International Journal of Urology (2004) **11,** 607–612

Original Article

Effects of acupuncture for chronic pelvic pain syndrome with intrapelvic venous congestion: Preliminary results

HISASHI HONJO,[1,2] KAZUMI KAMOI,[1] YOSHIO NAYA,[1] OSAMU UKIMURA,[1] MUNEKADO KOJIMA,[1] HIROSHI KITAKOJI[2] AND TSUNEHARU MIKI[1]

[1]*Department of Urology, Kyoto Prefectural University of Medicine and* [2]*Department of Clinical Acupuncture and Moxibustion II, Meiji University of Oriental Medicine, Kyoto, Japan*

Abstract

Background: The present study was designed to reveal the usefulness of acupuncture for chronic pelvic pain syndrome with intrapelvic venous congestion as evaluated by symptom scores, transrectal ultrasonography (TRUS) and magnetic resonance (MR) venography.

Methods: Ten male patients suffering from non-inflammatory chronic pelvic pain syndrome (NIH category IIIB) with intrapelvic venous congestion were treated using acupuncture. Eight patients had previously received pharmacotherapy, which was unsuccessful. Acupuncture was performed using disposable stainless steel needles, which were inserted into the bilateral BL-33 points and rotated manually for 10 min. The treatment was repeated every week for 5 weeks without other therapeutic maneuvers. Results from TRUS and MR venography, as well as clinical symptoms based on the NIH chronic prostatitis symptom index (NIH-CPSI) and the international prostate symptom score (IPSS), were compared before and after the treatment.

Results: No side-effects were recognized throughout the treatment period. The average pain and QOL scores of the NIH-CPSI 1 week after the 5th acupuncture treatment decreased significantly ($P < 0.05$ and $P < 0.01$, respectively) compared with the baseline. The maximum width of the sonolucent zone 1 week after the 5th treatment also decreased significantly ($P < 0.01$, compared with the baseline). Intrapelvic venous congestion demonstrated by MR venography was significantly improved in four patients.

Conclusion: This study provided novel information concerning the therapeutic effects of acupuncture on non-inflammatory chronic pelvic pain syndrome.

Key words acupuncture, chronic pelvic pain syndrome, intrapelvic venous congestion.

Introduction

A new classification system for prostatitis syndromes was proposed in 1995 at the National Institutes of Health (NIH) Workshop on Chronic Prostatitis.[1] Additionally, the NIH chronic prostatitis symptom index (NIH-CPSI), which explores three important domains of chronic prostatitis, including pain, voiding symptoms and quality of life impact, has been developed by the Chronic Prostatitis Collaborative Research Network.[2] Chronic non-bacterial prostatitis and prostatodynia are categorized as NIH category III. Notably, prostatodynia is categorized as category IIIB, and has been named chronic pelvic pain syndrome. Recently, a small number of reports have provided clinical data from pharmacotherapy for chronic non-bacterial prostatitis, which is classified as NIH category III.[3,4] However, few reports are available on the effects of physical therapy for patients with chronic pelvic pain syndrome.

In contrast, Terasaki *et al*. recognized the possible involvement of intrapelvic venous congestion in the pathogenesis of prostatodynia with the use of 3-D magnetic resonance venography (3D-MR venography).[5] Furthermore, Kamoi reported the clinical usefulness of transrectal ultrasonography (TRUS) in conveniently screening intrapelvic venous congestion.[6] The aim of the present study was to reveal the clinical utility of acupuncture for chronic pelvic pain syndrome with

Correspondence: Hisashi Honjo, Department of Urology, Kyoto Prefectural University of Medicine, Kawaramachi-Hirokoji, Kyoto 602-8566, Japan.
Email: honjo@muom.meiji-u.ac.jp
Received 7 May 2003; accepted 20 January 2004.

intrapelvic venous congestion, as evaluated by symptom scores, TRUS and MR venography.

Methods

Acupuncture was performed in 10 patients who had a diagnosis consistent with the NIH criteria for chronic pelvic pain syndrome, category IIIB. The definition of these criteria conformed to the guidelines from the first NIH International Prostatitis Collaboration Network reports.[1] Patients' ages ranged from 18 to 50 years, with an average of 32.4 ± 10.3 years. The patients had had symptoms of pain or discomfort in the pelvic region for at least 3 months. All of the patients had shown intrapelvic venous congestion, as revealed by TRUS and MR venography.[5,6] Their symptoms were perineal pain or discomfort in seven, lower abdominal pain or discomfort in four, testicular pain or discomfort in one and pollakisuria in two. In eight patients, previous medical therapies including antibiotics, anti-inflammatories and cernitin pollen extract had been tried, without success. The remaining two patients had received no previous medicinal therapy.

Technique

Acupuncture was performed using disposable stainless steel needles (0.3-mm diameter, 60-mm length, SEIRIN Kasei, Shimizu, Japan) with the patient in the prone position. Needles were inserted into the bilateral BL-33 (Zhongliao) points, as standardized by the World Health Organization, on the skin of the third posterior sacral foramina in the cranial direction. A needle was inserted into each side of the foramina sufficiently deeply for its tip to be close to the sacral periosteum (50–60 mm). The bilateral needles were then rotated reciprocally, the rotary direction being changed manually for 10 min.[8] The treatment was repeated once a week for 4 weeks for the initial treatment. When the initial treatment was effective, maintenance treatment was performed once every month. All patients were treated by acupuncture with no other medical therapies. In all patients, written informed consent was obtained following an explanation, not only of the treatment effects, but also of the possible side-effects that can accompany the acupuncture.

Assessment

The NIH-CPSI and the international prostate symptom score (IPSS) were used to quantify subjective symptoms.[2,7] In addition, TRUS and MR venography were used to monitor changes in intrapelvic venous congestion.

Transrectal ultrasonography was performed using a chair-type scanner with a 5.0-MHz probe (SSD2000, Aloka, Tokyo, Japan). The maximum width of the sonolucent zone was measured in horizontal transrectal ultrasonograms. The cut-off value of the maximum width of the sonolucent zone was 3 mm for the detection of intrapelvic venous congestion (Fig. 1).[5]

Magnetic resonance imaging (MRI) was performed using a 1.5 Tesla MRI machine (SMT-150X, Shimadzu, Kyoto, Japan). MR venography was obtained from T2-weighted images processed with maximum intensity.[6] MR venography was used to detect intrapelvic venous congestion based on three findings: the interruption of the internal pudendal veins, the dilation of the prostatic capsular veins and that of the venous plexuses behind the bladder (Fig. 2).

Statistical analysis

All values are expressed as mean ± SD. The Wilcoxon signed rank test (StatView 5.0J, Abacus Concepts Berkeley, CA) was used to compare the values before and after acupuncture. A *P*-value of less than 0.05 was considered statistically significant.

Results

None of the patients experienced any side-effects from the acupuncture treatment. One week after the 5th acupuncture treatment, urinary symptoms decreased from 3.2 ± 3.0 to 2.8 ± 3.7 (NIH-CPSI) and from 7.3 ± 8.9 to 6.5 ± 9.2 (IPSS), although in both cases $P \geq 0.05$. In contrast, there were statistically significant differences recognized in the domain of pain or discomfort (11.6 ± 4.5 before acupuncture *vs* 8.8 ± 6.3 after acupuncture, $P < 0.05$) and the impact of quality of life (7.6 ± 2.5 before acupuncture *vs* 4.3 ± 3.6 after acupuncture, $P < 0.01$). Most notably, with respect to the overall quality of life (Item 9), the number of patients who replied that they felt terrible, unhappy or mostly dissatisfied decreased from eight to three after the treatment. In contrast, the number of patients who replied that they were delighted or pleased increased from zero to five.

Before acupuncture, in all 10 cases, the maximum width of the sonolucent zone was more than 3 mm, suggesting intrapelvic venous congestion by TRUS (Fig. 1). After the treatment, the maximum width of the sonolucent zone was less than 3 mm in five of the patients (50%). Overall, the maximum width of the

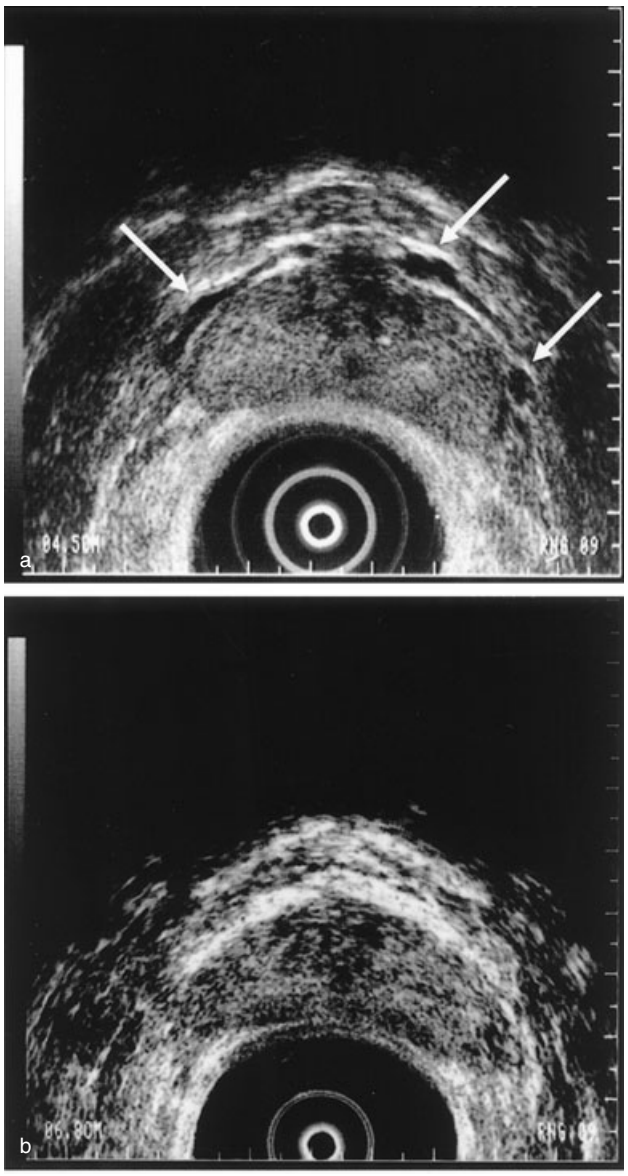

Fig. 1 Changes in the findings of intrapelvic venous congestion using transrectal ultrasonography before and after acupuncture. Transrectal sonograms of the prostate show the changes in a patient before (a) and after acupuncture (b). The arrows show the dilation of the sonolucent zone. The maximum width of the sonolucent zone is 4.5 mm before and 1.3 mm after acupuncture.

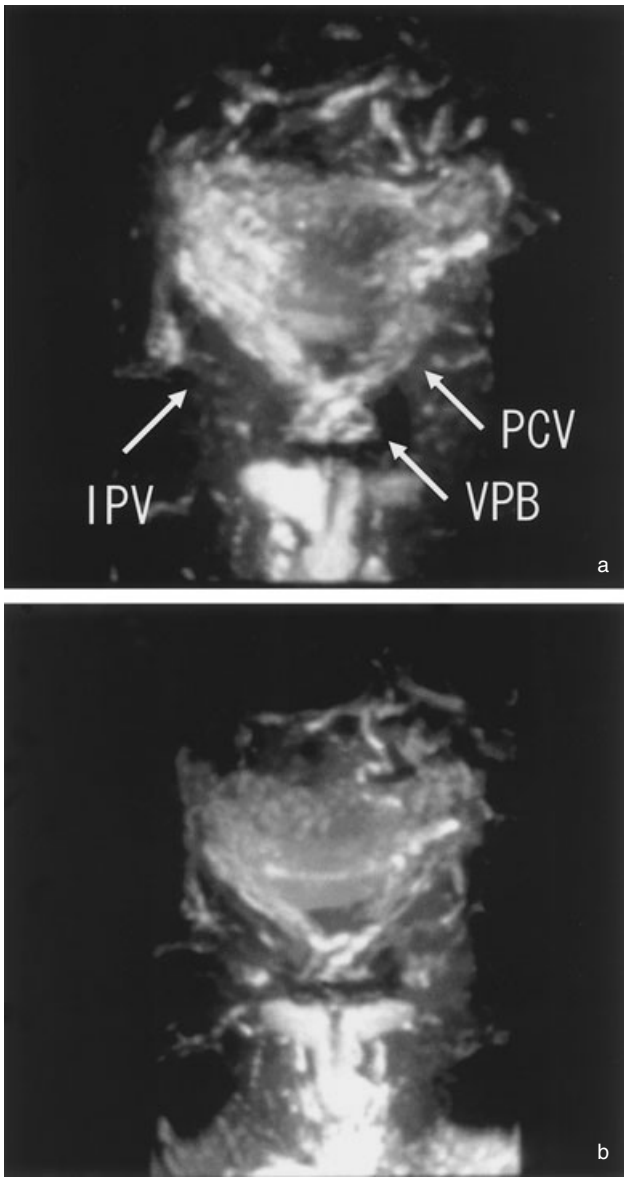

Fig. 2 Changes in the findings of intrapelvic venous congestion using magnetic resonance (MR) venography before and after acupuncture. MR venography images show the changes in a patient before (a) and after acupuncture (b). The arrows show the findings of intrapelvic venous congestion before acupuncture. After acupuncture these findings are not shown. IPV, interruption of the internal pudendal veins; PCV, dilation of the prostatic capsular veins; VPB, dilation of the venous plexuses behind the bladder.

sonolucent zone decreased significantly from 4.72 ± 0.48 mm to 3.24 ± 1.21 mm after acupuncture ($P < 0.01$, Fig. 3). The data of all the patients whose symptoms and intrapelvic venous congestion were revealed by TRUS and MR venography are shown in Table 1.

In all 10 cases, MR venography revealed intrapelvic venous congestion before acupuncture. After the treatment, based on the findings of MR venography, intrapelvic venous congestion disappeared in four patients (40%), was improved in three patients (30%) and remained unchanged in three patients (30%, Fig. 2). For the four patients in whom intrapelvic venous congestion disappeared, the therapeutic effects were maintained for

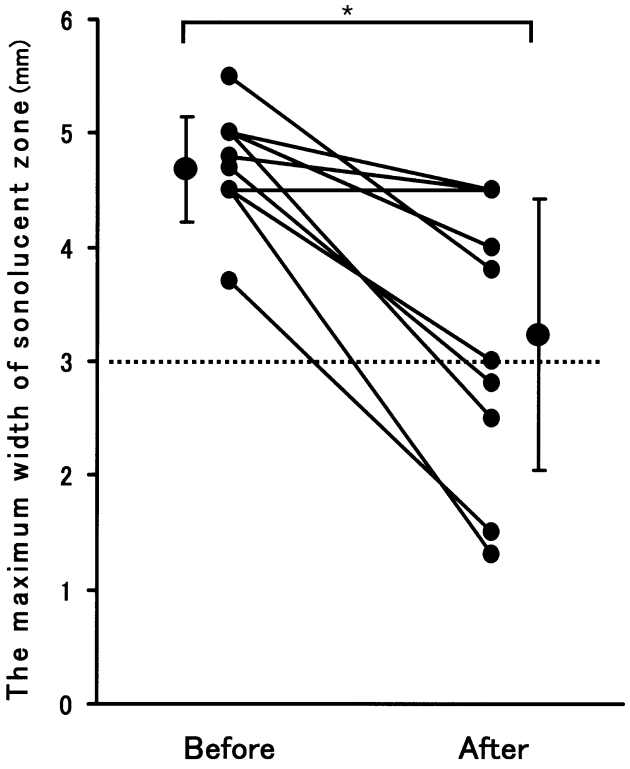

Fig. 3 Changes in the maximum width of the sonolucent zone, based on the results of transrectal ultrasonography before and after acupuncture. $n = 10$. *, $P < 0.01$.

3 months after the initial treatment. Interestingly, in each of these four patients, the maximum width of the sonolucent zone decreased to less than 3 mm, from 4.48 ± 0.56 mm to 2.03 ± 0.74 mm, after acupuncture. In addition, along with improvements in intrapelvic venous congestion, as evaluated by both TRUS and MR venography, the overall quality of life (Item 9) also improved.

Discussion

The present study is the first to describe the results of acupuncture for patients with non-inflammatory chronic pelvic pain syndrome and intrapelvic venous congestion. As demonstrated, acupuncture on the bilateral BL-33 points improved the symptoms of chronic pelvic pain syndrome. Particularly, the total scores of NIH-CPSI reduced more than 50% compared to the baseline in four (40%) out of 10 patients. Chen and Nickel reported the effects of acupuncture using several points and electrical stimulation for chronic prostatitis/chronic pelvic pain syndrome;[9] their results indicated that acupuncture could be a promising alternative therapy for patients suffering from these disorders.

With regard to the pathogenesis of non-inflammatory chronic pelvic pain syndrome (category IIIB), it has been suggested that the symptoms might be associated with venous congestion around the prostate. Watanabe reported that the 'sonolucent zone' recognized on TRUS was found frequently in patients with chronic prostatitis.[10] In addition, Terasaki *et al*. postulated that prostatodynia was likely to be caused by intrapelvic venous congestion, because the images of congestion around the prostate were also found predominantly on 3D-MR venography in patients with prostatodynia.[6] Kamoi reported that the dilation of the sonolucent zone (>3.0 mm) suggested intrapelvic venous congestion as evaluated by 3D-MR venography, showing a sensitivity as high as 86%.[5] Cho *et al*. also reported that abnormal prostate blood flow was observed along the entire prostatic capsule in 77% of patients with chronic prostatitis/pelvic pain syndrome.[11] The dilation of the periprostatic venous plexus on TRUS was, however, not always reported to be a specific finding of non-bacterial prostatitis.[12] Thus, the dilation of the sonolucent zone around the prostate on TRUS might not be specific to non-inflammatory chronic pelvic pain syndrome. As recognized in the present study, in three (75%) out of four patients who experienced an improvement in intrapelvic venous congestion, as confirmed by both TRUS and MR venography, the NIH-CPSI decreased more than 50% after acupuncture, compared to a 17% decrease (1/6) reported for those patients who did not show an improvement in congestion. These results suggest that intrapelvic venous congestion is likely to be an important factor in non-inflammatory chronic pelvic pain syndrome with intrapelvic venous congestion, in terms of the therapeutic effects of acupuncture.

The NIH Chronic Prostatitis Clinical Research Network reported the prioritization of treatment for chronic prostatitis.[1] Antibiotics, alpha-blockers, prostatic massage and anti-inflammatories are ranked as high priority treatment. In contrast, alternative therapies, including acupuncture, rank as low priority. Certainly, medical therapies using antibiotics and alpha-blockers for chronic prostatitis/pelvic pain syndrome have reportedly been of clinical use in a randomized controlled trial or multicenter trial.[3,4] However, it is also true that some patients with chronic prostatitis/pelvic pain syndrome do not respond to pharmacological agents. In the present study, eight out of 10 patients had undergone medical therapies including antibiotics or anti-inflammatories before acupuncture without success. In two of these eight patients, the symptoms and intrapelvic venous congestion, as evaluated by both TRUS and MR

Table 1 Profiles and results of acupuncture for patients with non-inflammatory chronic pelvic pain syndrome and intrapelvic venous congestion

Patient	Age	Symptoms	NIH-CPSI								IPSS		SLZ		MR Venography	
			Before				After				Before	After	Before	After	Before	After
			Pain	Void	QOL	Item 9	Pain	Void	QOL	Item 9						
1	50	Perineum pain	10	1	8	4	7	0	2	1	3	3	4.5	1.3	IPV, PCV, VPB	none
2	47	Lower abdominal pain, pollakisuria	11	6	6	4	7	0	5	3	10	6	4.7	2.8	IPV, PCV, VPB	none
3	33	Pollakisuria	8	4	9	5	0	1	3	1	8	2	3.7	1.5	IPV, PCV, VPB	none
4	18	Lower abdominal pain, testicle pain	12	1	8	4	6	1	0	0	3	1	5.0	2.5	IPV, PCV, VPB	none
5	31	Perineum discomfort	10	1	6	4	7	1	2	1	2	1	4.5	3.0	IPV, PCV, VPB	IPV, VPB
6	36	Perineum discomfort, lower abdominal pain	14	3	10	5	12	2	8	4	3	2	5.0	4.5	IPV, PCV, VPB	IPV, PCV, VPB
7	36	Perineum discomfort	3	1	3	3	0	0	0	0	2	0	4.8	4.5	IPV, PCV, VPB	PCV, VPB
8	23	Perineum pain, lower abdominal pain	20	10	12	6	18	10	11	6	31	29	5.5	3.8	IPV, PCV, VPB	IPV, PCV
9	24	Perineum pain	13	4	8	4	15	9	6	6	9	16	5.0	4.0	IPV, PCV, VPB	IPV, PCV, VPB
10	26	Perineum pain	15	1	6	3	16	4	6	3	2	5	4.5	4.5	IPV, PCV, VPB	IPV, PCV, VPB

IPSS, international prostate symptom index; IPV, interruption of the internal pudendal veins; MR, magnetic resonance; NIH-CPSI, NIH chronic prostatitis symptom index; PCV, dilation of the prostatic capsular veins; QOL, quality of life; SLZ, maximum width of sonolucent zone; VPB, dilation of the venous plexuses behind the bladder.

venography, improved after acupuncture. Therefore, acupuncture might be of particular use for patients with non-inflammatory chronic pelvic pain syndrome who had failed to respond to conventional medical therapies.

The mechanism of acupuncture effects on non-inflammatory chronic pelvic pain syndrome remains to be elucidated. Acupuncture on the bilateral BL-33 points has been reported to inhibit detrusor hyperreflexia in patients with spinal cord injury.[8] Honjo *et al*. showed that acupuncture suppressed the hyperactivity of the external urethral sphincter during the voiding phase, consequently improving detrusor external sphincter dyssynergia. In an experimental study using anesthetized rats, acupuncture stimulation suppressed proximal urethral electromyographic activities in the micturition reflex.[13] Meanwhile, neuromuscular pelvic floor dysfunction has been postulated to cause chronic pelvic pain.[14] It is likely that one of the mechanisms through which acupuncture improves the symptoms of non-inflammatory chronic pelvic pain syndrome is the neuromodulation of neuromuscular pelvic floor dysfunction.

The present study was only a preliminary one, which was performed using a small number of patients with no controls. Further studies are needed to clarify the effects of acupuncture treatment for non-inflammatory chronic pelvic pain syndrome, using a larger number of patients in a randomized, placebo-controlled trial.

In conclusion, this study provides novel information on the therapeutic effects of acupuncture for non-inflammatory chronic pelvic pain syndrome.

Conclusions

Acupuncture treatment can be effective in decreasing the symptoms of non-inflammatory chronic pelvic pain syndrome and in improving intrapelvic venous congestion.

References

1 Nickel JC, Nyberg LM, Hennenfent M for The International Prostatitis Collaborative Network. Research guidelines for chronic prostatitis: consensus report from the first National Institutes of Health International Prostatitis Collaborative Network. *Urology* 1999; **54**: 229–33.
2 Litwin MS, McNaughton-Collins M, Fowler FJ Jr *et al.* The National Institutes of Health chronic prostatitis symptom index: development and validation of a new outcome measure. *J. Urol.* 1999; **162**: 369–75.
3 Nickel JC, Downey J, Johnston B, Clark J and the Canadian Prostatitis Research Group. Predictors of patients' response to antibiotic therapy for the chronic prostatitis/chronic pelvic pain syndrome: a prospective multicenter clinical trial. *J. Urol.* 2001; **165**: 1539–44.
4 Cheah PY, Liong ML, Yuen KH *et al.* Terazosin therapy for chronic prostatitis/chronic pelvic pain syndrome: a randomized, placebo controlled trial. *J. Urol.* 2003; **169**: 592–6.
5 Terasaki T, Watanabe H, Saitoh M, Uchida M, Okamura S, Shimizu K. Magnetic resonance angiography in prostatodynia. *Eur. Urol.* 1995; **27**: 280–5.
6 Kamoi K. Clinical usefulness of transrectal sonography and transperineal color doppler flow imaging in the diagnosis of intrapelvic venous congestion syndrome. *Jpn J. Urol.* 1996; **87**: 1009–17.
7 Barry MJ, Fowler FJ, O'Leary MP *et al.* The American Urological Association symptom index for benign prostatic hyperplasia. *J. Urol.* 1992; **148**: 1549–57.
8 Honjo H, Naya Y, Ukimura O, Kojima M, Miki T. Acupuncture on clinical symptoms and urodynamic measurements in spinal-cord-injured patients with detrusor hyperreflexia. *Urol. Int.* 2000; **65**: 190–5.
9 Chen R, Nickel JC. Acupuncture ameliorates symptoms in men with chronic prostatitis/chronic pelvic pain syndrome. *Urology* 2003; **61**: 1156–9.
10 Watanabe H. Transrectal sonography: a personal review and recent advantages. *Scand. J. Urol. Nephrol. Suppl.* 1991; **137**: 75–83.
11 Cho IR, Keener TS, Nghiem HV, Winter T, Krieger JN. Prostate blood flow characteristics in the chronic prostatitis/pelvic pain syndrome. *J. Urol.* 2000; **163**: 1130–3.
12 de la Rosette JJ, Karthaus HF, Debruyne FM. UItrasonographic findings in patients with nonbacterial prostatitis. *Urol. Int.* 1992; **48**: 323–6.
13 Kitakoji H, Nabeta T, Kawakita K. Suppressive effects of acupuncture and pinching on micturition reflex activities in the rat proximal urethra. *The Autonomic Nervous System* 1994; **31**: 309–15.
14 Anderson RU. Management of chronic prostatitis–chronic pelvic pain syndrome. *Urol. Clin. N. Am.* 2002; **29**: 235–9.