic pain from pelvic congestion syndrome, flavonoid was shown to statistically decrease pain scores after 6 months (58). Well designed, randomized trials of efficacy and safety have not yet been performed. Since the molecular component of these supplements are antioxidants that can promote cellular healing, there is a potential source of herbal supplements with such properties that remains be explored.

3.2 Role of cannabinoids

The use of cannabis medicines (Cannabinoids) for pain management is controversial at this time. Opioids have been traditionally used to manage chronic pain when all conventional therapies fail (59•). But they have been shown to be ineffective and associated with significant side effects such as dependence and substance abuse, nausea, constipation, sedation and development of tolerance (59•). Physicians nationwide are prioritizing minimal use of opioid analgesics to reduce abuse and opioid crisis (60). There is a need to explore alternative options (59•).

Cannabis Sativa has been used to manage pain for several years particularly in the setting of palliative care and multimodal pain management and has been shown to not change plasma opioid levels (61). Moreover, cannabinoid receptor activation does not induce respiratory depression, making cannabinoids theoretically safer alternatives to opioids. While common routes of administration are inhalation and ingestion, others include rectal, sublingual, transdermal, ocular, and intravenous. However, there is strict regulatory control on the use of cannabinoids due to the adverse effects of smoking and emotional effects associated with it.

A meta -analysis of individual patient data that studied 178 participants with 405 observed responses from 5 RCT's showed inhaled cannabis provided short term relief in 1 in 5-6 patients with chronic neuropathic pain (62), however long-term data on the risks and benefits are needed according to the authors with reported outcomes latencies in the reviewed studies ranging from only 6 hours to two weeks. A systematic review studied 24 RCT's that were eligible for meta-analysis on the role of cannabis showed that there is currently limited evidence to say there is more pain reduction. Pain reduction was greater with inhalational cannabis compared to placebo than other routes of administration and adverse events were higher in the oral/oromucosal routes compared to inhalation. The majority of studies did not show an effect (63). A recent Cochrane database review on all randomized double-blind studies conducted using cannabis, both plant derived and synthetic THC and THC/CBD oromucosal spray versus placebo, showed that the benefits of cannabis-based medicine may outweigh the associated risks in the treatment of chronic neuropathic pain (59).

Cannabinoid receptors (CBD-1) have been increasingly found in patients with painful bladder syndrome suggesting that cannabis agonists may have a role in alleviating pain in these patients (64). At least 50% of men with CP/CPPS have used cannabis in their lifetimes and in a survey, medical cannabis has shown to cause improvement in mood, pain, muscle spasms and sleep without any improvement in weakness, fatigue, numbness, ambulation or urination. Cannabis was overall “somewhat effective” for chronic prostatitis and “very effective” for CPPS (49). Their role in female pelvic pain remains to be studied.

Conclusions:

The treatment of pelvic pain is challenging and the evidence for alternative treatments have significant limitations due to small sample sizes, lack of randomization, and long-term follow-up. The various interventional treatment options for female pelvic pain parallel the multiple potential etiologies. Due to the multifactorial nature of the problem, a multidisciplinary approach incorporating complementary and alternative medicine is likely to yield the best long-term results. We reviewed the existing literature to summarize the various CAM options studied in the treatment of pelvic pain. [Table 1], Exercise-based CAM including movement-based therapy such as Yoga has shown improved outcomes to help reduce overall pain and emotional wellbeing thereby reducing pain related disability. Pelvic floor physical therapy has shown improved outcomes in several studies and has been proposed that it should be considered first line treatment approach. Complementary modalities such as Acupuncture has shown promising results for chronic low back pain and has been shown to be feasible. Since central sensitization invariably occurs in this patient population, Cognitive behavioral therapy as part of the biopsychological approach is likely to result in improved outcomes and better management of comorbid psychiatric conditions that may impact pain. Preventive strategies with particular emphasis on physical therapy in the post-partum period and incorporation of self-instructed exercise programs such as Yoga can decrease functional disability for women.

Non-opioid alternatives such as cannabinoids may emerge to be safe and effective compared to opioids in refractory population but more prospective and randomized studies are needed. More prospective and well powered studies are needed to explore all complementary and alternative strategies in the treatment of chronic pelvic pain.

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2017 6 30;89(2): 110–113. doi: 10.4081/aiua.2017.2.110.• This RCT studied 48 men randomized to rectal suppositories of Curcumin extract 350 mg (95%) and Calendula extract 80 mg (1 suppository/die for 1 month). Patients of Group B received 1 suppository/die for 1 month of placebo. There was significant reduction in NIH-CPSI score and VAS score in the treatment group.

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Table 1:

CAM treatment options for women with pelvic pain

Physical Interventions	**Conditions studied**	**Improvements**
Physical therapy	Chronic urinary and fecal incontinence, pelvic organ prolapse, pelvic floor weakness, myofascial dysfunction, coccydynia, vulvodynia, vaginismus	Sexual function, urinary and fecal incontinene, pelvic floor muscle strength, dyspareunia, coccy% pain pelvic pain
Physical therapy± biofeedback± electromyography assisted biofeedback		
Manual techniques-myofascial, trigger point massage, strain-counter strain, kinetic chain assessment ± TENS and FES		
Acupuncture	Endometriosis, chronic pelvic pain (variable assessment modes and outcomes)	Pain, neuropathic components
Massage	Pelvic pain	Pelvic myofascial pain
'Thiele' massage+ PT+ trigger point therapy		
Osteopathic treatment	Pelvic girdle pain during pregnancy and post-partum	Low bach pain in pregnancy and postpartum, pudendal neuralgia (case report)
Mind-body interventions	Chronic pain, chronic pelvic pain	Non-malignant chronic pain, back pain, anxiety, depression
Movement based- Yoga Tai-chi, Qigong, Reiki		
Mindfulness based- CBT	Anxiety, depression, CPP, endometriosis, vulvodynia	Endometriosis, Chronic pain, pelvic pain, psychosocial function, decrease central sensitization, vulvodvina
Herbal medicines	Urological pelvic pain, Chronic prostatitis, CPPS, Pelvic congestion syndrome (Flavonoids)	Pelvic pain
Saw Palmetto, Cernilton [pollen extract), Quercetin, Capsicum frutescens (cayenne), Devil's claw, white willow bark, comfrey, Brazilian Arnica, curcumin, calendula, Flavonoids		
Cannabinoids Cannabis sativa	Chronic neuropathic pain, painful bladder syndrome, Chronic prostatitis, CPPS	Mood, pain, muscle spasms, neuropathic pain