Acupuncture and the Treatment of Irritative Bladder Symptoms

CJ Kelleher, J Filshie, G Burton, V Khullar, LD Cardozo

Summary
The conventional management of irritative bladder symptoms, namely urgency, urge incontinence, frequency and nocturia, with anticholinergic medication is limited by the side effects of treatment. Acupuncture is shown to be as effective in the management of irritative bladder symptoms as conventional anticholinergic therapy, with few side effects and a high degree of patient acceptability and compliance.

Key words
Acupuncture, Bladder, Frequency, Low compliance, Nocturia, Side effects, Urgency, Urge incontinence.

Introduction
Lower urinary tract dysfunction is a common and distressing problem for patients, adversely affecting many aspects of their quality of life. At least 14% of women are known to suffer significant bladder symptoms (MORI, 1991). Irritative bladder symptoms, namely urgency, urge incontinence, frequency and nocturia are particularly distressing, and sometimes difficult to treat. The conventional management of these symptoms relies heavily on the use of anticholinergic (antimuscarinic) drugs which often cause significant side effects.

Acupuncture has been used with some success in the management of irritative bladder symptoms (Philp et al., 1988; Chang, 1988), although there have been no studies comparing acupuncture to conventional forms of management. A further problem with previous studies is the lack of convincing subjective and objective evidence of cure, and to date there has been no credible placebo for acupuncture studies.

There is undoubtedly a major placebo component in the treatment of irritative bladder symptoms, especially when patients are seen on a regular basis to receive treatment and monitoring of their condition. Faced with the absence of a credible acupuncture placebo, treatment can only sensibly be compared to an existing effective treatment modality.

The aim of this study was to compare the efficacy of acupuncture to conventional anticholinergic drug therapy (oxybutynin) in the management of women with irritative bladder symptoms, using both subjective and objective assessment of treatment.

Method
Thirty nine women aged between 18 and 75 years, all with irritative bladder symptoms and negative mid stream urine culture, were included in the study. Prior to urodynamic assessment all patients completed a detailed urinary symptom questionnaire, a symptom visual analogue scale and a urinary diary. Urodynamic investigations comprising uroflowmetry, fast fill subtracted cystometry (100ml/min), and videocystourethrography were performed on each subject.

All the women had a diagnosis of low bladder compliance (a tonic detrusor pressure rise during filling cystometry of >15cm H2O for an infused volume of <500mls). Patients were excluded from the study if they were known to have non-neurogenic pathology likely to impair bladder compliance (e.g. previous radiotherapy or large fibroid uterus). Using a random number table, patients were allocated to receive either a six week course of acupuncture or oxybutynin (Ditropan) at a dose of 5mg bd. Twenty were allocated to the acupuncture group and 19 to receive oxybutynin.

The two groups were comparable in terms of age range and duration of symptoms (Table 1).

Acupuncture was performed by an experienced acupuncturist (JF), using 36 Bausch, 3cm long, disposable needles and a minimal stimulation technique, i.e. the needles were merely flicked into the skin through an introducer. Fifteen needles were used at each of the six, weekly visits and needles were left in situ a few mm below the skin without further stimulation for ten minutes. The acupuncture points used were bilateral Spleen 6 (SP6) and Stomach 36 (ST36). Conception Vessel 3 or 4, Bladder 23 and 28. These are traditional Chinese points and are reported in the literature to have been used successfully for this purpose (Philp et al., 1988; Chang, 1988; Stux et al., 1987; Pigne et al.,

<table>
<thead>
<tr>
<th>Group</th>
<th>n=</th>
<th>Mean age (Yrs)</th>
<th>Age range (Yrs)</th>
<th>Duration of symptoms (Yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acupuncture</td>
<td>20</td>
<td>51.2</td>
<td>24-72</td>
<td>5.2 (1-14)</td>
</tr>
<tr>
<td>Oxybutynin</td>
<td>19</td>
<td>48.1</td>
<td>21-76</td>
<td>4.9 (1-20)</td>
</tr>
</tbody>
</table>
1985). Two further paravertebral, lumbar, segmental points and four sacral, segmental points were employed. These were specifically chosen for possible autonomic effects. As far as possible, no feedback was allowed between the acupuncturist and the patient, and all assessments were performed by another doctor (CJK or GB).

Treatment outcome was assessed at the middle and end of the course of treatment by repeating the symptom questionnaire and visual analogue scale, the urinary diary, and a side effect visual analogue scale. Women taking oxybutynin were seen weekly, by the same way as those receiving acupuncture. All patients completing the study underwent repeated urodynamic assessment either one week after the last acupuncture session, or whilst still taking oxybutynin at the completion of six weeks treatment. They were seen again three months following completion of the study, when their urinary symptoms were re-evaluated. A quality of life questionnaire "The Psychosocial Adjustment to Illness Scale" (P.A.I.S.) (Derogatis, 1986), was completed by the patients at the start and at the end of treatment. All definitions used conformed to the standards of the International Continence Society (Abrams et al., 1988).

The average frequency (voids per day) and nocturia (voids per night) were calculated from the worst two days of frequency volume charting. All data was analysed using non parametric statistics on SPSS statistical package.

| Table 2 |
| RESULTS OF THE SYMPTOM VISUAL ANALOGUE SCORES BEFORE AND ON COMPLETION OF TREATMENT, USING THE WILCOXON TEST FOR MATCHED PAIRS. |
| Median (inter-quartile range). ** = p<0.005, *** = p<0.001 |

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>ACUPUNCTURE Before</th>
<th>ACUPUNCTURE After</th>
<th>OXYBUTYNNIN Before</th>
<th>OXYBUTYNNIN After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgency</td>
<td>50 (40-60)</td>
<td>20*** (10-45)</td>
<td>60 (33-85)</td>
<td>20*** (10-42)</td>
</tr>
<tr>
<td>Frequency</td>
<td>50 (30-65)</td>
<td>30*** (10-40)</td>
<td>50 (40-72)</td>
<td>23*** (10-38)</td>
</tr>
<tr>
<td>Nocturia</td>
<td>30 (20-52)</td>
<td>12*** (0-30)</td>
<td>31 (13-40)</td>
<td>20 NS (5-42)</td>
</tr>
<tr>
<td>Urge incontinence</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

**Results**

Nineteen of the 20 women treated with acupuncture completed the study. The only withdrawal was a patient who had to leave the country after 4 weeks of therapy and who had already shown symptomatic improvement prior to withdrawal. Sixteen of the 19 women treated with oxybutynin completed the study. Three withdrew due to unacceptable side effects and four were persuaded to complete the study, but were unwilling to continue with oxybutynin longer than six weeks due to side effects.

1. **Subjective assessment of outcome**

Analysis of the results of the urinary diary and the symptom visual analogue scores showed improvement in both treatment groups for symptoms of urgency, frequency and nocturia. Improvement was considerably better after six weeks of treatment than at the mid treatment assessment. The results of both the urinary diary and symptom analysis are shown in Tables 2 and 3.

Urgency and frequency were significantly improved by both methods of treatment, whereas nocturia was significantly improved only by acupuncture; there was no significant improvement in urge incontinence for either group.

Table 3
RESULTS OF URINARY DIARY COMPARING RESULTS PRIOR TO AND ON COMPLETION OF TREATMENT. (WILCOXON TEST).

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>ACUPUNCTURE Before</th>
<th>ACUPUNCTURE After</th>
<th>OXYBUTYNNIN Before</th>
<th>OXYBUTYNNIN After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>9.5 (7-11.5)</td>
<td>7** (6-9)</td>
<td>8.5 (7-11.25)</td>
<td>7.0* (5.75-8.25)</td>
</tr>
<tr>
<td>Nocturia</td>
<td>1.0 (0-1)</td>
<td>0.75 (0-1)</td>
<td>1.0 (1-2)</td>
<td>1.0 (0-1.25)</td>
</tr>
</tbody>
</table>

**ii. Side effects**

In contrast to many previous acupuncture studies, the presence or absence of side effects was specifically enquired about. The frequency of side effects for the two treatment groups is shown in Figure 1. Few side effects were reported by the group receiving acupuncture. Two women experienced...
discomfort due to insertion of the needles and three complained of feeling slightly light headed following needling, although this was not consistent for each session. Side effects were common for the oxybutynin group, all patients experiencing some degree of dryness of the mouth, and over half the patients complained of headaches, dizziness, gastrointestinal upset and transient visual impairment.

iii. Objective assessment

Both acupuncture and oxybutynin resulted in an increase in first sensation of desire to void and in bladder capacity during the filling phase of cystometry. The detrusor pressure rise on filling was decreased for both treatment groups. There was no statistically significant difference between the two groups comparing urodynamic results, however the numbers were small. The results for the two groups are shown in Table 4.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>ACUPUNCTURE</th>
<th>OXYBUTYIN</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
</tr>
<tr>
<td>Flow rate (mls/sec)</td>
<td>24 (11-40)</td>
<td>25 NS (15-34)</td>
</tr>
<tr>
<td>Residual (mls)</td>
<td>0 (0-10)</td>
<td>0 NS (0-15)</td>
</tr>
<tr>
<td>First sensation (mls)</td>
<td>165 (85-220)</td>
<td>210 NS (120-295)</td>
</tr>
<tr>
<td>Bladder capacity (mls)</td>
<td>400 (362-450)</td>
<td>460* (380-550)</td>
</tr>
<tr>
<td>Detrusor pressure rise on filling (cm H2O)</td>
<td>19.0 (15-25)</td>
<td>10** (5-20)</td>
</tr>
<tr>
<td>Voiding pressure (cm H2O)</td>
<td>30 (20-40)</td>
<td>25 NS (20-35)</td>
</tr>
</tbody>
</table>

iv. Quality of life assessment

Improvement was seen in quality of life as assessed by the P.A.I.S. although the small number of subjects limited the value of statistical comparison. Domestic, vocational and leisure activities were improved and patients experienced reduced levels of anxiety due to improvement in their bladder symptoms.

v. Three month follow up

Three months following the last treatment, 8 of the 20 patients in the acupuncture group were symptom free and had required no other medication. Four patients felt that their symptoms of urgency had returned, but not to the extent that further treatment was required. Two felt that their symptoms had not been improved at all by acupuncture and were the same as before. Four patients required further investigation and treatment following completion of the study. Two were abroad and uncontactable.

Seven out of the 19 patients were symptom free at 3 months on oxybutynin. Three of these however were taking treatment as required ("social oxybutynin") rather than in the conventionally prescribed manner. Three patients had been unable to complete the study due to side effects, and a further four patients who found side effects intolerable continued treatment with alternative medication and out-patient bladder drill. Four patients had required cystoscopy and bladder biopsy, two of these were found to have interstitial cystitis and were treated with steroids. One patient was uncontactable.

Discussion

Acupuncture was well tolerated with few side effects, resulting in a high level of patient acceptability and treatment compliance. It appears to be as effective as oxybutynin for irritative bladder symptoms in women with idiopathic low bladder compliance. Urodynamic assessment shows that it increases bladder capacity and improves detrusor compliance.

There are several possible mechanisms of action of acupuncture on the bladder, none of which has yet been substantiated. Acupuncture has effects that may be of relevance on the endogenous opioid and autonomic nervous systems (Han, 1987). Enkephalinergic nerves have been demonstrated in detrusor smooth muscle strips (Alm et al., 1981), and human detrusor muscle has been shown to be sensitive to the effects of enkephalins in vitro, increasing bladder compliance, and naloxone in vivo, decreasing compliance (Klarskov, 1987; Murray and Feneley, 1982). A number of studies have demonstrated the efficacy of acupuncture in the management of nocturnal enuresis (Song and Wang, 1985; Bartocci and Lucentini, 1981).

Philp and colleagues (1988), performed acupuncture on 20 patients with irritative bladder symptoms due to various pathologies and found a 76% symptomatic cure in patients with idiopathic detrusor instability and predominantly daytime symptoms. Results of cystometry were however disappointing, and only one patient who consented to repeat testing showed objective evidence of cure. Chang (1988) studied 52 women with irritative bladder symptoms, of whom only 14 had any cystometric abnormality, and found that 17 patients were symptom free after needling acupuncture point ST36 for a single 20 minute session. He found little improvement after acupuncture at the ST36 point. The mean maximum bladder capacity of 258 ± 56mls (mean ± SD) achieved after treatment for all patients however, was less than normal.

At present the mechanism of action, the optimum
sites and number of needles required, as well as the ideal frequency and duration of treatment remain unknown.

A criticism of many studies purporting to relieve irritative bladder symptoms, is the significant placebo effect of the treatments used. This criticism can equally well be applied to this study, although it is hoped that by using comparison with a conventional and widely accepted drug treatment and making both objective and subjective assessment of response this effect is minimal. However it may be that a placebo effect is in fact important in treating this condition, irrespective of the method of treatment.

We have shown acupuncture to be of equal efficacy to the standard anticholinergic therapy in the management of low bladder compliance, but with less side effects. Until it gains greater medical acceptance in this field, we suggest it could initially be used with benefit on those patients for whom conventional therapy has failed, or who are unsuitable for other forms of management. None the less, as with any other treatment, we would not recommend acupuncture for the management of women with irritative bladder symptoms without adequate prior investigation to elucidate the cause of their complaint.

Acknowledgement
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References

The BRITISH MEDICAL ACUPUNCTURE SOCIETY is a society of medically qualified doctors who practise acupuncture or have an interest in it. The society has expanded to include sections for dentists and veterinary surgeons.

The aims of the society are to promote the scientific understanding and practice of acupuncture as part of the normal practice of medicine.

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