An Investigation into the Treatment of Interstitial Cystitis with Acupuncture

By: Esther Holford and Toni Tucker

Abstract

This paper investigates the aetiology, pathology, diagnosis and treatment of interstitial cystitis (IC) from the perspective of traditional Chinese medicine (TCM), and evaluates the efficacy of acupuncture in the treatment of IC through a survey of 52 patients (28 respondents) who received both Chinese and Western medical treatment. The study's findings show that acupuncture was perceived to be very effective in treating IC, reducing symptoms of pain, frequency, urgency and nocturia by around half. Three-quarters of the patients studied also reported that acupuncture helped their emotional state. The study showed that respondents had a much higher incidence of immune-related functional conditions than occur in the general population, suggesting that IC is not isolated to the bladder but is part of a wider problem that affects the whole body. Although this study provides insight into IC, it has obvious limitations and is therefore intended to be indicative rather than definitive, and will be used as a foundation for future research in this area.

Introduction

Interstitial cystitis (IC) is a chronic inflammation of the bladder wall. It is a debilitating condition that can affect many areas of a person's life and cause a great deal of emotional stress. It is sometimes referred to as chronic urethral syndrome (CUS) or painful bladder syndrome (PBS), although IC is now the medically accepted term. There are an estimated 400,000 people in the UK with IC, 90 per cent of whom are female. All age groups can be affected, from children to the elderly, but it most commonly affects people between 20 and 50 years of age (COB Foundation Handbook, 2008).

There is no universally-recognised clinical definition of interstitial cystitis (Imamov et al., 2007). No laboratory tests or biopsy results are considered confirmatory, and diagnosis is therefore by exclusion. The symptoms are urinary frequency, urgency and usually pain. There are many Western medical treatments for IC because no single treatment has proved successful for everyone. A drug that reduces one patient's symptoms may have no effect on another patient. There is no known cure for IC.

There are few studies of the effectiveness of acupuncture in treating IC. Those that do exist show positive results, and cases have been documented of patients whose symptoms were so severe that they had been scheduled to have their bladders removed, and yet were cured of IC with acupuncture treatment (Tucker, 2004).

The problem with treating IC with acupuncture lies in the complexity of the diagnosis. IC is not described in the classical Chinese texts, and does not fit neatly into a single TCM syndrome. It is frequently diagnosed by practitioners as damp-heat in the Bladder and treated in the same way as bacterial cystitis. The confusion between bacterial cystitis and interstitial cystitis can also often lead practitioners to prescribe incorrect lifestyle advice that makes the condition worse. For example, many patients are told by their health professionals to drink copious amounts of cranberry juice, as they have heard this is good for cystitis. This well-meaning advice is likely to worsen symptoms of IC in most patients.

This study attempts to investigate the causative factors involved in IC and look for commonalities between patients' symptoms. It investigates the effects of IC on a patient's life and the effectiveness of acupuncture in its treatment. The study uses case histories and patient data from the practice of Toni Tucker, a U.K.-based practitioner who specialises in the treatment of IC. It is hoped that this research will help practitioners develop a deeper understanding of IC, so that they can experience greater clinical success with this difficult condition.

IC and Western medicine

To make a diagnosis of IC the first thing that is ruled out is a bacterial urinary tract infection (UTI). If there are repeated episodes of symptoms without the presence of bacteria a cystoscopy is usually performed to rule out bladder stones or tumours and make a diagnosis of IC. In some patients there are small lesions on the wall of the bladder called Hunner's Ulcers, although

this is only true for around 10 per cent of IC patients (whose IC is most severe), and therefore is not a reliable diagnostic criterion.

Symptoms of IC can be caused by radiation therapy for cancer or from spinal injuries. However, this paper discusses the most common type of IC which has no known biomedical aetiology. The main theories in Western medicine regarding the aetiology and pathomechanisms involved in IC are as follows:

- The glycosaminoglycan (GAG) layer that lines the bladder and protects the underlying membranes from urine becomes damaged either from infection, radiation therapy, surgery or other unknown agent.
- A low level of bacteria, undetectable by urine test, causes inflammation of the lining of the bladder. Patients are often given long courses of antibiotics, which rarely improve the condition. This suggests either that there are no bacteria, that the bacteria are resistant to antibiotics, or that the bacteria have embedded into the bladder wall where the antibiotics cannot reach them.
- A viral infection attacks and causes damage to the bladder.
- The body attacks itself in an autoimmune process. This pathomechanism is supported by the fact that many patients with IC have allergies (to food, chemicals, pollen etc.), and generally have oversensitive immune systems. This view is supported by some urologists and immunologists: 'Based on clinical presentations, epidemiology, pathology and laboratory findings and treatment response, there is an important correlation among interstitial cystitis and rheumatic, autoimmune and chronic inflammatory diseases.' (Lorenzo and Gómez, 2004). Van de Merwe (2007) also supports this view: 'No data support a direct causal role of autoimmune reactivity in the pathogenesis of interstitial cystitis. Indirect evidence, however, does support a possible autoimmune nature of interstitial cystitis, such as the strong female preponderance and the clinical association between interstitial cystitis and other known autoimmune diseases within patients and their families.'

There are several medical treatments for IC: analgesics (such as paracetamol, tramadol and gabapentin), muscle relaxants, antihistamines (such as Atarax) and drugs that repair the GAG layer of the bladder such as Elmiron and Cystistat. These are administered either in tablet form, or in the case of drugs such as Cystistat, installed directly into the bladder via catheter. In extreme cases where the patient is in extreme pain the bladder is surgically removed, although this is considered a last resort. Antidepressants are also sometimes prescribed, for example amitriptyline, which has analgesic and sedative benefits that some patients find helpful.

Western medical treatments for IC have had limited success and only work in a small percentage of patients. For example the drug Elmiron, the only drug specifically developed for IC, has been found to reduce symptoms of urgency and pain by 50 per cent, but only in 32 per cent of patients (Nickel, 2005). Other drugs have similar, or lower, success rates. Some patients try all the various treatments only to find that none relieve their symptoms. Many of the drugs have serious side effects, for example Elmiron can cause liver problems, nausea, dizziness and hair loss. In some cases patients are prescribed long periods of antibiotics.

IC and Chinese medicine

From a TCM perspective IC tends to be categorised as a mixed pattern, involving either full or empty heat or dampness and an underlying deficiency of the Spleen and or Kidneys. Many cases of IC, however, are of a purely deficient nature. Maciocia (2008) lists the main patterns associated with IC as follows:

- Spleen qi and Kidney yang deficiency with yin fire
- Spleen qi and Kidney yang deficiency with dampness
- Spleen qi and Kidney yang deficiency with qi stagnation
- Spleen qi and Kidney yang deficiency with blood stasis
- Kidney yin deficiency with empty heat

Tucker (2004) adds more patterns to this list:

- Deficiency of zheng qi/Spleen – Lung vacuity
- Stagnation of Liver qi and Liver stagnant fire
- Spleen qi sinking/Spleen vacuity
- Stomach and Spleen vacuity cold
- Bi syndrome, blockage and interference with circulation of qi and blood in the channels and collaterals, caused by injury to the lower spine and structures of the pelvic floor
- General disharmony amongst the zangfu

Generally the Spleen is considered of vital importance in IC. Li Dong Yuan's *Treatise on the Spleen and Stomach* discusses how pathology of the Spleen and Stomach can be responsible for many diseases. In the following quotation he explains how a weak Spleen can lead to dampness and heat in the lower jiao:

'One function of the Spleen is to control water liquids in the body, moving and transforming these. If the Spleen Qi becomes vacuous and weak and thus cannot move and transform water liquids, these may gather and transform into dampness. This dampness may hinder the free flow of yang Qi … the yang Qi backs up and transforms into depressive heat … dampness, being turbid and heavy percolates downward to the lower burner.' (in Flaws, 2007)

In addition, if the Spleen qi and yang are deficient, wei qi becomes weakened and pathogens can easily invade the body. One function of the Spleen is to raise qi. If the Spleen is weak this raising function can be impaired, causing symptoms of urinary urgency and frequency.

TCM has long recognised that the Small Intestine has a specific effect on the Bladder. It has been noted that negative emotional states can cause Heart pathologies such as Heart fire, which can spread to the Bladder via its paired organ in the Taiyang, the Small Intestine (Tucker, 2004). Brizman (2007) suggests that pathology in the small intestine is responsible for many chronic diseases. She suggests that damage to the wall of the small intestine causes microbes, including bacteria and fungi, to travel systemically into the blood stream and to other organs, causing disease. This is known as 'leaky gut' syndrome and is associated with chronic fatigue, fibromyalgia, sinusitis, allergies and ulcerative colitis (Meddings, 2008). Interestingly these are the same conditions that often appear alongside IC.

It can be seen from the different patterns listed above that the aetiology and pathology of IC is varied and therefore needs to be diagnosed based on the patient's symptoms, as well as their tongue and pulse. It should be noted that the tongue and pulse of many patients who are taking medication will not necessarily correlate to their patterns. Many patients taking amitriptyline, for example, will have a red and peeled tongue and a rapid and thin pulse, as it tends to consume yin and create heat.

Survey methodology

A total of 52 anonymous questionnaires were posted to IC patients asking them to evaluate their treatment by Western medicine and acupuncture, and enquiring about their IC and general health. The choice of questions in the questionnaire were based on surveying previous literature, discussions on IC internet forums and interviews with a TCM specialist in IC. The questionnaire format consisted mainly of closed-type questions (although some questions encouraged further detail from the patient), so that it was quick and easy for patients to answer, and comparisons might then be made between answers to quantify the analysis. The questions often had a list of possible answers and an 'other' section at the bottom, where respondents could add anything that they felt had not been covered. The questionnaire used set criteria and scales (such as pain scales) to quantify the patients' responses and determine how effective acupuncture is perceived to be in the treatment of IC.

Results

The questionnaire was completed by 28 of the 52 patients, providing a 52 per cent response rate. The main outcome of the study was that it showed a large proportion of IC patients view acupuncture treatment as effective. Sixty per cent of respondents rated acupuncture as bringing them a 75 to 100 per cent recovery (see Fig. 1). This is in sharp contrast to their rating of Western medicine, which 45 per cent of respondents reported as bringing no recovery at all. Although this study has limitations in terms of scale and methodology, this is clearly a very positive indication for acupuncture's effectiveness in treating this condition.

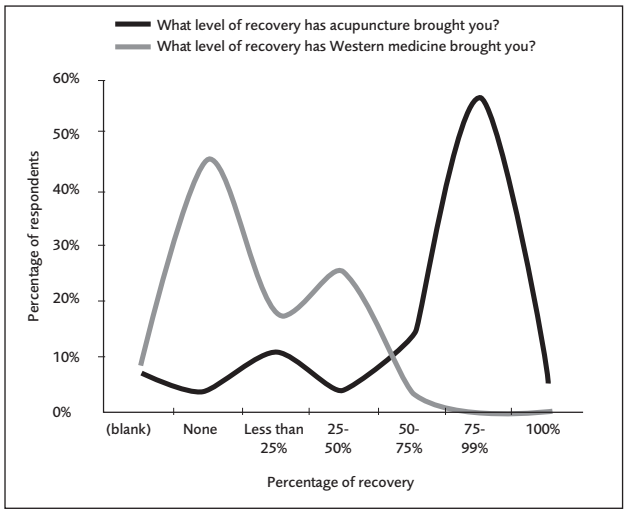

Fig. 1: **Self-reported levels of recovery attributed to acupuncture or Western medicine**

It can be seen from Figure 2 that IC is a debilitating condition that dominates many aspects of a patient's life, especially their emotional state. Many of the patients in the study had taken time off work because of their condition, or else had to give up work altogether. IC also significantly affected their relationships and social lives.

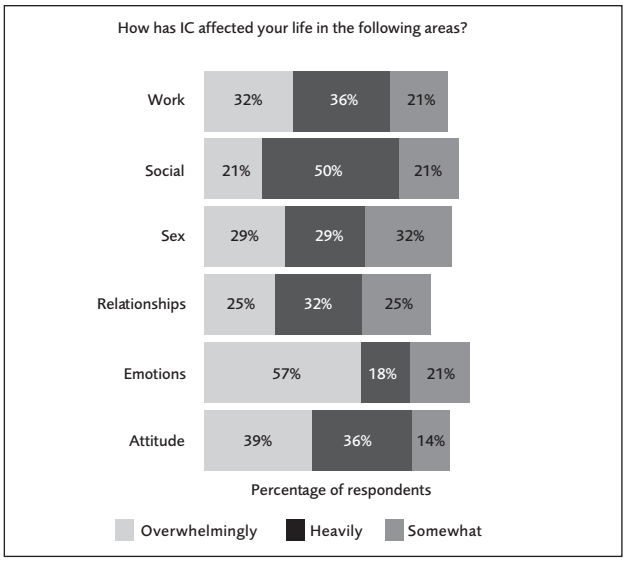

Fig. 2: **The effects of IC on respondents' lives**

Figure 3 demonstrates how patients rated the success of acupuncture at treating each symptom. All symptoms were found to be reduced by around half after treatment

(higher if at least 12 treatments were given). It appears that urgency and pain are slightly more successfully treated than frequency and nocturia.

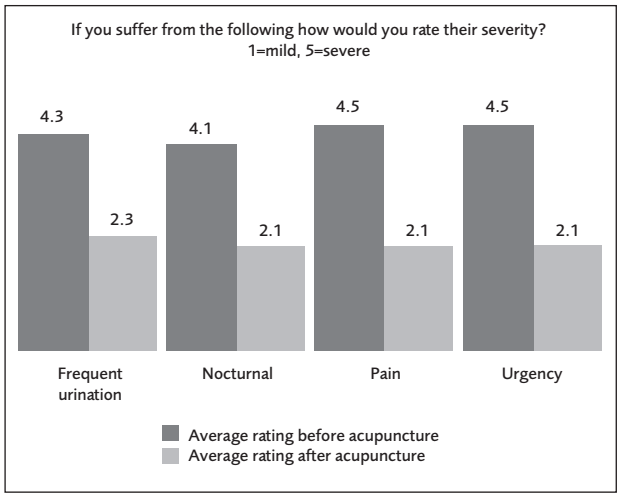

Fig. 3: **Patients' rating of the effects of acupuncture on IC symptoms**

On reading the completed questionnaires it was shocking to discover how ill some patients had been prior to their acupuncture treatment. One patient had been on a waiting list to have her bladder removed and came to acupuncture as a last resort. Through a combination of dietary changes and acupuncture she managed to rid herself of all symptoms of IC. This was not an isolated case and many respondents felt abandoned by Western medicine. Most of the patients that came for acupuncture treatment were at their wits' end, having undergone invasive and painful procedures and drug treatment with little - if any - success. Consequently one could consider these respondents to be at the more severe and chronic end of the IC spectrum.

Figure 4 shows that 64 per cent of patients reported a bacterial infection prior to the onset of their IC. Most were repeatedly prescribed antibiotics, which from a TCM perspective can suppress symptoms and drive the pathogen deeper into the body, whilst at the same time creating dampness. The properties of antibiotics are both cold and damp and can therefore suppress yang and injure the Spleen, further perpetuating a cycle of poor health. It is also possible that these patients were misdiagnosed as having a UTI when in fact it was the onset of the IC.

The stress factor

In our study almost half (43 per cent) of the patients reported extreme stress or shock prior to the onset of IC. It is possible that stress or shock causes a shift in the immune system that creates a propensity towards inflammation. In TCM terms stress may weaken the Spleen, Kidneys and Lung, disrupting wei qi and allowing an external pathogen (i.e. microbe) to take hold. Many of the respondents had experienced several of the trigger factors mentioned in Figure 4 prior to the onset of IC (see Figure 5). Extreme stress together with infection (from either a virus or bacteria) are both known to cause a shift in the immune system that predisposes a person to inflammation and mast cell production (Elenkov, 2007; Plotnikoff, 2006; Theoharides, 2001; Romagnani, 1999).

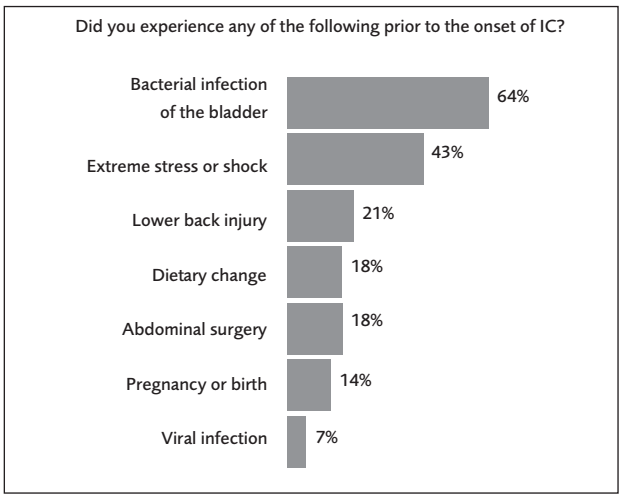

Fig 4: **Possible trigger factors of respondents' IC (percentage of respondents)**

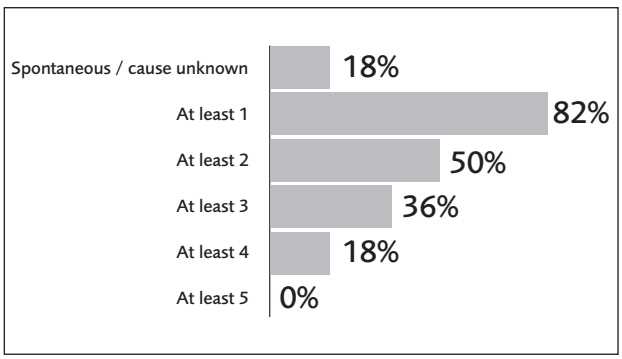

Fig. 5: **Number of identified factors present prior to onset of IC (percentage of respondents)**

Fig. 6 shows foods that respondents' found to exacerbate their IC symptoms. The worst foods appear to be citrus fruits, wine and tomatoes. Figure 7 shows the percentage of other conditions experienced by respondents, in addition to IC. It shows a large percentage of respondents with immune-related conditions, suggesting that these conditions are over-represented in IC patients compared to the wider population. As can be seen from the graph, the incidence of IBS, food allergies, sinusitis and colitis seems to be significantly higher in people with IC than in the general population.

Back pain also seems to be particularly associated with IC, although it is not clear whether the pain originates from an injury - and is therefore related to nerve damage - or from a form of fibromyalgia - which would indicate

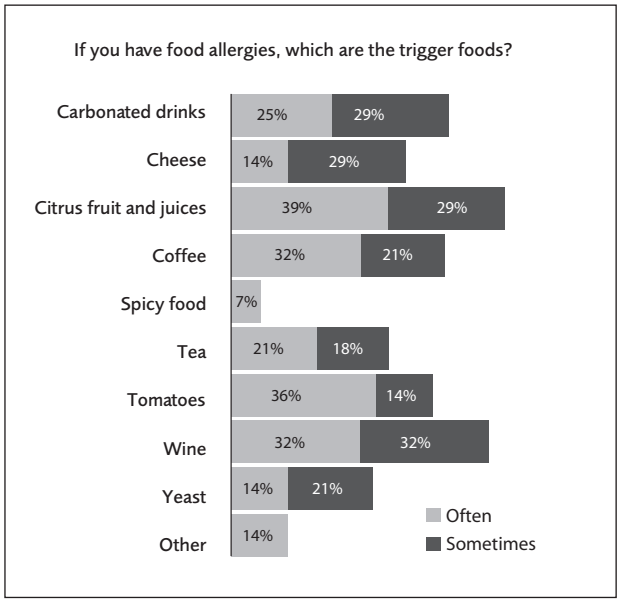

Fig. 6: **Problematic foods amongst IC patients (percentage of respondents)**

immune dysfunction. It is interesting that in TCM terms the Bladder channel runs up the back. Our research supports the theory that IC patients have more immunological conditions than people in the general population (see Figure 8). Three quarters of IC patients in this study had at least four immune-related conditions and a third had six conditions. This supports the author's theory that IC is part of a wider immunological imbalance, rather than merely a condition affecting the bladder in isolation.

Discussion

The authors' preliminary conclusion regarding the cause of IC based on this study is that a combination of infection and stress / shock sets in motion a cascade of physiological changes in the bladder. This results in damage to the GAG lining of the bladder and the production of mast cells. The damaged GAG layer means that there is no longer any protection from acid, so that molecules of food and drink can irritate and inflame the bladder, causing further inflammation and immune reaction. This means that IC is not just a bladder condition, but is a disease involving the digestive system – amongst other systems in the body.

This study indicates that acupuncture can treat not only the physical symptoms of IC but also the emotional state of the patient. Three quarters of respondents reported that acupuncture had helped them emotionally. It is unclear how big an effect this had on their physical symptoms. It may be the case that the physiological changes that occur in IC also have their roots in emotional stress or trauma, and that treating the emotional side starts to undo physiological damage. Whichever comes first – the stress or the physical symptoms - it is clear that patients with IC are often very upset and that anything that can help the condition become more bearable is of value to them.

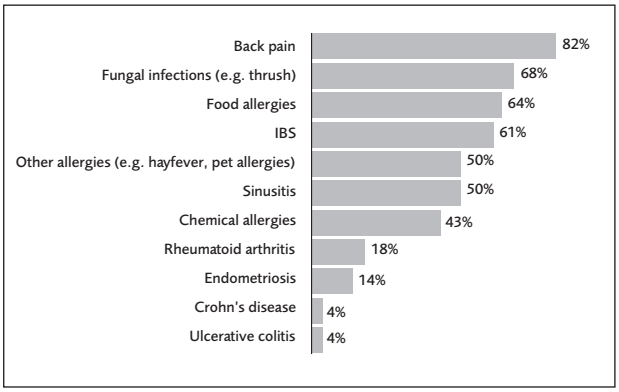

Fig. 7: **Other conditions reported by respondents in addition to IC (percentage of respondents)**

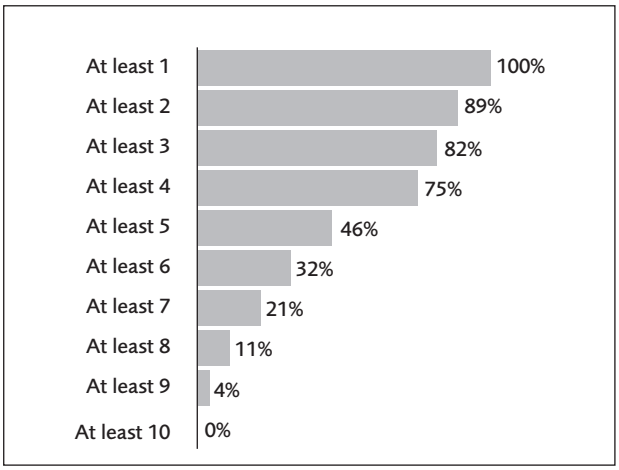

Fig. 8: **Number of respondents suffering multiple immunological conditions (percentage of respondents)**

Implications for practice

This study raises points that are important for clinical practice:

Stress

Stress has been shown to have a negative effect on the immune and digestive systems by both Western and Chinese medicine. Clinical studies by Lutgendorf (2001) and Rothrock (2001) both found that psychological stress caused symptoms of IC in humans and animals. Immunological research by Stojanovich and Marisavljevich (2008) link autoimmune diseases to stress. Our study suggests that stress or shock was a trigger of IC in many of the respondents. Identifying whether stress or shock is a causative factor for a particular patient may help to determine the appropriate treatment strategy. Unravelling the emotional impact of any trauma and making sure that the patient has properly dealt with it is therefore a vital factor in recovery from IC. Counselling may therefore be a necessary part of an IC treatment programme.

Diet

Diet is becoming recognised as an important factor in

the treatment of IC. Shorter et al. (2007) conducted a study involving 104 patients that showed diet affected IC symptoms in 90 per cent of patients. Whilst some specialists advise that dietary modification may be useful, our study suggests that diet is an extremely important factor in IC. Sixty-one per cent of patients reported that food or drink alone triggered attacks. The most implicated substances were citrus fruits, followed by wine, coffee, carbonated drinks and tomatoes. Tea, yeast and cheese were also cited as problem foods. It is uncertain whether a person's diet actually causes IC or merely exacerbates existing inflammation. The fact that 18 per cent of patients reported that their diet had changed just before the onset of their IC suggests that it may have been a key factor in its onset. The authors recommend that acupuncturists include dietary modification in their treatment strategy for patients with IC. It appears that whatever treatment a patient has, whether Western or TCM, a highly acidic diet makes it less likely to be successful.

The bigger picture

The authors propose that IC is merely the end symptom of a larger problem involving imbalance of the patient's immune system, and that its presence is strongly influenced by the mental-emotional state of the patient. In some people this imbalance may manifest as colitis, IBS or other conditions, but in people with a weakness in the bladder, it manifests as IC. It is therefore important to check whether patients with IC are also experiencing other immune-related conditions such as hay-fever, chronic fatigue (ME), atopic asthma, eczema, chemical allergies, joint pain and fungal or viral infections. During acupuncture treatment, patients often find that the symptoms of these conditions start to disappear along with the IC, which suggests acupuncture is helping to rebalance the immune system.

The authors suggest that such immunological conditions are symptomatic of a shift in the immune system that predisposes a patient to inflammation and a generally allergic state. In TCM terms this might be considered a dysfunction of the wei qi caused by weak Spleen, Lung and/or Kidney qi. The aetiology of Spleen and Kidney pathologies are similar to those known to weaken the immune system according to Western medicine – stress and shock, bacterial or viral attack, overwork and wrong diet. A weakened immune system (weak wei qi) allows pathogens to enter and take hold. These pathogens destroy the lining of the bladder (GAG layer) and even if the pathogens are subsequently removed, the damage to the bladder is already done. An acidic diet then further exacerbates the problem.

Limitations

Although this research provides an insight into IC, it has limitations for the following reasons:

- The respondents were all patients of one acupuncturist. The same results may not have been achieved with another practitioner.
- Questions were based on the criteria set by the researcher and therefore respondents may not have been able to answer within their own frame of reference.
- This was an initial study conducted on a limited cohort and therefore results should be viewed as indicative rather than definitive. Further research is planned that will use larger cohorts.
- The perceived improvement in patients' symptoms may have been due to the support provided by the practitioner rather than the acupuncture itself.

Conclusion

This study indicates that if a practitioner has a clear understanding of IC and gives suitable lifestyle advice, acupuncture can be more effective than Western medicine in the treatment of IC. Acupuncture is successful not only in treating the physical symptoms of IC, but also at improving the patient's emotional state. IC does not necessarily correspond with a pattern of damp-heat in the Bladder, but is rather caused by a dysfunction of the zangfu involving multiple patterns - understanding and treating this disorder will always tend to involve some level of complexity. ■

Esther Holford gained her acupuncture licence and BSc Hons at the College of Integrated Chinese Medicine (UK) and practices in Blackheath and Harley Street, London. She has a special interest in treating interstitial cystitis, infertility and autoimmune diseases.

Toni Tucker is a full-time practitioner of traditional Chinese acupuncture, and has a professional background in nursing and midwifery. Toni is particularly interested in treating patients with diseases of the urinary system, and her main focus is to provide effective treatment to patients affected by interstitial cystitis. She also has a special interest in fertility, conception and pregnancy.

Toni Tucker's detailed article on the presentation, differentiation and treatment of Interstitial cystitis was published in issue 75 of The Journal of Chinese Medicine, pages 38 to 44.

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