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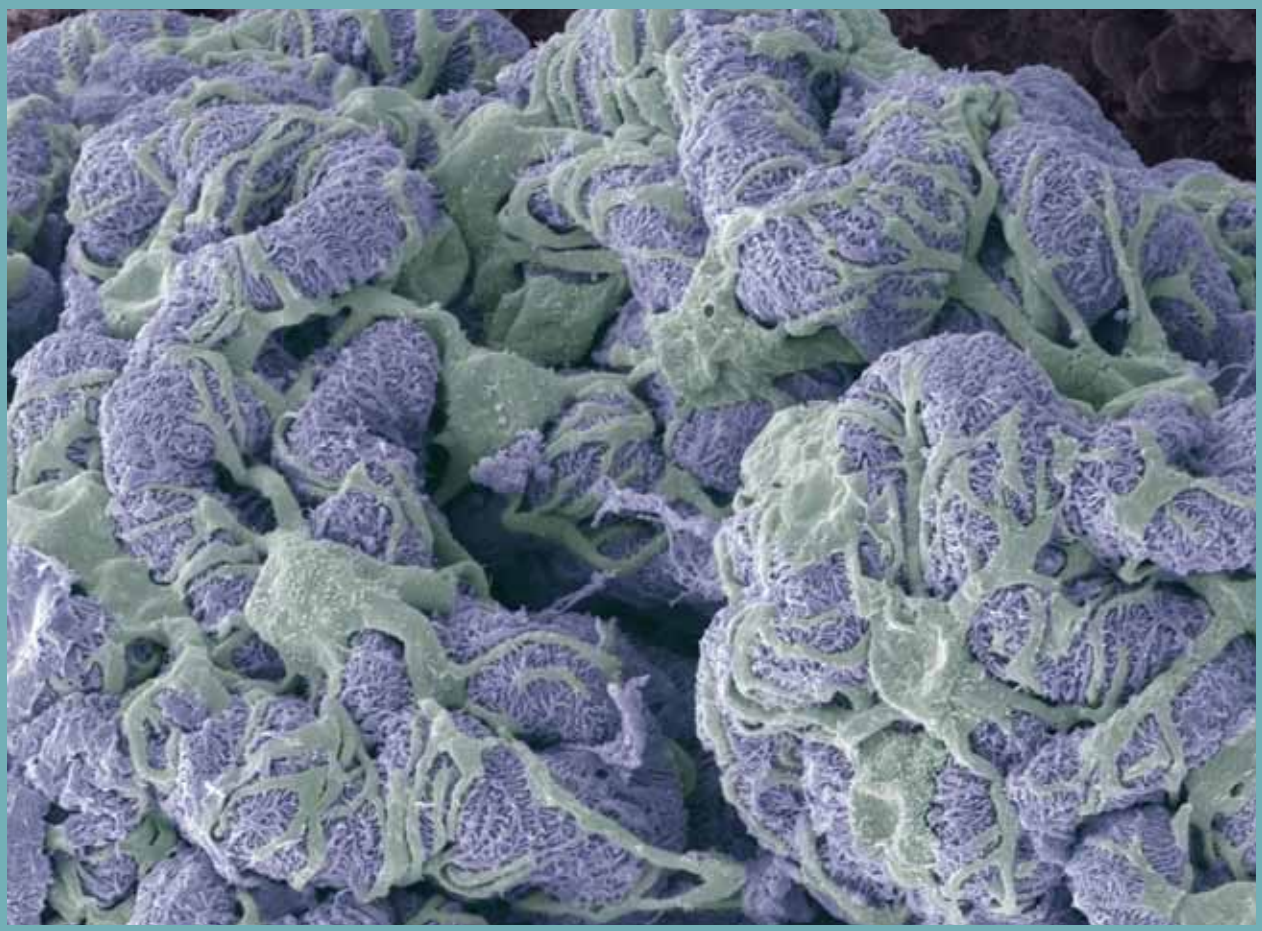

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A Randomized Controlled Trial of a Multifaceted Integrated Complementary-Alternative Therapy for Chronic Herpes Zoster-Related Pain

Fred Hui, MD, CCFP, Eleanor Boyle, PhD, Eugene Vayda, MD, FRCP, Richard H. Glazier, MD, MPH, FCFP

Abstract

INTRODUCTION: Our objective was to determine whether a three-week complementary and alternative medicine (CAM) approach integrating several therapies from Traditional Chinese Medicine (TCM) along with neural therapy (injection of 1% procaine as local anesthesia) reduces the level of unresolved pain associated with herpes zoster. METHODS: The design was a randomized controlled clinical trial in a community-based primary care clinic in Toronto, Ontario. We studied individuals 18 years of age and older with a confirmed diagnosis of herpes zoster of at least 30 days duration and with at least moderate postherpetic neuralgia pain (≥4) on a 10-point Likert scale. The CAM therapies used were acupuncture, neural therapy (1% procaine injection as a local anesthetic), cupping and bleeding, and TCM herbs. An immediate treatment group (n=32) received the CAM intervention once daily, five days per week, for three weeks. A wait-list (delayed treatment) group (n=27) was used as a control and received the same treatment starting three weeks after randomization. This three-week time period, when one group was receiving active CAM treatment and the other was not, was used as basis of comparison for treatment effects between groups. Pain, quality of life, and depression were measured at baseline, and three, six, and nine weeks post-randomization. Patients were followed for up to two years. RESULTS: Participants had a mean age of 69.8 years (SD=11.1) and had had herpes zoster-related pain for a median of 4.8 months (range: 1 month to 15 years). The immediate treatment and control groups had similar pain levels at baseline (treatment = 7.5; control = 7.8; p=0.5; scores based on the 10-point Likert pain scale). At three weeks post-randomization (i.e., after the immediate treatment group completed treatment) pain scores differed significantly (treatment = 2.3; control = 7.2; p< 0.001). The observed reduction in pain in the immediate treatment group was maintained at nine weeks and at long-term follow-up (one to two years later). The delayed treatment (control) group also had significant reductions in pain after their integrated CAM treatment was completed. CONCLUSION: The described CAM protocol was associated with significantly reduced sub-acute and chronic post-herpes zoster neuralgia pain within three weeks of initiating treatment. Improvements persisted for up to two years. (*Altern Med Rev* 2012;17:57-68)

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Introduction

Herpes zoster (HZ) is a painful vesicular skin disease (commonly known as shingles) that is caused by reactivation of latent varicella zoster virus infection in sensory nerve ganglia. The lifetime prevalence of HZ is between 10 and 20 percent.[1] Postherpetic neuralgia (PHN) is the most common complication of herpes zoster. PHN is characterized by neuralgia (pain that follows the path of a nerve) that persists for a period of time after the onset of herpetic skin lesions. Although there is no standardized clinical definition on the length of time required after HZ onset for a diagnosis of PHN, the presence of neuralgia one month after onset of HZ is often used as a cut-off clinically.[2,3] As a result, we used the presence of neuralgia persisting for more than one month after the onset of skin lesions as our criteria. Incidence, severity, and complications associated with HZ tend to increase with age. This age-related increase is also observed with the incidence of PHN. Among persons with HZ, about 50 percent of those over 60 years of age and 75 percent over 70 years of age experience PHN.[3] While PHN tends to improve

over time in many persons, some estimates have suggested that 23 percent of HZ patients have neuralgia that lasts for more than one year.[1] Unresolved pain in PHN can lead to a decreased quality of life, including mood changes, sleep disruption, social withdrawal, and depression, and it is associated with significant health care costs.[4,5]

Treatment for PHN generally includes one or more of antiviral medications (e.g., famciclovir and valacyclovir), tricyclic antidepressants, opioid analgesics, anticonvulsants (e.g., gabapentin and pregabalin), and topical applications (e.g., lidocaine patches or capsaicin lotion).[6-8] The use of the antiviral drugs, famciclovir and valacyclovir, is associated with reduced duration of PHN if these drugs are started within 72 hours of the appearance of herpetic lesions.[9,10] A 2009 review listed tricyclic antidepressants, gabapentin and pregabalin, and opioids as being evidence-based interventions for pain relief. It also concluded that topical capsaicin and lidocaine 5% patch relieve pain and decrease allodynia.[11] These medications might be administered alone or combined with psychosocial support.[6-8] Although sympathetic nerve block has been reported to reduce acute herpetic pain, this procedure probably does not prevent PHN.[8] Intrathecal methylprednisolone has been reported to improve PHN.[12] Given the immediate timing required for antiviral drugs and the potential adverse effects and limited effectiveness of other established therapies, there is a need for an evidence-based CAM approach.

A multifaceted complementary and alternative medicine (CAM) approach integrating several therapies from Traditional Chinese Medicine (TCM) (acupuncture, cupping and bleeding, and Chinese herbs), meditation, and neural therapy (injection of 1% procaine used to infiltrate intradermally and subcutaneously on the affected dermatome to interrupt chronic pain and provide local anesthesia effects), along with a conventional medical approach had previously been used with success by one of the investigators (FH). Out of a series of 54 patients with PHN, 68.5 percent reported a 75-100 percent reduction in pain compared with their pre-treatment pain level using the CAM protocol.[13] The main objective of this study was to determine whether a similar CAM protocol could significantly reduce the level of pain associated with PHN in the context of a randomized controlled trial.

Methods

Study Population

Study participants were recruited by using media advertisements and posters in major health care facilities in Toronto, Canada. Individuals 18 years of age and older with a diagnosis of HZ, confirmed by a physician, who had the condition for at least 30 days and PHN pain measuring at least four points on a 10-point Likert pain scale (0 = no pain; 10 = excruciating pain) were eligible for the study. The individuals also had to understand English, give informed consent, and be available to attend the clinic for 15 days of therapy over a three-week time period. Individuals were not eligible for the study if they had HIV/AIDS, had been on immunosuppressive drugs within the past month, had disseminated cancer, had received cancer chemotherapy in the previous year, had evidence of dementia, were currently pregnant or breastfeeding, were using anticoagulants, or codeine in large amounts (>60 mg/day on three or more days/week), or narcotics other than codeine within the past month, had used anticonvulsants within the past month, or had known intolerance to any components of the experimental therapies. This study was approved by the University of Toronto Research Ethics Board.

Randomization

Computer-generated block randomization was performed after stratification for duration of pain (short = 30-365 days; long >365 days) and whether anti-herpes drugs had been used within 72 hours of the skin eruption. Individuals were assigned to either the immediate treatment or wait-list control group (i.e., treatment delayed for three weeks) by opening an opaque envelope numbered in sequence after informed consent was obtained. Individuals in the immediate treatment group started to receive their three-week therapy within one week of randomization. Individuals in the wait-list control group did not receive treatment during the first three weeks, but completed the baseline outcome scales and were asked to return to the clinic in three weeks to receive their treatment. An investigator (EB), who was not involved with data collection, generated the allocation sequence. A research assistant enrolled participants in the trial and patients themselves opened the sequenced envelopes that assigned them to their groups.

Key words: acupuncture, alternative medicine, complementary therapies, randomized controlled trial, herpes zoster, postherpetic neuralgia, shingles, TCM, traditional Chinese medicine, cupping, bleeding, neural therapy

Sample Size

Based on data from the previous case series,[13] it was expected that the CAM protocol being investigated would result in a 50 percent reduction in baseline pain in at least 70 percent of individuals treated (compared with less than 20 percent in the wait-list control group) in individuals with short-duration PHN (30-365 days). The sample size needed to demonstrate a statistically significant result between the study and control groups was 20 (two-tailed α=0.05, 1-β=0.80). For the longer duration PHN (>365 days), we hypothesized that the therapy would result in a 50 percent reduction in baseline pain in at least 60 percent of the individuals treated, compared with less than 10 percent in the wait-list control group. A sample size of 15 in each group was needed to detect this difference (two-tailed α=0.05, 1-β=0.80). The overall sample size required was 70 participants (35 in each of the immediate therapy and wait-list control groups).

Outcome Measures

The primary outcome measure was the change in pain from baseline to three weeks measured on a 10-point Likert pain scale. Secondary outcome measures were health-related quality of life (measured by the Medical Outcomes Study-Short Form 36 [SF-36]),[14] and depression (measured by the Centre for Epidemiological Studies Depression Scale [CES-D]).[15] Adverse effects including pain with injections, pain with cupping and bleeding, and bleeding at treatment sites were rated on a 7-point Likert scale (0 = no adverse effects; 7 = severe adverse effects) and were collected daily during the three-week active treatment phase.

All outcome measures were administered, assessed, and recorded by trained volunteers (not by treatment or study personnel). Due to the nature of the treatment, neither subjects nor study personnel were blind to treatment allocation. Outcome measures were assessed at baseline, and three, six and nine weeks post-randomization. Long-term outcome of the treatment was assessed one to two years later using a mailed questionnaire.

Multifaceted Therapy

The therapy in the earlier case series had consisted of five components: acupuncture, neural therapy, cupping and bleeding, meditation, and Chinese herbs.[13] The same components were used in the current trial and were administered by one of the investigators (FH).

Acupuncture needles were inserted at acupuncture points (Large Intestine 4, Liver 3 and Stomach 36). These points were selected for the purpose of stimulating pain modulation and healing of wounds. Large Intestine 4 is associated with increased endorphins.[16] Liver 3 is in the same corresponding anatomical point on the foot as Large Intestine 4 on the hand and therefore has the same possible physiological effect. Stomach 36 enhances qi and blood in TCM and therefore was used to improve wound healing.

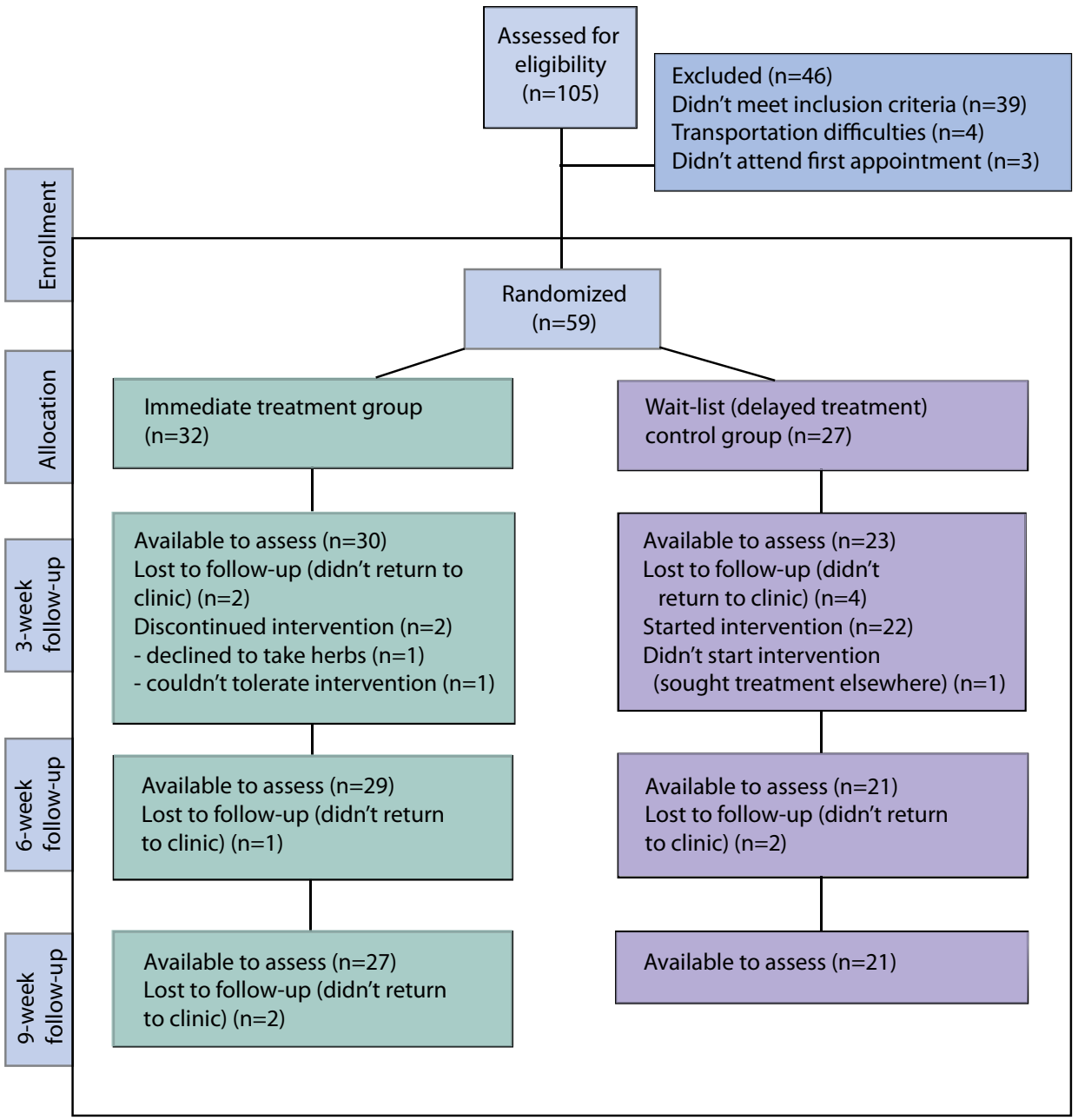
Neural therapy consisted of a 1 percent procaine solution injected into up to six points along the affected dermatome. Usually, a ventral point, a dorsal point, and a mid-auxiliary point were selected. Three additional points were added, with additional point selection determined by where there was the greatest sensitivity to light bruising of the hypersensitive skin. These local injections were primarily used intradermally and subcutaneously on the affected dermatomes as a means of interrupting chronic pain and producing local anesthesia.[17] This local anesthetic action was used to allow for relatively painless pricking for the cupping and bleeding therapy.

For cupping and bleeding, the skin was pricked with a sterile needle to create bleeding along a dermatome. A plastic suction cup with a vacuum seal was placed over the bleeding site. Air was manually withdrawn using a handheld suction gun. The negative pressure drew additional bleeding from the skin site.[18]

Patients were all given an audiotape on meditation techniques prepared by one of the principal investigators (FH) and encouraged to practice at home daily. Because compliance with meditation cannot be accurately measured,[19] it was not considered a part of the therapeutic regime.

Participants in the trial all received herbal tablets containing TCM patent herbal formulas. Each participant received Yun Nan Bai Yao (also called Yunnan Baiyao or White Medicine from Yunnan). Dose of this herbal formula was two tablets four times daily. It was selected to promote hemostasis and wound healing. Participants also received either Long Dan Xie Gan Wan (Gentian Clear the Liver Pills) or Zhi Bai Di Huang Wan (Eight Flavor Rehmannia Tea Pills). Doses of each were eight granules three times daily. Participants with thickly coated tongues received Long Dan Xie Gan Wan. Zhi Bai Di Huang Wan was given to participants with sparse tongue coating. In addition, additional TCM herbs (or over-the-counter Western medicines) were provided as deemed

Figure 1. Flow Diagram of Individuals Through the Trial



necessary to address other symptoms such as insomnia, constipation, or debilitation according to TCM diagnostic criteria.[20,21]

Statistical Analysis

The baseline scores of the SF-36 for both arms were compared against Canadian normative data for individuals aged 65 and 74.[22] Independent t-tests were used to determine if there was a significant difference in mean measures between the two treatment groups. Paired t-tests were used to determine if there were significant differences in mean measures over time within treatment groups.[23] A p-value of 0.05 or less was considered

Table 1. Characteristics of Study Subjects at Baseline

Characteristic	Immediate Treatment Group *(n=32)*	Wait-list Control Group *(n=27)*
Mean age (years)	69.8 (9.0 SD)	69.7 (13.3 SD)
Female (n)	18 (56.3%)	17 (63.0%)
Single (n)	12 (37.5%)	13 (50.0%)
Education less than high school (n)	13 (40.6%)	10 (37.0%)
Non-white racial background (n)	4 (13.3%)	3 (12.5%)
Immigrant to Canada (n)	16 (50.0%)	11 (40.7%)
Family income < $20,000 (n)	13 (41.9%)	9 (36.0%)
Shingle dermatome (n)		
Cervical	2 (6.3%)	1 (3.7%)
Lumbar	3 (9.4%)	3 (11.1%)
Cranial Nerve	7 (21.9%)	8 (29.6%)
Thoracic	29 (62.5%)	15 (55.6%)
Duration of shingle pain		
Median number of days (IQR)	145 (81-371.5)	143 (75.8-466.8)
Duration from 30 to 365 days (n)	23 (71.9%)	19 (70.4%)
Duration >365 days (n)	9 (28.1%)	8 (29.6%)
Mean number of co-morbid conditions	3.3 (2.1 SD)	3.0 (2.4 SD)
Mean number of previous CAM treatments prior to having shingles	0.9 (1.2 SD)	0.9 (1.4 SD)
Mean number of CAM treatments for shingle pain	0.4 (0.6 SD)	0.9 (0.9 SD)
Mean number of previous medical treatments prior to having shingles	0.5 (0.9 SD)	0.5 (0.8 SD)
Mean Likert Pain Scale score	7.5 (1.7 SD)	7.8 (1.4 SD)
Mean Depression Scale score	18.9 (14.1 SD)	20.4 (13.2 SD)
Mean SF-36 score: physical component; mental component	35.3 (9.0 SD); 39.1 (11.7 SD)	34.5 (7.5 SD); 37.7 (12.5 SD)

SD = standard deviation; IQR = interquartile range; CAM = complimentary and alternative medicine; SF-36 = Medical Outcomes Study-Short Form 36

to be statistically significant. All statistical analyses were conducted using statistical software (SPSS version 11.0).[24] Subjects were analyzed in the groups to which they were randomized whether they remained in the study, dropped out, or were lost to follow-up.

Figure 2. Comparison of the Study Population at Baseline with the Canadian Normative Data for Individuals Aged 65-75

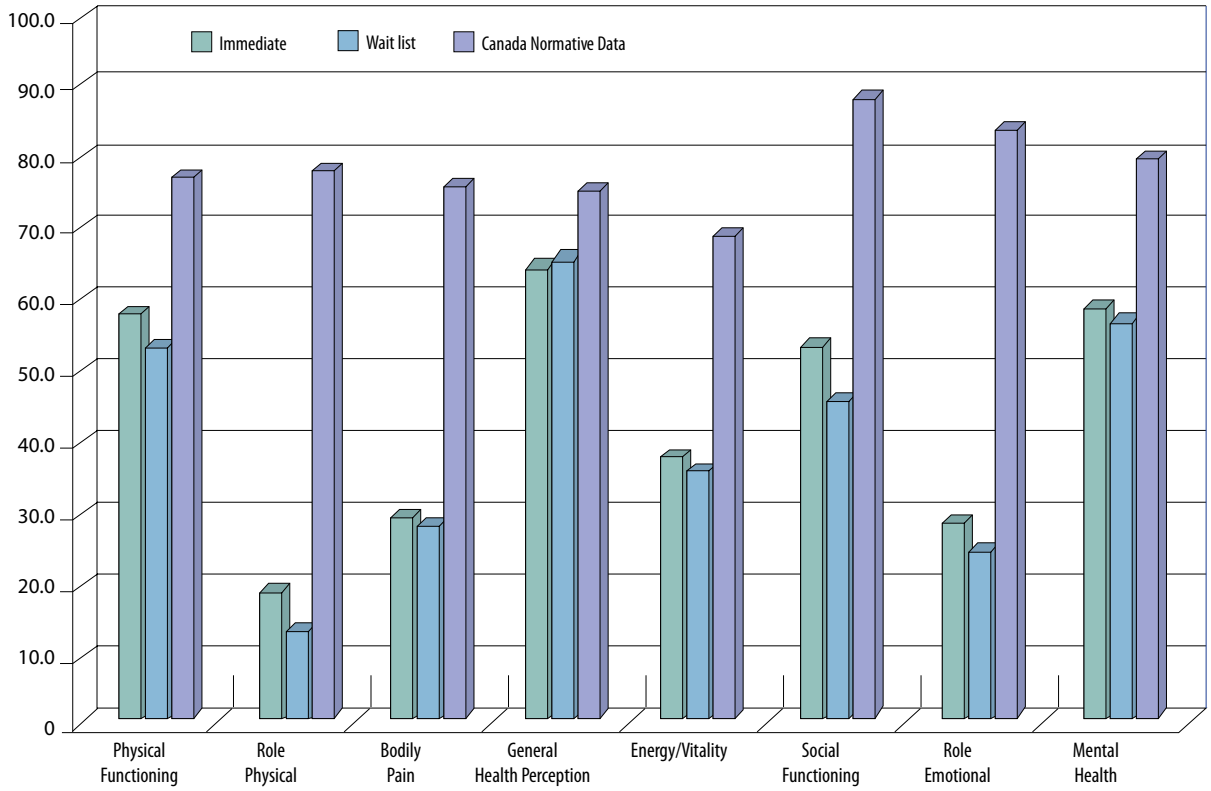


Table 2. Pain, Physical, and Mental Health-Related Quality of Life and Depression at Baseline and 3, 6, and 9 Weeks for Immediate Treatment and Wait-List Control Groups of the 8 Domains of the SF-36

	Baseline		3 weeks			6 weeks			9 weeks		
	n	Mean (SD)	n	Mean (SD)	Change from baseline Mean (SD)	n	Mean (SD)	Change from baseline Mean (SD)	n	Mean (SD)	Change from baseline Mean (SD)
Pain level*											
Immediate	32	7.5 (1.7)	30	2.3 (1.6)	-5.2 (2.3)	20	3.5 (1.9)	-3.9 (2.2)	17	3.5 (1.7)	-3.9 (2.3)
Wait-list	27	7.8 (1.4)	23	7.2 (2.3)	-0.5 (2.3)	17	4.5 (2.2)	-3.0 (3.1)	13	4.9 (2.1)	-2.5 (2.9)
Physical health†											
Immediate	31	35.3 (9.0)	30	40.5 (10.5)	4.7 (9.3)	29	45.5 (8.0)	9.3 (8.9)	27	45.2 (8.4)	8.0 (8.5)
Wait-list	27	34.5 (7.5)	23	33.6 (8.2)	-0.3 (5.9)	21	38.5 (9.0)	4.7 (8.4)	20	38.5 (9.0)	7.3 (9.7)
Mental health†											
Immediate	31	39.1 (11.7)	30	49.8 (11.8)	9.1 (11.6)	29	50.7 (10.0)	9.6 (12.7)	27	55.5 (7.0)	14.8 (11.2)
Wait-list	27	37.7 (12.5)	23	41.1 (12.5)	2.7 (8.7)	21	48.8 (11.1)	10.6 (18.9)	20	52.2 (9.1)	13.9 (17.7)
Depression‡											
Immediate	32	18.9 (14.1)	29	10.8 (10.5)	-6.0 (9.3)	29	7.9 (7.7)	-9.0 (10.6)	27	6.4 (5.4)	-9.6 (10.9)
Wait-list	27	20.4 (13.2)	20	18.1 (12.2)	-2.0 (9.8)	21	10.0 (6.8)	-9.3 (11.9)	21	9.8 (8.5)	-9.5 (14.9)

*Pain level measured by a Likert Pain Scale (a visual analogue scale with 0=no pain to 10=excruciating pain); †Physical and mental component summaries of the SF-36; ‡Depression measured by Centre for Epidemiological Studies Depression Scale

Results

Study enrollment took place over 18 months between January 1, 2000 and July 1, 2001. Final follow-up data were obtained in November 2002. There were 105 individuals who responded to the advertisements or were referred by a physician to the study (Figure 1). Thirty-nine (37.1%) of respondents were ineligible because they were currently on a high dosage of codeine (n=20), had cancer (n=5), were on anticoagulation therapy (n=5), were taking phenytoin (n=5), were unable to communicate in English (n=2) or had an insufficient pain level (n=2). Seven eligible subjects (6.7%) were not randomized due to transportation difficulties (n=4) or because they did not attend their first appointment (n=3). The remaining 59 subjects were randomized, 32 into immediate treatment group and 27 in the wait-list control group (i.e., delayed treatment).

The two arms were similar in demographic characteristics (Table 1), though the wait-list control group had tried a larger number of CAM treatments for PHN prior to this study. The mean scores of the individuals were similar in both arms of the study for the eight domains of the SF-36; however, both groups were significantly lower than the Canadian normative scores for individuals aged 65 to 74 (Figure 2).

The baseline pain level was similar in both groups (p=0.5). At three weeks, the mean pain level in the immediate treatment group decreased significantly from 7.5 to 2.3 (t_{29}=12.328; p<0.001). Over a similar three-week time period without any active CAM treatment, the mean pain level in the wait-list control group remained essentially the same (7.8 [baseline] and 7.2 [3 weeks]; t_{22} = 1.110; p=0.279). These results are presented in Table 2. A reduction of pain of at least 50 percent was reported by 20 subjects (66.7%) in the immediate treatment group versus two subjects (8.7%) in the

Figure 3. Percent Decrease (i.e., reduction in pain) from Baseline in Likert Pain Scale Scores (with error bars [2 SD]) in the Immediate Treatment and Wait-List Control Groups (Delayed Treatment) at 3, 6, and 9 Weeks

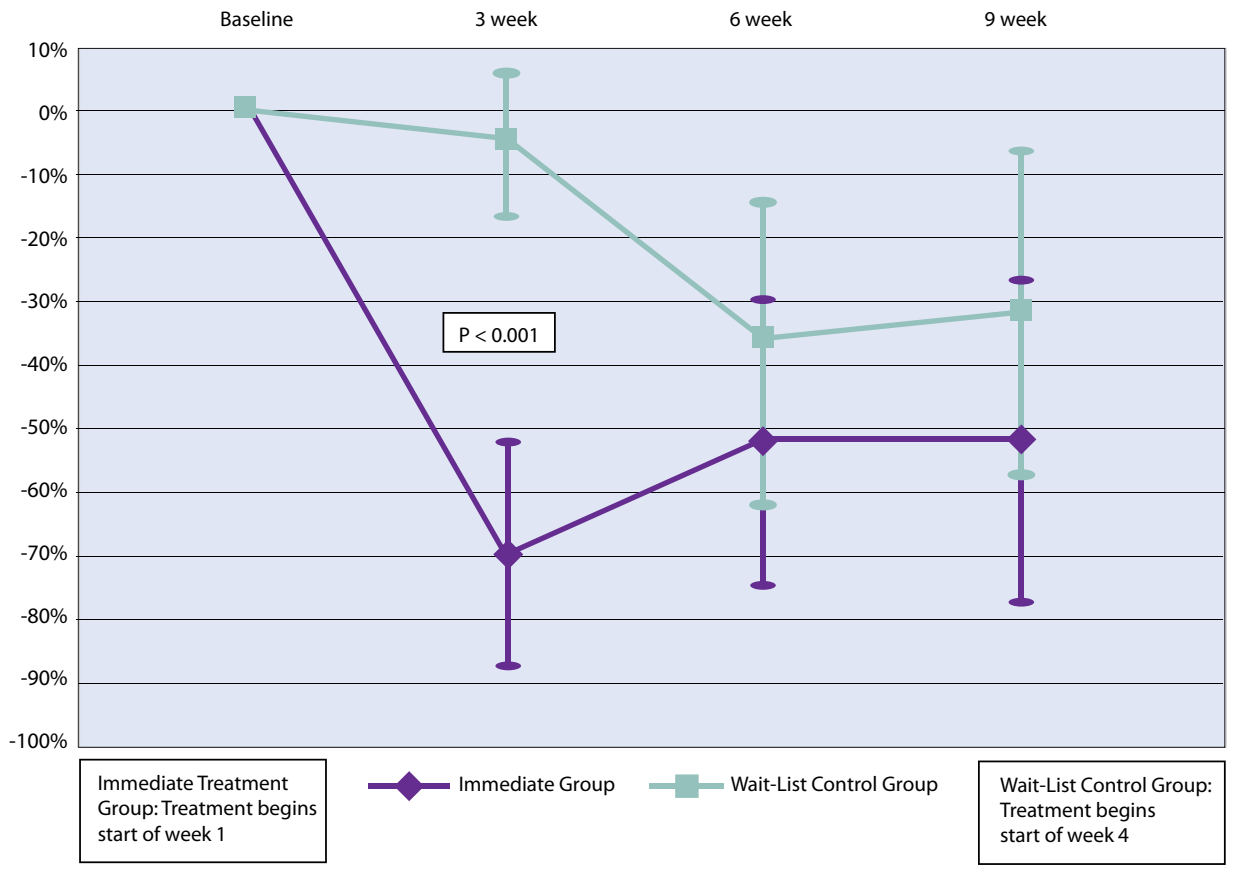
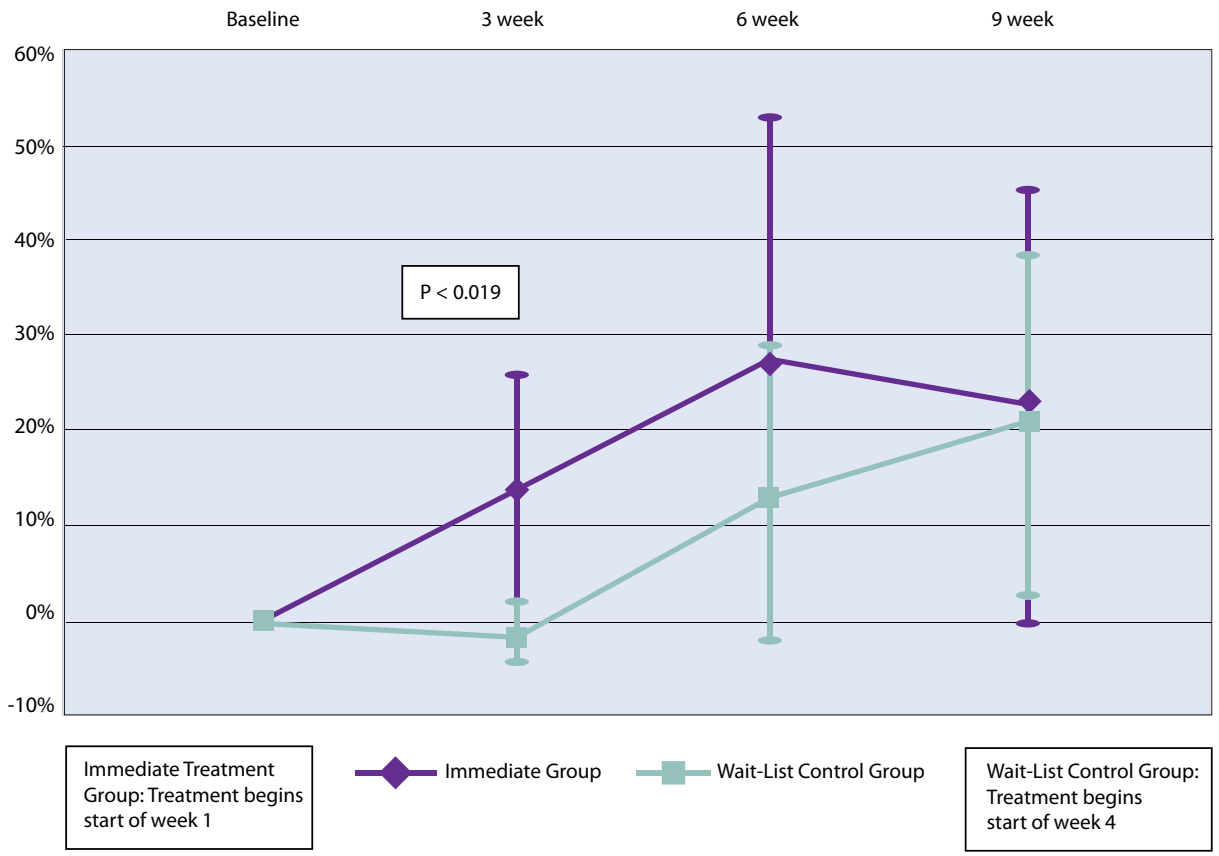


Figure 4. Percent Increase (i.e., improvement) from Baseline in SF-36 Physical Component Scores (with error bars [2 SD]) in the Immediate Treatment and Wait-List Control Groups at 3, 6, and 9 Weeks



wait-list control group. The mean decrease in pain in the immediate treatment group at three weeks was similar for both those with short (≤365 days) and long-term (>365 days) PHN (mean change -5.0 [SD=2.6]; n=21 [short duration]; and mean change -5.8 [SD=1.6]; n=9 [long duration]) and also for those who had been treated and not treated with antiviral medications at the onset of their HZ (mean change -5.9 [SD=2.2]; n=16 [treated with antiviral medications]; and mean change -4.4 [SD=2.2]; n=14 [not treated with antiviral medications]).

The changes from baseline to three, six, and nine weeks after randomization in primary and secondary outcomes appear in Figures 3-6. At three weeks of follow-up, the immediate treatment group had a significantly larger decrease in pain score than the wait-list control ($p < 0.001$) and a significantly larger improvement in the physical component of the SF-36 ($p=0.019$). There were trends towards greater improvement in the mental component of the SF-36 and in depression ($p=0.068$ and $p=0.191$, respectively).

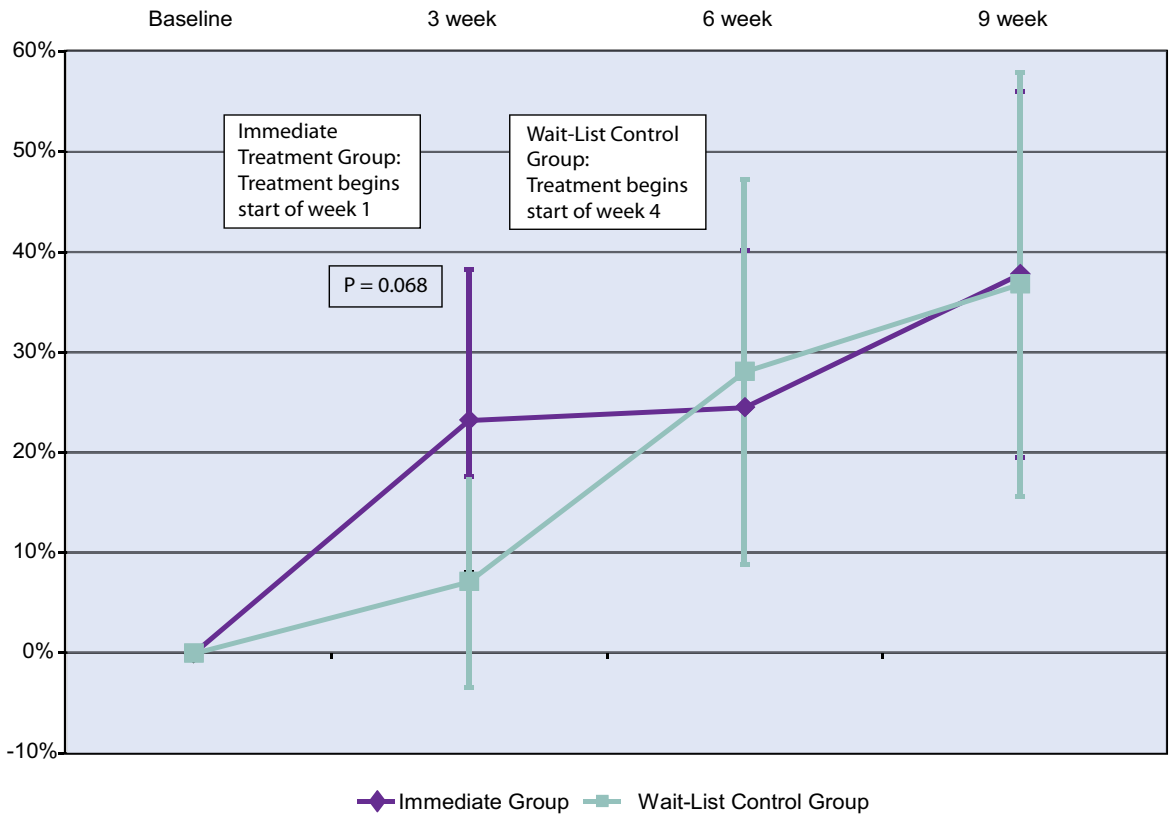
At six and nine weeks of follow-up, the immediate treatment group maintained the improvements seen in pain, physical and mental health, and depression (Table 2). Their mean pain scores increased (i.e., pain worsened) slightly over time, reaching 3.5 by the nine-week follow-up.

After initiation of the delayed treatment, mean pain scores in the wait-list control group fell from 7.2, prior to treatment, to 4.5 at six weeks, and 4.9 at nine weeks (i.e., 3 and 6 weeks following initiation of the CAM treatment protocol). At the nine-week post-treatment follow-up, the immediate treatment group had lower pain ratings than the subsequently treated wait-list control group (3.5 vs. 4.9, respectively, $p=0.047$).

By the nine-week follow-up, physical and mental health, and depression ratings were similar in the immediate treatment and wait-list control groups.

For the long-term follow-up, 33 of 59 participants responded to the mailed questionnaire, five could not be located, three had died, and the remaining 18 indicated that they were not

Figure 5. Percent Increase (i.e., improvement) from baseline in SF-36 Mental Component Scores (with error bars [2 SD]) in the Immediate Treatment and Wait-List Control Groups at 3, 6, and 9 Weeks



interested. Among respondents, 26 (78.8%) had continued relief of pain, including 11 (33.3%) who felt that their pain had continued to decrease after the treatment period, eight (24.2%) who felt they were the same as they were at the end of treatment, and seven (21.2%) who considered themselves completely cured. Five respondents (15.1%) felt they were worse than they had been after treatment.

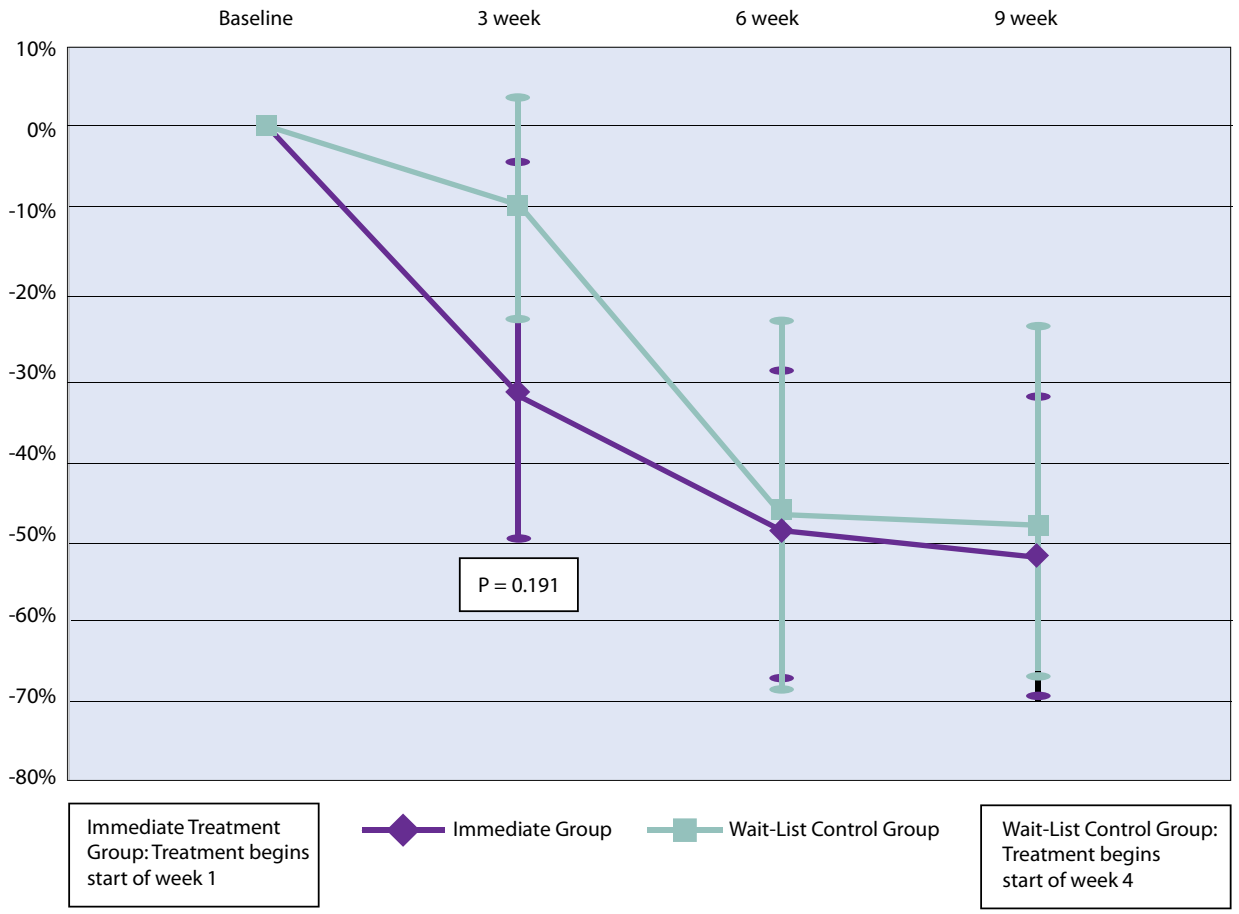
Given the therapies being used, and the fact that all subjects had hypersensitive skin at the involved dermatomes, some adverse events were expected. Pain was reported in 20.2 percent of all procaine injections given (142/702 treatments), with 18 individuals reporting this pain to be severe (≥ six on a seven-point Likert scale) at some point in time. There was also some pain reported from cupping and/or bleeding (137/706 treatments), with 14 individuals reporting this pain to be severe (≥ six on a seven-point Likert scale) at some point in time. There were few reports of prolonged bleeding (13/708 treatments) and no reports of severe bleeding associated with the therapies. One patient in the immediate treatment group died (cause: multiple myeloma) approximately two and a half weeks after completion of treatment. The multiple myeloma diagnosis was not known at the time of study recruitment.

Discussion

The multifaceted CAM protocol used in this trial was associated with a decrease in pain for at least nine weeks, even among those who had been experiencing moderately severe pain for over a year in duration. Along with the significant reduction in pain, there was significant improvement in physical health and a trend towards improved mental health and mood. Adverse effects were not severe and were relatively infrequent, usually involving only local discomfort associated with neural therapy injections and with the TCM cupping and bleeding therapy.

Current therapy for prolonged PHN has been of limited success[6-8,11] except for intrathecal therapy,

Figure 6. Percent Reduction (i.e., improvement in mood) from Baseline in Centers for Epidemiology Depression Scale (with error bars [2 SD]) in the Immediate Treatment and Wait-List Control Groups at 3, 6, and 9 Weeks



so the possible availability of an effective and relatively non-invasive treatment that has an effect within three weeks and appears to be free of lasting adverse effects could be a very useful treatment. Given the multiple components of treatment described in this study, it is not possible to attribute the pain reduction to a single intervention, and it is possible that a combination of therapies may have been required to produce the observed effect. Acupuncture alone for PHN has been associated with more modest effects.[25,26] The exact mechanisms through which acupuncture, neural therapy, cupping and bleeding, and TCM herbs work are not fully established. In future research, it would be important to determine which treatment components, or combinations, are responsible for producing the therapeutic effect and to attempt to elucidate the biological mechanisms involved.

The internal validity of the study was high, given the inclusion of randomized and comparable active treatment and control (delayed treatment) groups. Although improvement in symptoms has been reported from sham acupuncture (a procedure which varies widely in format where placebo needles are used or where the needles are only partially inserted, inserted away from the acupuncture point, or inserted in a non-indicated acupuncture point),[27,28] sham acupuncture was rejected for ethical reasons and because it was not compatible with the design of this trial. It was impossible to blind the subjects, given the nature of the treatment. However, none of the therapists providing the treatments were involved with collecting outcome data for the study.

As expected, there was dropout from both groups. The dropout rate was slightly larger in the wait-list control group. Dropouts were all included

in the analyses. Differential dropout numbers from the two groups does not explain the results of this trial, since even in the worst-case scenario, where it is assumed that all of the dropouts in the immediate treatment group had pain scores of 10 and those in the wait-list control group had pain scores of 1, the groups would remain significantly different at three weeks (mean=2.8 [SD=2.5] and mean=6.3 [SD=3.1], respectively). Subjects in the immediate treatment group, who did not come back to the clinic for the six and nine-week assessments, tended to be individuals who had low pain scores (mean=2.5 [SD=2.3]) at the three-week follow-up. This may have resulted in an underestimate in the mean change scores from baseline at six and nine weeks.

The applicability of the CAM treatment used in this trial to other patients in other settings remains to be determined. Although subjects in the trial, like most PHN patients, were elderly, had multiple co-morbidities, and had lower health-related quality of life than people their age in the general population, these results might be expected to occur in other subjects with PHN.

Although one investigator (FH) has successfully taught this treatment approach to other practitioners, large-scale training in this technique has not yet been attempted and its success in the hands of other practitioners remains to be established.

The contribution of each of the five treatments is not known. Clinical experience gained in the post-trial period leads us to hypothesize that cupping and bleeding might be the most essential treatment element. The small wound produced could stimulate the various stages of wound healing, both locally and at the herpes-affected dermatome. In subsequent studies cupping and bleeding could be used alone or paired with acupuncture or TCM herbs. The neural therapy, while used strictly as a local anesthetic and so not intended as part of the actual therapy, is a necessary part of the protocol to facilitate cupping and bleeding.

Conclusions

We conclude that this multifaceted CAM approach is effective in rapidly reducing pain and improving health-related quality of life for persons with moderately severe persistent pain from PHN. Further research is required to determine which elements of the treatment are most essential and to assess the broad applicability of these results across different practitioners and settings.

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