



REVIEW OF LITERATURE ON RECENT TRENDS OF REHABILITATION IN INTERSTITIAL CYSTITIS

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ABSTRACT

Interstitial cystitis means inflammation of bladder wall, and it is chronic disease commonly found in women but this disease affected both sexes. It is mostly found in young people between the ages of 42-48. The cause of IC / BPS is still unknown, but multiple theories exist including Chronic bacterial infection, Bladder inflammation, Neurogenic inflammation, Urothelial dysfunction, Mast cell activation, Genetic predisposition, Autoimmune mechanism, Defective GAG layer, Sensory nervous system, Psychosomatic mechanism, Environmental factors. IC / BPS is divided into Hunner lesion and without Hunner lesion. Patient also complaint of pain throughout the pelvis in the urethra, vulva, vagina, rectum such as lower abdomen and back. Pain usually occurs with specific food or drink and worsen due to bladder filling which improved by voiding. Urinary frequency and urgency are another feature of IC / BPS. Due to insufficiency of IC symptom, underdiagnosed or late diagnosis commonly occur. The health examination involves patient history such as onset, duratyle-related inducing factors, and symptoms, physical examination, urine analysis, questionnaires, and cystoscopy are done to evaluate the disease. Treatment is pharmacological, surgical, or Rehabilitation but in recent time rehabilitation is more effective than pharmacological or surgical treatment.

Keywords: Interstitial cystitis, Chronic pelvic pain syndrome, bladder pain syndrome, irritable bowel syndrome.

1. INTRODUCTION

Interstitial cystitis/Bladder pain syndrome (IC / BPS) is a chronic condition characterized by pelvic ache or perineal pain or pressure which is originating from the bladder, and accompanied by one or more urinary symptoms such as nocturia, increased urinary frequency and urgency. Although the disease affects both sexes, women are more commonly affected than men (Colemeadow, et al.2020). Typical IC patients are white and female, The female to male ratio is 10:1. The reported average age of onset is 42 years old to 48 years old; however, in usually, it is found in younger (Lukban, et al. 2001). The etiology of IC / BPS is unknown but multiple theories exist including Chronic bacterial infection, Bladder inflammation, Neurogenic inflammation, Urothelial dysfunction, Mast cell activation, Genetic predisposition, Autoimmune mechanism, Defective GAG layer, Sensory nervous system, Psychosomatic mechanism, Environmental factors. (Colemeadow, et al. 2020)

Pain is the common symptom of IC / BPS which is experienced by 97% people with the condition. Patient also complaint of pain throughout the pelvis in the urethra, vulva, vagina, rectum such as the lower abdomen and back. Pain usually occurs with specific food or drink and worsen due to bladder filling which improved by voiding. Urinary frequency and urgency are another feature of IC / BPS (Hanno, et al. 2015).

Due to the insufficiency of IC symptom specificity, under diagnosed or late diagnosis commonly occur. If, the health examination involves patient history such as onset, duration, lifestyle-related inducing factors, and symptoms, physical examination, urine analysis, questionnaires, and cystoscopy to rule out exclusive disorders (Dayem, et al. 2020).

In addition to pharmacological agents, non-pharmacological approaches to therapy can supply symptom comfort for patients with IC. Every affected person with IC should be counsel about dietary and way of life modification that can minimize symptom flares Symptom flares are also related with stress, which sufferers can decrease by stress reduction techniques. High- tone pelvic flooring dysfunction (PFD) involving pelvic floor muscle tenderness and spasm is usually observed in patient with IC. Patient with high- tone PFD respond to the physical therapy which are given by physician including overall stretching and strengthening exercise, realignment of the sacrum and ilium, myofascial release. Internal massage is also effective to reduce the IC symptoms in patient with high tone PFD or in sufferers who have no longer respond to pharmacological and behavioral therapies, sacral neuro-modulation has been shown to be really helpful in quite a few studies. (Chaung, et. al. 2009) Low energy shock wave (LESW), known to have anti-inflammatory, anti-apoptotic effects, and may improve tissue healing has been used to treat diseases of the urinary system, including erectile dysfunction, and Chronic prostatitis chronic pelvic pain syndrome (Shen, et al. 2021).

2. ETIOPATHOGENESIS

- 1 Chronic bacterial infection: Some people thought that bacterial infections become the main cause of the observed changes. Wilkins and his colleagues suggest that as Gardnerella and Lactobacillus may be responsible for the development of IC / BPS (Grover, et al. 2011). No evidence of current infection should not lead people to assume that infectious diseases are not working role in the pathogenesis of BPS / IC. Two infectious agents cannot be identified by routine analysis such as nanobacteria and Escherichia coli, in pathogenesis of the disease (Dinis, et al. 2015).

- 2 Mast cell activation: Mast cells originate in the bone marrow and are it is known to be involved in Type I allergies and hypersensitivity reactions. These cells contain a variety of vasoactive and inflammatory substances, such as such as histamine, leukotrienes, prostaglandins and tryptase. Mast cell triggers are usually many, including allergic toxins (supplement C3a and C5a), cytokines (i.e., interleukin [IL] -1, IL-2, tumour necrosis factor [TNF] etc.), Growth factors, bacteria, certain neuropeptides and many research reports on free radicals the number of mast cells in the bladder patients, especially those related to hunner ulcer. The reason for the proliferation of mast cells in IC is unclear. Damaged urothelial cells produce cytokines such as stem cell factor (SCF), which may cause mast cell activation (**Amrute and Moldwin, 2007**).
- 3 Sensory nervous system: The sensory nervous system of the bladder plays an important role in the pathogenesis of lower urinary tract dysfunction. In fact, that afferent hyperexcitability is the result of neuroinflammation of the bladder. Overexpression of nerve growth has been shown in the mouse urothelium can cause excessive neuronal innervation, pelvic tenderness, increased mast cells and changes in bladder function. Finally, a recent study showed BPS / IC may be affected by factors including changes characteristics of the peripheral bladder afferent pathway respond to normal harmless stimuli based on the above evidence, it can be assumed. The pathophysiology of BPS / IC syndrome and LUTS can be sequential development: Urethral injury (UTI, surgical trauma, chronic over inflated)
- 4 Inter-epithelial inflammation: Chronic infiltration of inflammatory cells under the epithelium Feel the incoming inflammatory response surge, dorsal horn ganglion and corresponding spinal cord (**Digesu, et al. 2020**).
- 5 Genetic predisposition: Genetic risk factors for development of the IC are composed of both the chromosome loci and specific genes there in epigenetic, the BPS-specific miRNAs have also been described (**Dinis, et al. 2015**). Research shows that IC is more it is common in twins with chronic fatigue syndrome. Warren and his colleagues studied the prevalence of IC in monozygotic and dizygotic double eggs, reported greater consistency between IQs single-egg twins are compared to two-egg twins, indicating the contribution of genetics to IC / BPS (**Grover, et al. 2011**).

3. CLINICAL PRESENTATION

Pain is the common symptom of IC / BPS which is experienced by 97% people with the condition. Patient also complaint of pain throughout the pelvis in the urethra, vulva, vagina, rectum such as the lower abdomen and back. Pain usually occurs with specific food or drink and worsen due to bladder filling which improved by voiding. urinary frequency and urgency are another feature of IC / BPS. Patient report urinating as frequently as every half to hour throughout the day. Urination provides temporary relief from pain, but pain return due to filling of bladder. Urinary urgency refers to a sudden need of urination in order to relieve pain and discomfort, and is experienced by 85% people. Many patients also report in night time awakening due to pain and voiding. Men who complaint with pain in the pelvic region, as well as urinary urgency and frequency, are usually diagnosed with a related urologic chronic pelvic pain conditioning called Chronic Prostatitis/Chronic pelvic pain syndrome (**Hanno, et al. 2015**). Other symptoms may include dyspareunia and burning sensation in the genitals, up to 58% of IC patients cannot sexual intercourse due to pain (**Lukban, et al. 2001**). Up to 25% of

patients will experience non-urinary symptoms (anal discomfort, itching and burning of the vulva and glands, dyspareunia, painful ejaculation, difficulty walking and sitting). Both men and women experience symptoms after sexual intercourse (Mishra, 2015).

4. PHYSICAL THERAPY MANAGEMENT

- 1 Electrical stimulation: Electrical stimulation can directly stimulate the pelvic floor muscles through a small probe that is inserted into the vagina or rectum. This can help desensitize the nerves and even cause the muscles to contract and relax.
- 2 Ultrasound therapy: Therapeutic ultrasound uses sound waves to generate deep heat, which can help reduce cramps and increase blood flow, or it can promote healing and reduce inflammation in a non-thermal environment. Ultrasonic equipment can handle radio waves of low frequency and intensity and can be used at home.
- 3 Transcutaneous electrical nerve stimulation (TENS): With TENS, mild electrical pulses can relieve pelvic pain and, in some cases, reduce frequent urination. TENS can increase blood flow to the bladder. It strengthens the muscles and control the bladder or trigger the release of substances that stop pain.
- 4 Sacral nerve stimulation: The sacral nerve is the main link between the spinal cord and the bladder nerve. Stimulation of these nerves can reduce the urgency associated with interstitial cystitis.
- 5 Bladder training: Bladder training is a self-control technique that suppresses the urge to urinate and has been included as a first-line treatment in the AUA guidelines. Parsons and Koprowski used this technique to treat 21 patients with IC / BPS, 71% of whom had at least 50% symptom relief. Chaiken et al. using bladder training combined with dietary adjustments and pelvic floor muscle exercises, 42 patients with refractory IC / BPS were treated. (Pang and Ali, 2015)
- 6 Acupuncture: In recent decades, urologists have accepted acupuncture as an effective treatment. Our previous studies have shown that acupuncture can effectively regulate the storage and emptying function of the bladder. An initial study reported that after acupuncture treatment, one patient improved both subjectively and objectively. After treatment, the condition of 3 patients improved significantly and 2 of them relapsed asymptotically during the 48-month follow-up. Due to limited evidence, more clinical trials are needed to determine the efficacy of acupuncture in treating IC / BPS. (Pang and Ali, 2015)

5. MASSAGE

Holzberg et al. treated ten IC / BPS women using transvaginal massage focused on the levator ani, obturator internus, piriformis muscle and trigger point. In addition to external massage, we find that whole-body massage can help IC/ BPS patients. According to our experience, about one-third of patients may experience temporary symptomatic improvement after 4-6 times of full body massage. (Pang and Ali, 2015). Massage refers to a series of actions on the body that have the right pressure to get muscle relaxation. The petrissage, effleurage, tapotement, friction, vibration, and kneading massage techniques are used. These techniques are applied to the upper and lower extremities, trunk, buttocks, abdomen, head and neck, each for a specific period of time. (Chung & Jarnagin, 2009)

6. BEHAVIORAL MODIFICATION & STRESS MANAGEMENT

Behavior modification techniques such as sports, bath, meditation, shortening hours of work to create a stress-free environment. Home environment, or join educational programs and patients support groups help keep reduce stress levels. Patients should be encouraged learn positive coping skills reduce daily discomfort activity. Support is a positive coping strategy. It has to do with better health in patients with chronic diseases. This Including spousal support, family, friends, IC / BPS support groups and professional's health field. Patient IC / BPS seek emotional support, talk about your feelings, and request the sympathy of others some benefits have been seen, especially during outbreaks of IC / BPS (Hanno, et al. 2015).

7. PELVIC FLOOR PHYSICAL THERAPY

PFPT can be used to treat tenderness and tension of the muscles, and indirectly improve related urinary, sexual and intestinal symptoms. PFPT, specially trained physical therapists perform manipulations on the external trunk and connective tissues of the lower limbs, as well as intravaginal myofascial release techniques to treat the muscles and tissues of the vagina, rectum, abdomen, buttocks, thighs, and lower back. A trial sponsored by the National Institutes of Health showed that compared with general therapeutic massage (GTM), in the multi-center feasibility trial and the second clinical trial, IC / BPS patients who received internal pelvic muscle physiotherapy were treated the treatment result is positive. 59% of patients in the PFPT group and 26% of the patients in the GTM group improved their symptoms (Han, et al. 2018).

8. YOGA

A study has shown that yoga can relax the pelvic floor muscles by adjusting relative muscle tension, helping to alleviate the symptoms of IC / BPS. In terms of specific yoga poses, breaststroke, fish pose, half-shoulder pose and alternating nostril breathing are all good for IC / BPS (Pang and Ali, 2015). Vinyasa Yoga (Sun Salutation) seems to be the most effective and therapeutic treatment, and patients can easily follow other treatments at home. The cat stretch pose in yoga can relieve lower abdomen pain, while the hip stretch pose can strengthen the hip muscles while learning to control the grip of the core muscles (Chung, et al. 2015).

9. LOW ENERGY SHOCK WAVE THERAPY

The term 'shock wave' refers to a high-energy sound wave that terminates in a burst of energy, much like a mini-explosion. A shock wave is a sound wave that is transmitted continuously at a frequency of 16-20 MHz, and can carry energy from the region of positive pressure to the region of negative pressure and propagate the medium. Shockwave (SW) can be applied in a variety of medical situations for its unique physical, physicochemical and biological effects. Therefore, LESW itself may have therapeutic effects in inflammatory diseases such as chronic prostatitis and cystitis. We suggest that LESW can reduce bladder pain. In patients with IC / BPS more advanced basic scientific research LESW is widely used, clinical trials are required it is used to treat IC / BPS (Lin, et al. 2020).

10. CONCLUSION

In this research we found that for IC / BPS patient rehabilitation is more effective than pharmacological or surgical treatment. Because it can cure the problem without any harmful effect.

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