

# Auricular acupuncture in prison psychiatric units: a pilot study

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**Objective:** The study explores whether auricular acupuncture can be a viable treatment form for inmates in prison psychiatric units.

**Method:** Inmates in a prison psychiatric unit and in a support unit for violent behavior were offered group treatment with auricular acupuncture three times a week over a period of 9 months. Another prison psychiatric unit served as a control group.

**Results:** Twenty-two inmates received treatment, and 11 inmates received treatment for over 8 weeks. Cortisol levels were higher for inmates in the support unit than for the other two groups. Inmates treated at least 25 times were prescribed fewer psycholeptic drugs than controls. Perceived autonomy increased for treated inmates in the psychiatric unit. Inmates treated for over 8 weeks experienced improved inner harmony and calm and better clarity over future plans.

**Conclusion:** Acupuncture is a non-verbal form of treatment appropriate for prison psychiatric units. The treatment facilitates contact and complements other psycho-social treatment forms.

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## Introduction

The treatment of mentally ill offenders presents a challenge to the criminal justice system and to mental health providers (1). Careful needs assessment is a prerequisite for providing adequate treatment and for ensuring public safety (2). One path for more effectively meeting the needs of mentally ill offenders who are released from prison is case management (3, 4). How to meet such offenders' needs while they are still in prison is unclear in view of the limited resources for combining mental health treatment with involvement in the criminal justice system. Another complicating factor in allocating treatment resources is that mentally ill prison inmates appear to possess clearly different clinical characteristics from psychiatric patients and to show more comorbidity (5). A treatment modality that has shown promise for the treatment of psychiatric inpatients is auricular acupuncture. Auricular acupuncture has been widely used for the treatment of substance abuse since the 1970s (6) and research shows that it may be effective in reducing drug use (7) and in increasing treatment

compliance (8). The purpose of the present study is to explore whether auricular acupuncture could be beneficial for inmates in prison psychiatric units. In view of the particular challenges involved in managing violence in inpatient psychiatric settings, the present study also explores the use of auricular acupuncture for violence-prone inmates in a special prison psychiatric unit.

The major focus of the study was whether or not inmates would show an interest in treatment and whether it would be possible to treat them in groups. Several outcome measures were also selected. In addition to the actual number of treatments received by each participant, cortisol levels, medication levels and perception of psychosocial climate were measured. Participants receiving treatment for longer than 8 weeks also filled in a qualitative evaluation form. It was hypothesized that cortisol levels would be reduced after treatment with auricular acupuncture, and that levels would be lower for the treatment group than for a control group not receiving treatment with auricular acupuncture. It was further hypothesized that medication levels for psychoactive drugs would be reduced following treatment with auricular

acupuncture. The perception of the psychosocial climate in the unit was expected to change in some way following treatment. No hypothesis was conceived for the qualitative measurement of treatment effects for the study participants.

### Material and methods

#### Participants

The study was approved by the regional scientific ethical committees at Karolinska Institutet and Umeå University. Treatment was offered to inmates at the Härnösand prison psychiatric unit in the northern Swedish city of Härnösand, and at a special 'support' unit for particularly violence-prone inmates at the Huddinge Remand Prison outside of Stockholm. Inmates at the Kumla prison psychiatric unit in central Sweden served as a control group. All three units housed up to eight male inmates in a high-security setting, with inmates primarily serving long-term sentences of at least 12 months. The inmates could be placed in the units during the whole sentence or for briefer time periods of between several days and several months. Treatment was offered between September 1997 and June 1998 at the Härnösand psychiatric unit and between November 1997 and June 1998 at the support unit. Between December 1997 and June 1998 inmates at the Härnösand unit were also offered herb tea made with a combination of natural herbs intended to soothe abstinence symptoms during rehabilitation from substance abuse. Following a misunderstanding, four inmates at the Härnösand unit were offered back massages on a limited number of occasions as part of the study during the fall of 1997. Inmates at the support unit were only treated with auricular acupuncture.

Study participants were recruited through informal presentation and information brochures handed out by the acupuncturists offering the treatment, who were both prison nurses employed in the unit for the duration of the study. The acupuncturist in the Härnösand psychiatric unit worked only as an acupuncturist whereas the acupuncturist in the Huddinge special unit was also employed part-time as a nurse in the unit.

#### Procedure

Counter-indications for treatment were local inflammation of the ear, prepsychotic or psychotic states as indicated by observations of medical personnel at the prison. Each inmate was informed that he could choose to abandon treatment at any

time with no obligation to explain why. Treatment was offered three times a week at each unit. Each treatment session lasted approximately 40 min with participants reclining on comfortable sofas in the unit recreation room. All participants were treated according to the NADA-Acudetox protocol (6) with five ear points at Sympathetic, Shen Men, Kidney, Liver and Lung. Acupuncture treatments were given bilaterally with stainless steel needles (0.22 × 0.13 mm) manufactured by the Suzhou medical appliance factory in China. Needles were inserted according to standard procedure just under the skin at the five ear points. A choice of music tapes was available to both groups, with a range including Enya, baroque classical music and nature sounds.

Before beginning treatment each participant gave a saliva sample for measurement of cortisol (Salivette®, Sarstedt). All samples were taken at approximately 12.45 p.m. in order to eliminate differences due to natural variations in the level of cortisol in the body over a period of 24 h. Participants continuing in the study gave additional saliva samples every 6 weeks and at termination of the treatment. Saliva samples are available from January 1998 and onwards because the original study design provided for urine tests of epinephrine and norepinephrine. The urine tests were discontinued after the first attempt during the fall of 1997, because the participants associated the tests with possible negative sanctions in case of detection of drug use. This occurred in spite of explicit information given that urine samples were not analyzed for drug use. Study participants also anonymously answered the Correctional Institutions Environment Scale (CIES) in Swedish (9) at the beginning of the study and every 3 months until treatment was terminated. Drug prescription levels were collated from medical journals for each participant in both treatment and control groups. Staff at the two treatment units and at the control unit filled in the CIES at the beginning of the study and every 3 months. Participants receiving treatment for over 8 weeks filled in a qualitative assessment form developed by the first author for evaluation of long-term treatment with auricular acupuncture (10).

Following completion of the study, the first author carried out semistructured interviews with staff at both treatment units. The psychiatric consultants at both units were also interviewed as to their impressions of the auricular acupuncture treatment. In addition, unstructured interviews with inmates at the Härnösand unit were carried out following termination of the project.

## Results

All statistical analyses were performed using SPSS.

### Number of treatments

No registered participants were excluded from the study based on the criteria for counter-indications. The participants numbered 22 in total, 10 at the support unit and 12 at the psychiatric unit. A total of 466 treatments were given during the study period, 161 at the support unit and 305 at the psychiatric unit. Half of the participants received treatment during a shorter period of less than 4 weeks for between one and 11 treatment sessions. The other half received treatment for a longer period of at least 8 weeks, participating in between 18 and 44 treatment sessions during a period of up to 23 weeks at the support unit, and in between 18 and 83 treatment sessions during a period of between 11 and 32 weeks at the psychiatric unit. The mean number of treatments per week at the support unit was 1.5 sessions/week for the shorter period and 2.0 sessions/week for the longer period, and at the psychiatric unit the mean number of treatments per week was 2.2 for both time periods. No treatments were offered at the control unit, although control unit inmates were offered the opportunity of experiencing one trial ear acupuncture treatment following the first measurement. Three of four inmates accepted the offer. No trial treatment was offered at the second cortisol measurement.

### Cortisol

Cortisol measurements were carried out from January of 1998. Cortisol was measured on four occasions at the treatment units, with  $n = 5, 3, 3,$  and  $2,$  respectively, at the support unit and  $n = 10, 5, 3,$  and  $2,$  respectively, at the psychiatric unit. Cortisol was measured on two occasions at the control unit with  $n = 4$  and  $5$  for the two occasions. An analysis of variance showed a tendency towards a significant difference at the first measurement, with a higher general cortisol level among the participants at the support unit ( $P < 0.10$ ). When measurements from the first and second occasions were combined, the analysis of variance showed that cortisol levels were significantly higher [ $F(1, 29) = 3.25, P < 0.05$ ] at the support unit ( $M = 9.88, SD = 6.28, n = 8$ ), compared with both the psychiatric unit ( $M = 5.59, SD = 2.17, n = 15$ ) and the control unit ( $M = 7.17, SD = 3.30, n = 9$ ). Analysis of variance within groups over time showed no significant differences.

Further analysis involved graphing patterns over time for each participant who received at least 25 treatments and for the control group. This exercise showed continual reductions in cortisol levels for two of three participants from the support unit and a zigzag pattern for the third participant (from 8.5 pic/ml at the first measurement to 24.6 pic/ml, 5.7 pic/ml and 15.9 pic/ml at the other three measurements). The acupuncturist at the support reported that this participant arrived at the support unit following treatment for psychosis at a forensic psychiatry unit. The saliva test was carried out on his first day at the support unit. At the second measurement this participant, the only inmate with a Swedish upbringing among inmates from countries outside Europe, expressed feeling stress over being an outsider in the unit. At the third measurement the climate in the unit was calm whereas at the fourth measurement the climate was unsettled due to the decision to close the unit and place the remaining inmates elsewhere at an institution that had not yet been selected.

For participants at the psychiatric unit the pattern showed reduced cortisol levels for two participants at the second measurement and a slight increase at the third measurement. The third participant showed increased cortisol levels at the third and fourth measurements. This participant reduced his medication considerably during the 10 weeks of treatment, indicating during this time that he felt 'much worse'. Following the 10-week period he increased his medication level back to the original dosages. The two inmates at the control unit for whom measurements were available on two occasions showed conflicting patterns, with a lower cortisol level at the second measurement for one and a higher cortisol level for the other inmate.

### Drug prescription levels

The sample was divided as follows for analysis and comparison of drug prescription levels. A treatment group was created consisting of a total of seven participants from both treatment units who received at least 25 auricular acupuncture treatments. A control group was created consisting of eight inmates, four from the control unit and four from the psychiatric unit, who did not receive any acupuncture treatments. Prescription levels were determined based on manually recorded drugs and dosages as prescribed by the attending psychiatrist at each unit between late summer 1997 and June 1998. Due to occasional interval prescription of dosages it was not possible to calculate exact daily dosages for each individual. Instead, the number of

times a drug occurred on the list for each individual was tabulated for the period when data were collected. Drugs were classified according to the internationally used ATC system. The most commonly prescribed drugs in the Swedish Prison and Probation Service in 1997 were alimentary (A), general anti-infectives (J), nervous system (N) and respiratory system (R). Prescriptions of these drugs are higher for prison inmates compared with the general population for the N, R and J groups (30.9%, 12.7% and 10.8%, respectively, compared with 16.4%, 9.7% and 6.8%) (11). The following procedure was undertaken for the analysis. Each drug list contained up to 13 columns that were entered into an SPSS data file. The number of times a particular drug occurred was tabulated and sorted into the correct ATC category for each individual. In addition to the A, J, N and R categories, cardiovascular system drugs (C), dermatological (D) and musculo-skeletal system (M) drugs were recorded. Because of the more frequent prescription of drugs in the N group, these were divided into subcategories. Table 1 shows the mean frequency of prescription for each drug in the treatment and control groups, and the *F* values and levels of significance from an analysis of variance comparing the control and treatment groups.

Most of the differences in mean number of prescribed drugs were not significant. However, when subcategories N05A-C (antipsychotics, anxiolytics and hypnotics and sedatives) were combined into

the higher subcategory N05 (psycholeptics), the treatment group proved to have significantly fewer prescribed drugs in this category compared with the control group [ $F(1,13) = 5.50, P = 0.043$ ]. In addition, when all drugs for which the treatment group mean was lower than the control group mean were combined into one variable (categories N02B,C; N03A; N04; N05; A and M), the treatment group was also found to have a significantly lesser number of these drugs prescribed [ $F(1,13) = 5.64, P = 0.034$ ]. A tendency ( $P < 0.10$ ) was found for fewer drugs to be prescribed for the control group in comparison with the treatment group for general anti-infectives for systemic use (category J) and for a combination of all drug categories besides the N category (A, C, D, J and M) [ $F(1,13) = 3.33, P = 0.091$ ;  $F(1,13) = 3.89; P = 0.07$ ]. Additional analyses to identify possible differences in drug prescription within the treatment group – i.e. between the support and psychiatric units – showed only tendencies towards lower prescription of hypnotics and sedatives (N05C,  $P = 0.075$ ) and groups other than the N group (A, C, D, J and M,  $P = 0.056$ ) for the support unit.

Psychosocial climate

The CIES form was collected on four occasions throughout the study period at the Härnösand psychiatric unit for both inmates and staff, on three occasions for inmates during the spring of 1998

Table 1. Comparison of drugs prescribed for treatment (over 25 acupuncture treatments) and control groups during the study period

Prescribed drugs	Mean		SD		ANOVA	
	Control (n = 8)	Treatment (n = 7)	Control (n = 8)	Treatment (n = 7)	F	Sign.
Opioids (N02A)	2.00	2.00	2.619	3.055	0.000	1.000
Other analgesics and antipyretics (N02B)	0.25	0.00	0.707	0.000	0.867	0.369
Antimigraine preparations (N02C)	0.25	0.00	0.707	0.000	0.867	0.369
Analgesics (N02)	2.50	2.00	2.777	3.055	0.110	0.745
Antiepileptics (N03A)	0.75	0.29	1.035	0.756	0.957	0.346
Anti-Parkinson drugs (N04)	0.75	0.29	1.488	0.756	0.553	0.470
Antipsychotics (N05A)	5.00	1.43	7.709	2.225	1.389	0.260
Anxiolytics (N05B)	2.50	0.86	3.505	1.069	1.411	0.256
Hypnotics and sedatives (N05C)	5.00	2.29	3.703	2.138	2.897	0.113
Psycholeptics (N05)	12.50	4.57	8.928	2.760	5.054	0.043*
Antidepressants (N06A)	4.00	6.00	3.207	10.328	0.273	0.610
Alimentary tract and metabolism (A)	1.00	0.57	1.512	1.512	0.300	0.593
Cardiovascular system (C)	0.25	2.57	0.707	3.780	2.932	0.111
Dermatologicals (D)	0.25	0.57	0.707	0.976	0.544	0.474
General anti-infectives for systemic use (J)	0.00	1.43	0.000	2.225	3.333	0.091**
Musculo-skeletal system (M)	1.00	0.86	1.512	1.069	0.043	0.838
Respiratory system (R)	2.00	3.14	1.512	3.625	0.668	0.428
Nervous system (N – total)	20.50	12.86	13.342	13.459	1.215	0.290
Other groups (A, C, D, J, M)	4.50	9.14	3.338	5.640	3.891	0.070**
Treatment less than control combined (N02B,C; N03A; N04; N05; A; M)	16.50	6.29	10.461	4.680	5.642	0.034*
Control less than treatment combined (N06A, C, D, J, R)	6.50	13.71	2.777	12.724	2.463	0.141

\*  $P < 0.05$ ; \*\*  $P < 0.10$ ,  $df = 1$  for all comparisons.

and once in January 1998 for staff at the Huddinge support unit, and on one occasion in February 1998 for both inmates and staff at the control unit. A significant difference between inmates in the different units occurred on the Autonomy scale [ $F(2,26) = 5.13$ ;  $P = 0.013$ ] and between staff on the same scale [ $F(2,26) = 3.96$ ;  $P = 0.032$ ]. Inmates at the control unit perceived autonomy as highest compared with the Härnösand psychiatric unit, followed by the support unit. Staff at the Härnösand psychiatric unit perceived autonomy as highest, compared with the support unit and the control unit in that order. Analysis over time for inmates at the Härnösand psychiatric unit showed a tendency to increased perception of autonomy [ $F(3,15) = 2.57$ ;  $P = 0.053$ ]. No other significant differences occurred between staff, between inmates or over time. Significant differences did, however, occur between staff and inmates at each unit. Staff at the psychiatric and support units perceived the psychosocial climate as better than inmates on all CIES scales except for the control scale at Härnösand and the focus on personal problems scale at the support unit. At the control unit no significant differences occurred between staff and inmates except on the support scale, which staff perceived as considerably better than inmates [ $F(1,8) = 14.77$ ,  $P < 0.01$ ].

#### Qualitative evaluation

Four evaluation forms were collected, two from each treatment unit. Participants stated that they continued receiving treatment because 'one feels relaxed afterwards', 'one becomes more calm and harmonious after each treatment', 'it reduces anxiety, is calming' and 'it calms me down'. All participants experienced improved inner harmony/calm and improved clarity over future plans. Three out of four participants experienced improvement in their powers of concentration, sleep quality, amount of prescribed drugs, smoking habits and relations with significant others. One or two participants expressed improvement in their experienced physical pains and relations in the community.

#### Interviews

Five semistructured interviews were carried out with staff at the Härnösand psychiatric unit. Staff were not sure whether the acupuncture had had any effect but they expressed their certainty that the inmates had appreciated the activity. They speculated that this might be due to the acupuncturist being a woman, that she was a nurse and that she was not part of the regular prison staff. None of

the staff interviewed perceived any aspect of the treatment as negative and they all thought it should continue. The unit psychiatrist was interviewed by telephone. She had not observed any special change during the study in the inmates' behavior, the drug prescription level or in the psychosocial climate. She described a significant change in staff involvement in psychiatric practice at the unit following staff training in psychiatry: staff now participated in the psychiatrist's rounds and showed a much greater interest in the inmates. The nurse giving acupuncture treatment at the support unit indicated in an unstructured interview that the study had been very successful with inmates who had a high level of acting-out. As an example, she described one participant who threatened staff, injured himself and sprayed blood on others and generally was easily irritated. This inmate never showed any threatening behavior at the acupuncture treatments. When he was transferred to a new environment after 44 treatments his entry went smoothly, contrary to all expectations. The acupuncturist found the method to be effective for making contact with a group of inmates, who often became talkative following treatment. She noted that inmates would comment that the treatment was painful but that they must tolerate the pain in order to experience the effects. The psychiatrist and nurse from an adjoining forensic psychiatry unit – who attended the inmates at the support unit before the nurse/acupuncturist was employed – did not note any change in the inmates following the acupuncture, but they did express surprise over the fact that the inmates had been willing to participate in group treatment.

#### Discussion

This study was a small pilot exploration of the possibility of treating prison inmates in psychiatric units with ear acupuncture. The results show that several of the inmates experienced positive effects from the treatment and wanted to continue receiving it over a period of at least several weeks. Outcomes on cortisol levels, drug prescription levels and the psychosocial climate may be summarized as inconclusive, primarily owing to the small number of participants in the study and perhaps also their heterogeneity. The lower consumption of psycholeptic drugs by the treatment group should be investigated further in future, larger-scale studies of acupuncture for this group of individuals. The tendency toward change in perceived autonomy over time for treated inmates at the psychiatric unit invites further investigation of whether acupuncture affects self-experienced

autonomy. Qualitative results also point to the participants' experience of receiving something of value through the treatment. There is a total absence of studies on long-term treatment with auricular acupuncture. Studies on complementary medicine are notoriously challenging to design and carry out (12). Still, the present study indicates that ear acupuncture can be a viable treatment form for prison inmates in psychiatric units, even those with particularly aggressive behavior. Exactly which mechanisms are at work, and what the effects are on physical and emotional levels, is a fascinating area to explore in future cross-sectional and long-term studies of this difficult to treat group.

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