

RESEARCH ARTICLE

Acupuncture in the treatment of alcohol withdrawal symptoms: a randomized, placebo-controlled inpatient study

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Abstract

Thirty-four alcoholics were treated with acupuncture to the ear and the body in a randomized single-blind placebo-controlled design over 14 days. Orthodox points and placebo needles to orthodox points were used daily for a total of 10 treatments starting on the first day of admission as add-on therapy to standard medication with carbamazepine. The primary outcome was the Clinical Institute Withdrawal Assessment (CIWA-Ar-scale) assessed on days 1–6, 9 and 14. No initial differences were found regarding sociodemographic data, drinking history and alcohol-related data, indicating successful randomization. Longitudinal analysis of the Clinical Institute Withdrawal Assessment (CIWA-Ar-scale) data showed that patients assigned to acupuncture had a general tendency towards better outcome results and significantly fewer withdrawal symptoms on day 14 (Wilcoxon- $W = 177.500$, $Z = -2.009$, $p = 0.045$). No significant differences were found in the Beck Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI X1 and X2) and Eigenschaftswörterliste (EWL S60). We conclude that acupuncture as an adjunctive treatment to carbamazepine medication shows promise for the treatment of alcohol withdrawal symptoms. Further investigation of this treatment modality appears to be warranted.

Introduction

The World Health Organization lists a variety of medical conditions that may benefit from the use of acupuncture or moxibustion. Such applications include treatment of addictions to alcohol, tobacco and other drugs. According to contemporary research standards, there is a paucity of high-quality research assessing the efficacy of acupuncture in addiction treatment compared with placebo or sham acupuncture.¹ Although

Medline research revealed four randomized single-blind controlled studies investigating acupuncture treatment outcome of alcohol and cocaine abuse, respectively,^{2–5} none of them investigated the influence of acupuncture treatment on withdrawal symptoms. In addition, all but one³ of them used sham acupuncture (acupuncture to non-specific points) as control group and all the studies failed to show significant differences between treatment and control

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groups. Only one controlled clinical trial of acupuncture for severe recidivist alcoholism could be identified which showed significant treatment effects⁶ but only one of 40 control patients completed the programme compared to 21 of 40 patients in the treatment group. With sham acupuncture differences may not be identified due to the non-specific effects of needle acupuncture puncturing the skin. When the placebo treatment involves mock needling, it is virtually impossible to blind the acupuncturist. Blinding the patients is possible using the method of Streiberger & Kleinhenz,⁷ even when the patients are acupuncture-experienced. Therefore, from a methodological point of view, acupuncture with placebo needles seems to be more appropriate because it has the same credibility as real acupuncture⁸ without a strong stimulus as in sham acupuncture.

The aim of this study was to evaluate the efficacy of acupuncture in the treatment of alcohol withdrawal symptoms, taking particular care to circumvent the methodological difficulties that characterize this type of research.

Patients and methods

Patients

We included 34 alcoholics (mean age 43.3 years, SD = 9.0) admitted to the detoxification unit of the Medical School, Hannover. Inclusion criteria were alcohol addiction according to ICD-10 criteria, age over 18 years and informed consent. Exclusion criteria were severe hepatic or haematological complications, addiction to other drugs than alcohol, major psychiatric disorder, previously received acupuncture, anticoagulation and pregnancy. Subjects were assigned randomly to placebo or verum condition in a single-blind, placebo-controlled design. Both groups did not significantly differ with respect to sociodemographic data and drinking history and alcohol-related data. The patients gave written informed consent to participate in the study, as required by the local ethics committee.

Examination

Patients were required to give a rating on the Clinical Institute Withdrawal Assessment (CIWA-Ar-scale), Beck Depression Inventory (BDI), Eigenschaftswörterliste (EWL 60S) and State-Trait Anxiety Inventory (STAI) on days

1–6, on day 9 and on day 14, which was the discharge day.

The CIWA-Ar-scale is a 10-item scale for clinical quantification of the severity of alcohol withdrawal.⁹ The maximum possible score is 67 points. The BDI¹⁰ is an instrument to identify depression and to quantify the degree of depression (21-item version). Mood was assessed by an extensive adjective checklist (Eigenschaftswörterliste EWL 60S). This self-report inventory is a short form of the Adjective Check List (EWL) by Janke & Debus¹¹ using 60 items. It has been used repeatedly in clinical surveys.¹² Each item is described by an adjective giving a description of the mood. The items of the EWL 60S can be summarized to the following mood scales: general well-being, anxiety/depression, performance-oriented activation, general deactivation, extraversion/intraversion, excitation/anger. EWL 60S has been validated for its capacity to correspond with the assessment by different investigators, and to yield high internal consistency.¹³ Similar dimensions of pleasantness–unpleasantness are described by Larsen *et al.*¹⁴

The STAI¹⁵ was selected to measure the current state of the individual in terms of the level of transitory anxiety at the time the questionnaire was completed (STAI X1) and to measure the general level of background anxiety with which an individual operates in normal life (STAI X2).

Treatment

Placebo needle. The tip of the needle is blunt in order to cause a pricking sensation without actually puncturing the skin.⁷ The needle was inserted through a cube-shaped elastic foam to obscure the patients' vision on the insertion point.⁸

Verum needle. Seirin B-type needles no. 8 (0.3 × 0.3 mm) and no. 3 (0.2 × 0.15 mm) were used for verum acupuncture.

Protocols

The patients underwent one treatment per day for a total of 10 treatments starting at the first day of admission as add-on therapy to standard medication with carbamazepine. Verum needles were inserted bilaterally at auricular acupoints Sympathetic, Shenmen, Kidney, Liver and Lung. In addition, we used bilaterally GV20 (middle of

the skullpan), Extra1 (middle between the eyebrows) and LI4 (first dorsal interosseus muscle of the upper limbs). Placebo needles were apparently inserted at auricular point Shenmen, Extra 1 and LI4. The needles were left in place for 30 minutes after insertion. The exact localization of those acupoints is described in Cheng.¹⁶

Both the investigator performing follow-up examinations and statistical procedures and the patients were blind to treatment condition (placebo vs. verum), blinding the acupuncture practitioner was impossible due to methodological reasons. All patients received carbamazepine as pharmacological treatment to reduce withdrawal symptoms, starting with 400mg as a liquid and continued on 3 × 200mg/day. After 6 days of carbamazepine treatment the dosage was reduced (every day 200mg). No other medication was given, especially no benzodiazepines or opioids. The psychotropic and anticonvulsant effects of carbamazepine has led to its use in withdrawal syndromes. It is as effective and safe as benzodiazepine¹⁷ and more effective than placebo¹⁸ in relieving alcohol withdrawal symptoms. In addition, carbamazepine lacks abuse potential and has minimal interactions with alcohol.¹⁹ However, due to its toxicity carbamazepine has limited usefulness in alcoholics with severe hepatic or

haematological complications which were disclosed in this study.

Statistical analysis

The required sample size to achieve 80% power for the expected differences between mean values was calculated as 17 per group. Because of the high variance within groups non-parametric methods were employed. Differences between groups were estimated using the Wilcoxon test, differences between examinations with the Mann-Whitney *U*-test. In addition, we computed one-way ANOVA. Differences were considered significant with $p < 0.05$.

Results

Prior to treatment, placebo and verum groups did not differ significantly in terms of CIWA-Ar-scale, BDI, EWL 60S and STAI X1 and X2, sociodemographic data, drinking history and alcohol-related data (Table 1).

The one-way ANOVA did not show any significant difference between the two groups with regard to all outcome parameters. However, the main outcome parameter CIWA-Ar-scale showed a strong tendency towards superiority of the

Table 1. Sociodemographic data, drinking history, alcohol-related data, CIWA-Ar-scale, BDI, STAI X1, STAI X2, EWL60S prior to treatment. Differences were not significant ($p > 0.05$). Standard deviation is indicated in parentheses

| | Verum | Placebo |
|--|-------------|-------------|
| Age (years) | 46.2 (8.1) | 40.5 (9.2) |
| Sex (m/f) | 15/2 | 15/2 |
| Alcohol consumption (g/day) | 279 (125) | 311 (115) |
| Alcohol consumption (years) | 11.9 (6.4) | 12.1 (6.5) |
| γ -GT (U/l) | 104 (80) | 197 (225) |
| GPT (U/l) | 57.9 (60.0) | 27.4 (26.5) |
| GOT (U/l) | 54.5 (48.8) | 45.9 (61.6) |
| GLDH (U/l) | 23.9 (19.9) | 12.3 (19.0) |
| MCV (fl) | 97.5 (4.2) | 98.2 (6.0) |
| MCH (pg) | 33.3 (1.6) | 33.2 (2.2) |
| CIWA-Ar-scale (day 1) | 10.9 (8.3) | 16.2 (11.8) |
| BDI (day 1) | 14.6 (8.7) | 20.5 (8.6) |
| STAI X1 (day 1) | 50.1 (11.4) | 50.2 (15.1) |
| STAI X2 (day 2) | 47.0 (10.2) | 51.9 (9.8) |
| EWL 60S: general well being (day 1) | 15.8 (4.5) | 16.1 (4.5) |
| EWL 60S: anxiety/depression (day 1) | 15.7 (4.9) | 17.4 (5.8) |
| EWL 60S: performance-orientated activation (day 1) | 18.2 (4.6) | 17.6 (4.5) |
| EWL 60S: general deactivation (day 1) | 23.4 (6.8) | 26.9 (8.5) |
| EWL 60S: excitation/anger (day 1) | 22.2 (6.4) | 25.5 (8.5) |
| EWL 60S: extraversion/intraversion (day 1) | 21.5 (4.8) | 21.7 (4.6) |

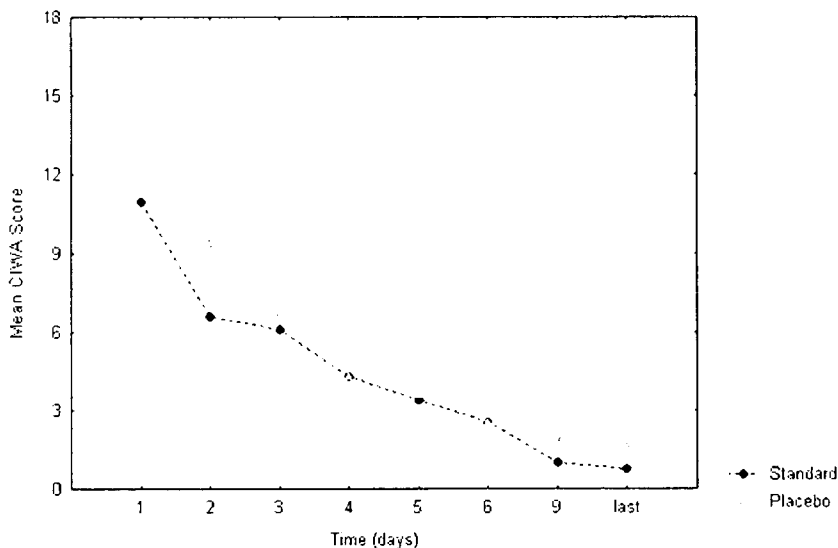


Figure 1. Mean CIWA-Ar-scale score (range 0–67) on days 1–6, day 9 and last day, usually day 14. Verum treatment (standard) is indicated in triangles, placebo treatment (placebo) in filled circles. In the Wilcoxon test on the last day significantly less signs of alcohol withdrawal showed in the verum group (Wilcoxon- $W = 177.500$, $Z = -2.009$, $p = 0.045$). No other significant differences were found.

verum treatment ($F = 3.288$, $df = 1$, $p = 0.081$). Especially on day 14 there were significant less signs of alcohol withdrawal in the verum group (Wilcoxon- $W = 177.500$, $Z = -2.009$, $p = 0.045$) (Fig. 1). BDI ($F = 2.132$, $df = 1$, $p = 0.157$), STAI X1 ($F = 0.167$, $df = 1$, $p = 0.686$) and STAI X2 ($F = 0.379$, $df = 1$, $p = 0.544$) showed a weaker tendency towards better performance of the verum group. A much weaker tendency towards better outcome of the verum group showed the EWL 60S. However, there was no significant difference between both groups.

Discussion

Most studies in the literature on the use of acupuncture to assist abstinence from alcohol are open and uncontrolled. In addition, none of them looked specifically into potentially life-threatening withdrawal symptoms. Indeed, with carbamazepine and other drugs withdrawal symptoms may remain under control, but may be associated with side-effects including dry mouth, dizziness, drowsiness, diarrhoea, nausea, etc. which could restrict motivation continuing the detoxification programme. Due to the study by Salim²⁰ we assume that carbamazepine and

acupuncture works synergistically but not with reduction of the effect size, as shown with benzodiazepines.^{21,22} Therefore benzodiazepines and other drugs with potentially reducing or potentiating effects—such as opioids—were systematically avoided. The controlled trial of acupuncture for severe recidivist alcoholism of Bullcock *et al.*⁶ found significant treatment effects even at the end of 6 months. However, as a *Lancet* editorial²³ pointed out, the controls may have been more severely affected cases because significantly more patients in the placebo group had been admitted to detoxification centres during the 2 years before entry into the study. A recently published study² found no difference in the number of drinking days or level of craving between treatment and control patients. As in the other studies control acupuncture consisted in the needling of incorrect points which do not preclude non-specific acupuncture effects. Wörner *et al.*³ virtually used mock TENS, which may seem not as plausible to the patients as treatment with needles. Therefore, acupuncture with placebo needles seems to be more appropriate because it has the same credibility as real acupuncture⁷ without a strong stimulus, as in sham acupuncture.

Findings from the current study suggest that acupuncture as adjunctive treatment to carbamazepine medication supports the treatment of alcohol withdrawal symptoms. The potentially underlying mechanisms are the modulation of hormonal factors²⁴ and the autonomic nervous system²⁵ by acupuncture. However, the effects were less pronounced than expected, which may be addressed on one hand to the not totally inactive placebo and on the other hand to the onset of a delayed response to acupuncture. Therefore, further investigations should include three conditions: verum, placebo and sole medication. In addition, placebo needles should "be inserted" into non-acupuncture points. Treatment frequency may be doubled to twice a day.

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