Non-Pharmacological Approaches To Treating Lower Urinary Tract Symptoms in Women through Integrative Medicine

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Lower urinary tract symptoms (LUTS) encompass a non-specific group of urologic indications that have an enormous economic and quality-of-life impact on women. Typically treated with lifestyle, pharmacologic, and/or surgical interventions, the addition of non-pharmacologic and non-invasive treatments may greatly improve outcomes related to LUTS. Evidence-based complementary health approaches, such as those offered through an integrative medicine (IM) department, address each woman as a whole person, including her physical, psychological, social, and spiritual needs. Having a dedicated IM center and integrating IM care within a urology center can guide patients to treatments that are safe and effective, thus providing appropriate care while empowering woman with self-care options. This article discusses the use of acupuncture, Reiki, guided imagery, yoga therapy, and naturopathic medicine to treat LUTS in women. We present how each modality can benefit women with different symptoms to provide optimal care for women with LUTS.

Key Words: **Integrative medicine, naturopathy, pain management, pelvic pain, urinary incontinence, overactive bladder.**

The term lower urinary tract symptoms (LUTS) encompasses a non-specific group of urologic indications typically falling into the broad categories of filling or irritation (e.g., urinary incontinence, dysuria, nocturia, interstitial cystitis [IC]) and voiding or obstructive issues (e.g., overactive bladder, incomplete voiding, spastic bladder). In addition, chronic pelvic pain (CPP) falls under the LUTS umbrella. CPP can present with unknown etiology and is generally defined as noncyclic pelvic pain occurring between the umbilicus and pelvis lasting more than 6 months that results in decreased quality of life (QoL) and often requires medical intervention (Ahangari, 2014; American College of Obstetricians and Gynecologists, 2011). LUTS can be caused by a single issue or

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be multifactorial in nature, potentially including gynecological, gastrointestinal, neuromuscular, and genitourinary disorders, among others (Dick, 2004; Hudson, 2006). Despite the broad, often ambiguous nature of these disorders, they have an enormous economic and QoL impact on women.

Prevalence estimates of LUTS vary depending on the population and definition used. However, a recent study in Brazil found LUTS occurred at least half the time in 59% of women over age 40 years (Soler, Gomes, Averbeck, & Koyama, 2018). The incidence of LUTS also increased with age; 96% of women age 70 years and older reported experiencing LUTS at least half of the time (Soler et al., 2018). Similarly, the number of women with CPP varies greatly; incidence rates of 5.7% to 26.6% have been reported worldwide, with 15% of women in the United States and the United Kingdom experiencing CPP (Ahangari, 2014; Ayorinde, Bhattacharya, Druce, Jones, & Macfarlane, 2017).

LUTS can negatively impact QoL (Soler et al., 2018). Coyne and colleagues (2012) evaluated the QoL of participants with urinary incontinence in a survey using the Health Anxiety and Depression and Short Form-12 (SF-12) questionnaire. Urinary incontinence caused a clinically relevant feeling of anxiety among 30% to 50% of female respondents and depression among 17% to 35%. Among these groups, poor physical and mental aggregate summary scores obtained via the SF-12 questionnaire were found in at least 11% of respondents (Coyne et al., 2012). Overactive bladder is associated with depression, lost work productivity, reduced sexual satisfaction, and lower levels of overall health (Coyne et al., 2008), while CPP is associated with depression, anxiety, low self-esteem, reduced marital satisfaction, sexual dysfunction, and somatic symptoms (Dalpiaz et al., 2008). Rates of anxiety are as high as 73% (Brazil) and 31% (UK) in women with CPP (Romão et al., 2009; Zondervan et al., 2001), and disturbed physical and mental health and sleep quality were reported by 32% of these women (Zondervan et al., 2001).

Despite therapeutic advances, due to the impact on QoL and the high incidence of co-morbid conditions associated with LUTS, additional treatment strategies are needed to reduce the burden among this patient population (Bavendam et al., 2016). For example, symptoms of CPP have been reported to persist for years (Dalpiaz et al., 2008). A multiprofessional approach has been suggested to improve outcomes related to LUTS (Bavendam et al., 2016; Dalpiaz et al., 2008).

This article will discuss various complementary health approaches utilized to treat LUTS in the integrative medicine (IM) department of our institution and provide a case exemplar to illustrate the beneficial effects of IM in reducing symptom burden.

Integrative Medicine – Why?

Typically treated with lifestyle, pharmacologic, and/or surgical interventions, the addition of non-pharmacologic and non-invasive treatments may greatly reduce the burden of LUTS. The Joint Commission, an organization that accredits and certifies healthcare organizations and programs in the United States, currently requires medical professionals to provide non-pharmacological treatments for pain control (The Joint Commission, 2017). This requirement emphasizes the critical need to reduce opioid use and recognizes the role that non-pharmacologic measures can play in pain management.

Despite a clear need for effective interventions for populations suffering from LUTS or CPP, the difficulty of effectively diagnosing these conditions often hampers treatment efforts. This issue is further complicated by the fact that women who present with LUTS and/or CPP/IP are frequently victims of past abuse or assault (Nault et al., 2016; Peters, Kalinowski, Carrico, Ibrahim, & Diokno, 2007), and thus, may be particularly emotionally and psychologically fragile. These disorders are difficult to diagnosis; therefore, women are frequently subjected to many invasive, painful procedures during the diagnostic evaluation process and during initial treatment attempts, all of which can be exhausting for any woman, and particularly traumatic for female victims of abuse.

Gentle, non-invasive techniques may have higher treatment success rates because uncomfortable and invasive strategies may invoke additional stress and pain. Safe and effective evidence-based complementary health approaches for the treatment of LUTS enable healthcare providers to address each woman as a whole person, including her physical, psychological, social, and spiritual needs. It is important to note that many patients use complementary health approaches on their own, without first discussing these treatment options with a healthcare provider. For example, O'Hare and colleagues (2013) found that over 80% of patients with IC had tried some type of complementary health approach. This practice is not without risk. In particular, the use of supplements can be dangerous without guidance, due to side effects and the possibility for interactions with other medications they may be taking (Lanni, Anderson, Armstrong, & Patricolo, 2016). Therefore, a dedicated IM center that incorporates IM care within a urology center can guide patients to additional treatment options that are safe and effective, and thus, provide appropriate care while empowering a woman with self-care options.

Established in 2004 at Beaumont Health, our IM department currently offers a variety of servic-

es to inpatients and outpatients across three hospitals and four outpatient facilities. Services available include clinical massage, acupuncture, yoga therapy, reflexology, cranial sacral therapy, integrative nutrition services, functional medicine, naturopathic medicine, Reiki, and guided imagery. The IM department works closely with other departments to provide comprehensive care.

In addition, our institution has a dedicated Women's Urology and Pelvic Health Center that accommodates women ages 18 to 96 years for issues regarding bladder dysfunction, pelvic pain, pelvic floor dysfunction, IC, and sexual dysfunction. Approximately 2,500 women visit the center yearly for appointments in urology, clinical psychology (specializing in pain), sex therapy, colorectal, gynecology and urogynecology, with an additional 2,400 visits annually for physical therapy. Board-certified, fellowship-trained physicians and certified women's health nurse practitioners provide comprehensive, multi-modal treatment approaches, including traditional, allopathic care by urologists, sacral and pudendal neuromodulation (Peters, Shen, & McGuire, 2013), percutaneous tibial nerve stimulation (PTNS) (Staskin, Peters, Mac Diarmid, Shore, & de Groat, 2012), physical therapy, psychologists, sexual medicine/sexual counselors, yoga therapy, support groups, and IM (Gupta, Gaines, Sirls, & Peters, 2015). These different modalities are used in various combinations in a unique, multidisciplinary therapeutic approach that is tailored to each patient's needs.

Here, we specifically discuss the use of acupuncture, Reiki, guided imagery, yoga therapy, and naturopathic medicine to treat LUTS in women. We present how each of these modalities can benefit women with different symptoms to provide optimal care for women with LUTS.

Integrative Medicine for LUTS In Women

Acupuncture

Acupuncture – derived from the Latin words "acus" (needle) and "puntura" (penetration) – is a part of Traditional Chinese Medicine (TCM). This ancient technique is characterized by the insertion of very fine needles into various points on the body's surface to influence physiological functions (U.S. Department of Health and Human Services, 2018b). The practice originated in China approximately 3,000 years ago and is one of the oldest continuously utilized medical procedures in the world. The goal of acupuncture is to maintain the body's homeostasis by inserting acupuncture needles at specific points on the body.

In TCM theory, acupuncture works to alleviate pain by restoring Qi along the meridian. Qi, defined as the energy of the body, is the driving force behind the functioning of organs and tissues. Meridians are 'vessels' for channeling Qi that run along the body, connecting organs and tissues. Acupuncture points are located at various points along these meridians. Health issues can arise when the Qi is blocked, and these blockages can be alleviated by acupuncture at specific points. In Western medicine theory, acupuncture is known to affect the nervous system. The acupuncture points, which are along the meridians, are believed to stimulate the peripheral nervous system (PNS) whose nerves spread throughout the body and connect to the spinal cord and central nervous system.

Acupuncture stimulates the PNS, inducing the release of neurotransmitters and endogenous opioids that relieve pain (Leung, 2012). However, acupuncture can also have electromagnetic effects that may explain the analgesic effect of acupuncture (Chang, 2013). In addition, the endorphins and neuro-hormones released in response to acupuncture regulate multiple systems in the body, including the immune system, autonomic nervous system, endocrine system, and musculoskeletal system. Acupuncture improves symptoms of urinary incontinence (Engberg, Cohen, & Sereika, 2009; Kim, Nam, Park, Lee, & Kim, 2008; Liu et al., 2013; Paik et al., 2013; Wang, Zhishun, Peng, Zhao, & Liu, 2013), overactive bladder (Emmons & Otto, 2005; Forde et al., 2016), and urinary urgency (O'Dell & McGee, 2006), and reduces pain associated with CPP/IC (Capodice et al., 2007; Dharmananda, 2003; Ozel et al., 2011).

Different acupuncture points are associated with various health concerns, and the stimulation of specific points to target specific concerns is known as the acupuncture protocol (for further information regarding these sites, see Deadman, Al-Khafaji, and Baker, 2007). The acupuncture point Kidney 3 (KD3) is in the depression midway between the tip of the medial malleolus and the attachment of the Achilles' tendon. Stimulation of this acupuncture point is used to address impotence, premature ejaculation, seminal emission, weak low back/knees, and frequent urination. The acupuncture points KD7 and KD8 are two finger widths above KD3. Stimulation of KD7 can alleviate painful urinary issues and edema, while KD8 is used for urinary pain and pain in the genital/inguinal area.

The acupuncture point Ren2 is on the midline just above the pubic bone. Stimulation of Ren2 can alleviate enuresis, painful urinary issues, flow issues, and fullness and pressure sensations in the lower abdomen; it can also be used to treat vaginal discharge. The acupuncture point Spleen 6 (SP6) is located on the inside of the lower leg. Gynecological issues, such as premenstrual syndrome, irregular or painful menstruation, infertility, delayed or difficult labor, and genital pain or

itching, can be helped by stimulation of SP6. However, SP6 stimulation is contraindicated during pregnancy because it can induce uterine contractions.

Certain allopathic techniques also capitalize on acupuncture sites. PTNS is a neuromodulation technique that uses intermittent electrical stimulation of the tibial nerve at the site of SP6. PTNS affects the afferent pathways to the sacral spinal cord, which then influences the efferent outflow to the lower urinary tract (Blok, Groen, Bosch, Veltman, & Lammertsma, 2006; Sirls, Killinger, Boura, & Peters, 2017). This FDA-approved procedure, performed by a urologist in the outpatient setting to treat overactive bladder (Sirls et al., 2017; Staskin et al., 2012), also improves LUTS symptoms and may mitigate CPP (Tutolo et al., 2018).

In a healthcare setting, the acupuncturist first reviews the patient's chart and works with each patient's care provider(s) before providing care. Then, in a typical session, the practitioner inserts the needles into the patient, often with the aid of a moxibustion or a heat lamp, and allows the patient to relax for 15 to 30 minutes with the needles inserted. The effects of acupuncture are cumulative, and frequent sessions are recommended initially to restore normal functioning of the body. Once the body is realigned, maintenance sessions occurring at a rate of approximately one per month are suitable.

Reiki

Reiki therapy is considered an energy therapy. Energy is defined as the ability of a physical system to perform work. The human body utilizes chemical energy (e.g., cell function) and electrical energy (e.g., heartbeat, nerve cells). Every cell in the body has energy, and the human body generates an energy field that can interact with other energy fields, although this energy is not quantifiable by current techniques. In Reiki theory, it is believed that our thoughts and body's health affect our energy, and conversely, manipulation of the energy flow to balance the body's energy system can affect health.

In Reiki therapy, practitioners place their hands lightly on or just above a person to facilitate energy balance, and support the body's natural healing ability (U.S. Department of Health and Human Services, 2018a). During a Reiki session, the patient may feel warmth or coolness, a sense of deep relaxation, diminished pain, reduced anxiety/depression, and an increased sense of well-being. However, a brief discomfort may occasionally occur with energy shifts. Reiki is considered a very low-risk intervention with only a few contraindications, such as severe psychotic or personality disorders because quieting techniques may increase psychotic symptoms.

While further research on the effects of Reiki is needed, it can induce the parasympathetic response, thus reducing stress, pain, and anxiety (Demir, Can, & Celek, 2013; Thrane & Cohen, 2014). Reiki may also increase relaxation, improve patient QoL and sleep, and promote wound healing, all of which may be due to Reiki's beneficial effects on stress. Chronic stress is known to negatively affect health by impacting the body's energy and physiology. Additionally, Reiki promotes the immune response and can improve energy flow and circulation.

Several clinical trials are in progress to evaluate the effects of Reiki in patients with various conditions, such as cancer, acquired immune deficiency syndrome (AIDS), neuropathy, and fibromyalgia. Reiki can be particularly beneficial for patients with LUTS because it is a very gentle, non-invasive therapy that is often welcomed by female patients who, as previously mentioned, may have experienced trauma. However, patients with LUTS who have not experienced prior trauma or abuse can also appreciate this gentle technique because traditional diagnostic and therapeutic techniques are invasive and frequently painful.

Typically, visits to a Reiki practitioner in a health system involve one-hour appointments. The patient remains clothed and lies on a massage table in a warm, soothing environment with soft music playing. The Reiki practitioner holds his/her hands over specific locations on the body for a period of time and then moves to the next location. The patient experiences relaxation as the parasympathetic response is elicited. Patients with urologic conditions seen at the Women's Urology and Pelvic Health Center of our institution receive two complimentary Reiki sessions as part of the health system's volunteer program.

Guided Imagery

Guided imagery therapy is a mind-body complementary health therapy in which a facilitator guides a person's thoughts and imagination toward specific images to accomplish a specific goal or outcome (Wood & Patricolo, 2013). Guided imagery is based on the understanding that the mind and body are connected, and the mind can influence the body (Wood & Patricolo, 2013).

There are no contraindications for the use of guided imagery, although the technique should be used with caution in patients with severe psychotic or personality disorders, where a quiet mind can lead to an increase in psychotic symptoms. Guided imagery sessions can be facilitated through recordings of generalized scripts that may focus on reducing negative situations, such as stress and anxiety, insomnia, or pain, or on increasing desired traits, such as a sense of calm and well-being. Such recordings are useful because patients can listen to them multiple times at their convenience. However, private,

individualized sessions are highly recommended because the script can be tailored to the individual's life circumstances and goals, thus enabling the session to provide a more powerful experience.

Guided imagery reduces stress, anxiety, and pain, and improves a person's overall sense of well-being (Carlson & Bultz, 2008; Running & Seright, 2012; Wood & Patricolo, 2013). We have previously shown that patients in the progressive care unit who listened to a guided imagery recording reported significant reductions in pain and anxiety (Patricolo et al., 2017). Regarding LUTS, the regular use of guided imagery can benefit women with IC by significantly reducing pain and certain bladder symptoms (episodes of urgency) (Carrico, Peters, & Diokno, 2008). We have guided imagery recordings available that promote relaxation, enhance healing, and soothe pelvic symptoms for women with CPP, IC, or other pelvic dysfunction. Sample scripts for this patient population are provided in Figure 1.

Figure 1.
Sample Guided Imagery Scripts for Patients with LUTS or Pelvic Pain

- Breathing out and letting the tension out of these muscles. Notice any sensations you have of pain or discomfort in your pelvic area. Just breathe slowly into the pain. Allow these muscles to rest and relax.
- Imagine yourself in a beautiful peaceful place…you are safe. As you lie warm and protected, feel the sun warm the exact location of your pain. This is a place where rest, healing, and peace are always available.
- As you breathe in this clean, fresh oxygen, you may feel the warm glow moving slowly over your hips and lower back, massaging out any tension…this golden warmth is wrapping effortlessly over your bladder area…there is no urge or discomfort here…only total relaxation.

Yoga Therapy

Yoga therapy is an individualized mind-body complementary health approach that uses physical movements and postures, breathing techniques, and meditation to promote relaxation, which can help manage pain and symptoms related to depression and anxiety. Yoga therapy offers self-management tools for comfort and relaxation that can help patients reverse stress-related symptoms and self-actualize a meaningful QoL.

Yoga therapy can improve the symptoms of LUTS, specifically urinary incontinence (Huang, Jenny, Chesney, Schembri, & Subak, 2014; Kim, Kim, Shin, Choo, & Kim, 2015; Vinchurkar & Arankalle, 2015). For women with LUTS, yoga therapy focuses on mindfulness, awareness, and restoration of strength and relaxation of the pelvic floor muscles. With an increased awareness of this area of the body, women may be able to gain a level of control over the muscles that support the bladder and other pelvic organs.

At a private, clinical yoga therapy session, the yoga therapist meets with patients, conducts an initial assessment of the patient to identify health problems, and develops a treatment plan. Typically, a limited number of yoga therapy sessions (e.g., 2 to 4) are suggested to initiate treatment. Yoga therapy sessions are typically one hour, and involve breathing and meditation techniques related to stress, anxiety, and pain. Personalized instruction sheets are provided to patients to suggest ways to incorporate yoga therapy into daily life. An exit strategy is provided at the final session to emphasize the acquisition of skills as part of the patient's self-management toolbox in managing LUTS-related pain and anxiety.

Naturopathic Medicine

Naturopathic medicine encourages a person's inherent self-healing process using nutrition, herbal medicine, homeopathy, lifestyle counselling, and mind-body medicine to treat the whole person (Lanni et al., 2016). A naturopathic doctor (ND) includes a Western medical understanding of the body (e.g., differential diagnosis, physical diagnosis, lab work, pathology, microbiology, etc.) with a focus on evidence-based complementary and alternative medicine.

An initial consultation with a ND typically involves several lengthy appointments, which are necessary to allow the ND and the patient to thoroughly discuss all aspects of the patient's life. The ND can then obtain a clear understanding of the patient as a whole. With regard to LUTS, an ND focuses on the person's diet and lifestyle to alleviate symptoms. Dietary considerations include supplements and food sensitivities, while lifestyle concerns include smoking cessation, achieving and maintaining a healthy weight, stress reduction, and exercise.

Dietary considerations. Various aspects of diet can affect digestive and urinary tract health. In general, a diet that optimizes digestion (and eliminates constipation) and allows for a healthy weight will reduce bladder symptoms; eating whole foods and avoiding overly processed food can help achieve these goals. Food sensitivities can also cause digestive issues and pain; an elimination diet can be undertaken to determine whether an individual is reacting poorly to certain foods. Common offenders are gluten, dairy, alcohol, soy, citrus, caffeine, nuts, eggs, and tomatoes.

An anti-inflammatory diet can often help decrease pain and urinary symptoms that are due to inflammation after tissue injury (Friedlander, Shorter, & Moldwin, 2012; Oh-Oka, 2017; Sesti et al., 2011). This diet involves a high amount of water, fruits, and

cooked, low-carbohydrate vegetables, while limiting caffeine, sugar, and alcohol. Turmeric, a spice obtained from a plant in the ginger family, has long used for its medicinal properties and has anti-inflammatory effects (Hewlings & Kalman, 2017). Turmeric can be added to food to increase consumption.

In addition to diet, certain vitamins and minerals have been associated with LUTS. However, depending on the substance, either an excess or a deficiency may be problematic. For example, an excess of vitamin C is associated with urinary issues. The average person requires only 200 to 500 mg of vitamin C daily, and an excess of vitamin C can lead to highly acidic urine, which can affect the urothelium and increase pain and the urge to micturate. Ascorbic acid has been found to activate mast cells (Yazdani & Pio, 2016), which are present in the urothelium, thereby possibly contributing to LUTS.

While calcium is an important mineral for bone health, an excess of calcium can cause problems with regard to urinary tract health. The Leicestershire MRC Incontinence Study found no associations between dietary calcium and one-year incidence of urgency or urinary incontinence in women; however, women who consumed more than 2.4 cups (568 ml) of milk per day were significantly more likely to develop urgency and overactive bladder symptoms (Dallosso, McGrother, Matthews, & Donaldson, 2003). In addition, calcium supplement use and calcium ions may increase bacterial adherence to uroepithelial cells and urinary tract infection risk.

Magnesium is also important for urinary tract health. Magnesium is available in different preparations, including magnesium citrate, magnesium hydroxide, and magnesium glycinate, to name a few. The different preparations show no difference with regard to bioavailability, with all tested preparations significantly increasing urine magnesium excretion (Bøhmer, Røseth, Holm, Weberg-Teigen, & Wahl, 1990). However, many magnesium preparations can cause gastrointestinal distress; magnesium citrate and magnesium glycinate are two preparations that do not (Ranade & Somberg, 2001).

In a double-blind, placebo-controlled study, women with urinary symptoms took 350 to 700 mg of magnesium hydroxide twice daily for one month. Women receiving magnesium hydroxide reported improvement in symptoms, including fewer episodes of urge incontinence, less frequent urination, and fewer awakenings at night to urinate (Gordon et al., 1998). Taking calcium can create a magnesium deficiency; consuming 2 g/day of calcium (citrate) has been shown to decrease magnesium absorption and plasma levels in healthy volunteers (Hardwick, Jones, Brautbar, & Lee, 1991). Therefore, calcium intake should be balanced with magnesium in a 2:1 ratio (calcium:magnesium). It is also important to note that many medications can deplete magnesium, including antibiotics, diuretics, proton pump inhibitors, and oral contraceptives.

Vitamin D deficiency can contribute to LUTS. The optimal range of vitamin D levels in the blood is 30 to 50 ng/mL. Data from the National Health and Nutrition Examination Survey found that 82% of nonpregnant women in the United States over the age of 20 had vitamin D levels less than 30 ng/mL (Badalian & Rosenbaum, 2010). A more recent study found that over 77% of postmenopausal women were vitamin D deficient (≤20 ng/mL) (Navaneethan, Kekre, Jacob, & Varghese, 2015). Therefore, vitamin D deficiency is a prevalent issue and one that has implications for LUTS.

Vitamin D deficiency has been associated with pelvic floor disorders, including pelvic organ prolapse and stress urinary incontinence (Gau, 2010; Navaneethan et al., 2015). Vitamin D deficiency has also been associated with the presence of at least one LUTS symptom, while higher vitamin D levels are associated with a decreased risk of pelvic floor disorders in women (Badalian & Rosenbaum, 2010). Lower vitamin D levels have also been associated with LUTS in men (Elshazly et al., 2017).

To increase levels of vitamin D, it is important to use the appropriate supplement preparation. There are two types of vitamin D supplements: D3 (cholecalciferol), which comes from the conversion of cholesterol compounds, such as 7-dehydroxy cholesterol, from lanolin or sheep's wool; and D2 (ergocalciferol), which comes from plants and is found in fortified foods. D2 is less biologically active. Vitamin D3 is found in eggs, organ meats, animal fat, cod liver oil, and fish; it is equivalent to the vitamin D3 formed in your skin from UV-B and effectively raises serum 25-hydroxyvitamin D levels (Tripkovic et al., 2012). Synthetic D2 should be avoided because it exhibits no effect on mortality and may even be toxic at higher doses (Bjelakovic et al., 2014).

In addition to optimizing vitamin and mineral levels, probiotics can be used to treat both constipation and diarrhea, and can prevent antibiotic-associated diarrhea and yeast infections. Again, the probiotic supplement must be selected with care. Probiotic supplements can contain a single strain of probiotics or multiple strains, and strains can vary in their ability to colonize the gut. Quality control is an important issue; using trusted brands and properly storing the probiotics are important considerations.

Lifestyle considerations. Certain lifestyle changes can also improve the symptoms of LUTS (Christofi & Hextall, 2007). A study by Brown and colleagues (2006) demonstrated that lifestyle inter-

ventions alone, including a healthy diet, increased exercise, weight loss, and smoking cessation, significantly improved the incidence of urinary incontinence in women; this effect was primarily attributed to weight loss. The beneficial effects of weight loss on urinary incontinence have been supported by other studies (Imamura, Williams, Wells, & McGrother, 2015; Lukacz, Santiago-Lastra, Albo, & Brubaker, 2017; Subak et al., 2005). Obesity is considered a strong, independent risk factor for urinary incontinence, with a dose-response effect of weight on urinary incontinence (Whitcomb & Subak, 2011).

Smoking has been associated with urinary incontinence (Lukacz et al., 2017; Tampakoudis, Tantanassis, Grimbizis, Papaletsos, & Mantalenakis,1995) and symptoms of LUTS (Koskimaki, Hakama, Huhtala, & Tammela, 1998), and smoking cessation is considered first-line therapy for urinary incontinence and overactive bladder (Arnold, McLeod, Thani-Gasalam, & Rashid, 2012; Lukacz et al., 2017).

Coffee and soda intake have been shown to increase LUTS symptoms in women, including urgency; in particular, caffeinated diet soda has the strongest association with LUTS (Maserejian et al., 2013). Other lifestyle interventions to control urinary incontinence include the management of constipation and reducing intake of carbonated beverages and alcohol (Lukacz et al., 2017). Scheduled voiding and altering fluid intake can also be effective (Aoki et al., 2017; Lukacz et al., 2017).

Similar lifestyle modifications can have a positive impact on overactive bladder, including altering fluid intake, smoking cessation, weight loss, management of constipation, bladder training, and pelvic floor muscle training (Arnold et al., 2012). Bladder training involves scheduled voiding rather than voiding in response to urgency. The time between voiding is gradually increased over approximately 6 weeks. In addition, pelvic floor muscle training can help patients control urgency and incontinence (Arnold et al., 2012; Lukacz et al., 2017).

As the evidence indicates, improving overall health through diet and lifestyle changes can reduce LUTS symptoms, including urinary incontinence and pain, and thus, potentially avoid or reduce the need for further medical interventions.

Case Report

To illustrate how these different IM modalities can come together to help a patient, we report a case study of a 52-year-old female who presented to our IM department with CPP and overactive bladder, which had been an issue for the past 12 years. The patient self-rated the severity of both her CPP and overactive bladder at 10/10 (on a scale of 0 to 10, with 10 being the most severe). Her diet was the standard Western diet, and she suffered from irritable bowel syndrome (IBS), gastro-esophageal reflux, and anxiety. She had no known allergies. She was not taking any medications but did ingest 600 mg of calcium per day. Her vitamin D level was low at 12 ng/ml.

Visit #1

At the initial consultation with the ND, the patient's concerns, medical history, and bloodwork were reviewed along with her lifestyle. An elimination diet was suggested to identify food sensitivities, and the following supplements were recommended: multi-strain probiotics to help with IBS symptoms; vitamin D3, 5,000 IU per day; and 300 mg of magnesium glycinate at bedtime to balance the calcium. In addition, the patient began to listen to a guided imagery recording nightly that focused on reducing anxiety and LUTS symptoms.

Visit #2

The second appointment with the patient occurred 6 weeks after the initial consultation. At this point, the elimination diet indicated she was sensitive to dairy and gluten; therefore, these food categories were removed from her diet. Her IBS symptoms showed improvement, with formed bowel movements daily. Gas, bloating, and overactive bladder symptoms were reduced from 10/10 to 2/10, while her pelvic pain rating reduced from 10/10 to 5/10. Acupuncture and Reiki therapies were recommended along with continuing elimination of dairy and gluten, while continuing magnesium, vitamin D, and probiotics.

Visit #3

The patient's third appointment occurred 8 weeks after her second visit. The patient's overactive bladder, IBS, and pelvic pain had resolved. Her anxiety had substantially reduced and was now limited to approximately 1 to 2 episodes every other month, lasting less than 30 minutes in duration. Her vitamin D levels were now at 35 ng/ml; therefore, the vitamin D3 dose was reduced to 2,000 IU per day. The patient continues with acupuncture and Reiki once a month, and listens to a guided imagery recording three times per week.

Nursing Implications

Support from nursing staff is critical for the successful implementation of complementary therapeutic strategies, and education is crucial to gain nursing support. Nurses at our institution can take training programs and attend educational seminars to learn about the IM modalities available to patients. In addition, the nurse practitioner at the Women's Urology and Pelvic Health Center meets quarterly with a multiprofessional team that includes IM, and there is a holistic nurse council at the hospital. The IM depart-

ment encourages nurses in high-referral areas to experience the treatments first-hand. Nurses can also participate in the Institute's Faculty Scholars Program in Integrative Healthcare; this professional development program allows healthcare professionals to earn continuing medical education credit while exploring the fields of IM and health care.

Conclusions

In conclusion, we have shown how different IM modalities can be used to treat symptoms of LUTS and CPP/IC. Women with LUTS and CPP/IC have unique issues and concerns that make them a sensitive patient population who can benefit greatly from gentle, non-invasive treatment options. In addition, the current focus on non-pharmacologic interventions for pain management supports the use of IM, which includes safe, effective, non-habit-forming treatment modalities that can greatly improve QoL. These IM techniques can be incorporated into a healthcare system to provide additional treatment options to patients, thus optimizing care and empowering women to take control of their body and health. ◙

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