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Effects of Acupressure on Pain and Vital Signs of Patients Following Small Abdominal Surgeries: A Clinical Trial

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ABSTRACT

Background: Several studies have investigated the effect of acupressure on pain and vital signs however the results are inconsistent. Either no study has been conducted on the effect of acupressure on vital signs of post-surgical patients, or it is not available.
Objectives: The present study was conducted to assess the effects of P6 acupressure on pain and vital signs of patients following small abdominal surgeries.
Patients and Methods: A double-blind randomized controlled trial has been conducted during the first three months in 2012 on patients after small abdominal surgeries in Al-Zahra hospital of Isfahan. Patients who were candidates for small abdominal surgeries and met the inclusion criteria were entered the study and were randomly allocated to the intervention and placebo groups (40 patients in each group). In the intervention group, acupressure was applied to P6 acupoint on both hands. An acuband without a push button was also placed around the patients' wrist in the placebo (control) group. Acubands were worn for seven hours. Pain and vital signs were assessed prior starting acupressure and once every hour in the first seven hours after regaining consciousness. Data analysis has been conducted with SPSS version 11.5. T test was applied to compare the severity of pain and the mean of vital signs in the two groups.
Results: The mean score of pain severity was higher in P6 group at the first and fourth hours following surgery but this score was lower in this group at other times. However, the differences between the mean of pain severity of the two groups were not statistically significant. In total, no significant differences were observed between the vital signs parameters in the two groups at seven hours.
Conclusions: This study showed that P6 acupressure had no statistically significant effect on post-operative pain, and vital signs of patients who underwent small abdominal surgeries. Further investigations with larger sampling are suggested.
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▸ *Implication for health policy/practice/research/medical education:*
More research is needed to confirm the effects of acupressure on pain and vital signs Following small abdominal surgeries. Nurse researchers have the responsibility to organize more investigation in this area.

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1. Background

Most of the patients describe post-operative pain as the most terrible aspect of a surgery (1). It has been reported that from the patients who underwent surgeries, 60% experience mild to moderate pain and 40% experience severe post-operative pain (2). Vital signs are also affected by surgery and the anesthesia procedure (3) Opioids and non-steroidal anti-inflammatory drugs are the most common treatment for post-operative pain but using them is associated with complications such as respiratory depression and gastrointestinal problems (4). Using an alternative medicine instead of drug therapy may prevent or decrease such complications. Several studies have examined the effect of acupressure on pain following different surgeries. Lee et al. have examined the effect of SP6 acupressure on labor pain and reported that the method was effective on pain reduction (5). Stux and Hammerschlag have also reported that acupressure on P6 acupoint is effective on pain reduction following abdominal surgery (6). However, Sakurai et al. have reported that pressure on P6 acupoint was not effective on pain reduction after abdominal surgery (4). Several studies have also investigated the impact of acupressure on vital signs. However, either no study was conducted on the effects of acupressure on the vital signs of post-surgical patients, or it is not available. Bassampour et al. have used acupressure in patients prior to abdominal surgery. They did not find a significant difference in pulse rate, respiratory rate, systolic and diastolic blood pressures in the intervention group (7). Also, Zhang et al. showed that stimulation of acupuncture points in people with high blood pressure could decrease the systolic pressure but did not affect diastolic pressure (8). In a study on auricular acupressure in pre-hospital transport settings, no effect has observed on the patients pulse rate and blood pressure (9). However, in a study on elderly patients with hip fractures, auricular acupressure has significantly decreased the patients' heart rate but did not affect blood pressure (10).

2. Objectives

Due to the differences in the results of previous studies, the present study was conducted to assess the effects of P6 acupressure on pain and vital signs of patients after small abdominal surgeries.

3. Patients and Methods

A double-blind randomized controlled trial was conducted during the first three months in 2012 on patients who underwent small abdominal surgeries in Al-Zahra hospital of Isfahan, Iran. One of the researchers (ME) passed a course on acupressure and using the acubands prior starting the present study. Patients who were candidates had small abdominal surgeries and agreed to participate in the study were consecutively entered into the study and randomly allocated to the intervention and placebo groups. In this manner, 40 patients were allocated in each group. Inclusion criteria were: surgical incisions less than 10 centimeters, having no problems or lesions in the regions of the P6 acupoints, age between 18 to 70 years old, no addiction or drug dependency, no previous history of acupressure, no known neurological or psychiatric disease, and receiving general anesthesia (all patients were anesthetized with the same protocol). Exclusion criteria were: unexpected complications during surgery and anesthesia, length of a surgical incision 10 centimeters and over, and receiving drugs outside routine anesthesia protocol. P6 acupoint is located on the anterior surface of forearm, 2 inches proximal to the distal wrist crease between tendons of flexor carpi radialis and palmaris longous. Acupressure was applied with special acubands (PsiBand). Each acuband had a push button for applying pressure on the acupoint. After each patient recovered from anesthesia and was aware of the location, time and person, the patient's pain and vital signs were assessed and recorded by the co-researcher. Then acubands were fastened by the first researcher. In the intervention group the acubands were fastened on both hands so that its button was located on the P6 acupoint. Then the radial pulses were checked to ensure that it would not interfere with the blood flow in radial arteries. In order to keep the patients, staff and the co-researcher blind about the patient's group, an acuband without the push button was also placed sleazy around the patients' wrist in the placebo (control) group. Acubands were kept in place for seven hours. However, based on the patient's request, acubands were loosened for 10 minutes every two hours and then were fastened again. For patients who suffered from pain with a score higher than five, the pain was considered severe and an analgesic (Pethidine, 1mg/kg) was administered. The data collection instrument had three parts. The first part included questions about demographic data including age, gender, the patient's group, and the length of surgical incision (that were measures using a transparent ruler, in millimeters) and the duration of anesthesia (in minutes). The second part was a visual analog scale used for recording the severity of pain. It consisted of a 10 centimeters column. Descriptors were placed at each end of the column (0 = no pain and 10 = the most unimaginable pain). Patients were asked to mark an X on place that corresponded with severity of pain. The third part was a table for recording vital signs including pulse rate, respiration rate, and systolic and diastolic blood pressure. Pulse and respiration rates measured for one minute each time and blood pressure was assessed using a sphygmomanometer marked as ALP-K2. Protocol of the study was approved by the institutional review board and the Research Ethics Committee of Kashan University of Medical Sciences. Data collection was performed following permission from the hospital authorities. Before conducting any intervention, the purpose of the investi-

gation was explained to all patients (without specifying the groups) and all patients signed the informed consent before participation. All patients were assured that analgesic would be administered if the method was not effective. All participants were also assured about confidentiality and freedom to participate in the study. The researchers observed all ethical issues in accordance with the Helsinki Convention. Data analysis was done by SPSS version 11.5. T test has been used to compare the severity of pain and the mean of vital signs in the two groups. A P value less than 0.05 was selected as significant level in all the tests.

4. Results

The current study was conducted with 80 patients. One patient in the P6 group was discharged prior the fifth hour and thus excluded from the study. Then the data of 79 patients was analyzed (39 patients in P6 group and 40 patients in the placebo group). The mean age of the P6 group was 31.05 ± 14.67 year and for the placebo group was 30.13 ± 14.49 year (P = 0.73). The mean length of incision were 60.26 ± 13.56 mm in P6 group and 58.77 ± 11.84 mm in placebo group (P = 0.43). The mean duration of anesthesia was 86.92 ± 20.73 min in P6 group and 86.91 ± 17.15 min in placebo group (P = 1.000). Mean score of pain severity were higher in P6 group at the first and fourth hours after surgery but this score was lower in this group at other times. However, the differences between the mean of pain severity of the two groups were not statistically significant (Figure 1). In total, the mean scores of vital signs (pulse rate, respiratory rate, systolic and diastolic blood pressure) showed a downward trend in both groups. The mean of pulse rate before intervention was 88.34 ± 9.16 and 88.77 ± 7.98 (per minute) in the P6 and placebo groups respectively (P = 0.81) and changed to 84.02 ± 7.57 and 84.30 ± 8.09 (per minute) at the seventh post-operation hour, respectively (P = 0.87). The mean of respiration rate before intervention was 20.09 ± 3.28 and 20.27 ± 2.33 (per minute) in the P6 and placebo groups, respectively (P = 0.76) and changed to 18.50 ± 1.88 and 18.50 ± 1.99 (per minute) at seventh post-operation hour, respectively (P = 1.00). The mean of systolic blood pressure before intervention was 125.86 ± 13.17 and 122.55 ± 12.56 mmHg in the P6 and placebo groups, respectively (P = 0.23) and changed to 118.64 ± 10.36 and 118.59 ± 11.26 mmHg at the seventh post-operation hour, respectively (P = 0.98). The mean of diastolic blood pressure before intervention was 79.32 ± 7.50 and 78.57 ± 7.95 mmHg in the P6 and placebo groups, respectively (P = 0.65) and changed to 73.68 ± 6.86 and 75.25 ± 7.33 mmHg at seventh post-operation hour, respectively (P = 0.30). In total, no significant differences were observed between the vital signs parameters in the two groups at seven hours (Table 1).

Table 1. Changes in Vital Signs in the Two Groups at Seven Post-Surgical Hours

Time	Pulse Rate, per min			Respiration Rate, per min			Systolic Pressure, mm Hg			Diastolic Pressure, mm Hg		
	P6	Placebo	P value	P6	Placebo	P value	P6	Placebo	P value	P6	Placebo	P value
Prior to interventiom	88.34 ± 9.16	88.77 ± 7.98	0.81	20.09 ± 3.28	20.27 ± 2.33	0.76	125.86 ± 13.17	122.55 ± 12.56	0.230	79.32 ± 7.50	78.57 ± 7.95	0.65
First hour	86.32 ± 7.93	86.25 ± 8.25	0.96	19.64 ± 2.08	19.68 ± 1.90	0.91	121.41 ± 12.28	120.05 ± 12.17	0.602	76.27 ± 7.54	76.32 ± 8.05	0.97
Second hour	86.34 ± 7.62	86.09 ± 8.17	0.88	19.61 ± 2.40	19.48 ± 2.17	0.78	120.91 ± 10.64	119.05 ± 12.74	0.495	75.36 ± 6.63	75.82 ± 7.51	0.76
Third hour	84.95 ± 7.95	85.82 ± 7.70	0.60	18.95 ± 2.27	19.02 ± 1.73	0.87	119.36 ± 11.54	117.86 ± 11.69	0.546	74.27 ± 8.09	74.86 ± 7.18	0.71
Fourth hour	84.73 ± 7.59	84.82 ± 7.66	0.95	19.07 ± 2.00	18.89 ± 1.79	0.65	119.95 ± 11.45	117.86 ± 13.29	0.432	74.14 ± 6.85	74.91 ± 7.94	0.62
Fifth hour	84.32 ± 8.40	84.41 ± 7.89	0.95	18.80 ± 1.86	18.64 ± 1.83	0.68	118.91 ± 10.97	118.18 ± 11.96	0.767	73.68 ± 7.16	74.50 ± 7.41	0.60
Sixth hour	84.11 ± 8.10	84.36 ± 7.17	0.87	18.36 ± 1.94	18.36 ± 1.85	1.00	118.45 ± 11.08	117.32 ± 12.53	0.653	73.50 ± 6.88	73.59 ± 6.97	0.95
Seventh hour	84.02 ± 7.57	84.30 ± 8.09	0.87	18.50 ± 1.88	18.50 ± 1.99	1.00	118.64 ± 10.36	118.59 ± 11.26	0.984	73.68 ± 6.86	75.25 ± 7.33	0.30

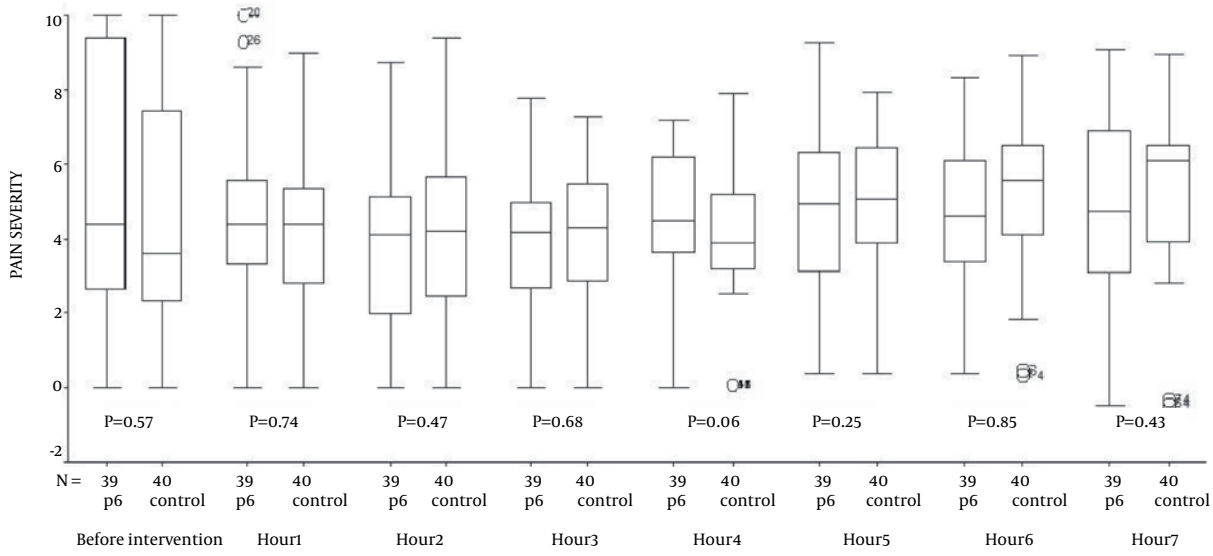

Figure 1. The Mean of Pain in the Acupressure Group and Control Group at Different Time

5. Discussion

In the present study, the mean of pain severity was lower in the P6 group at most of the post operation hours. However, the differences between P6 and placebo groups were not significant during the seven post operation hours. Studies on the effects of acupressure on pain have led to different results. Lee et al. and Stux and Hammerschlag have reported that acupressure on the sP6 and P6 acupoints was effective in reducing pain after childbirth and abdominal surgery (5, 6). However, the present study was consistent with the results of Sakurai et al. study (4) and could not confirm the effect of P6 acupressure on post-operative pain in abdominal surgeries. In the present study, the mean of vital signs parameters of both groups were declining in the early hours and then stabilized within normal ranges. Also, no significant differences were observed between the two groups at different hours. Although no previous studies are available on the effect of P6 acupressure on vital signs after abdominal surgeries, some of them were conducted in different conditions and on different locations and have led to different results. Kober et al. investigated the effect of auricular acupressure on vital signs and reported no significant effects (9). Bassampour et al. has used acupressure on two acupoints in patients before abdominal surgery. They reported statistically significant but not clinically important decreases in pulse rate, respiratory rate, systolic and diastolic blood pressures (7). Zhang et al. have also used acupressure in patients with hypertension and reported that acupressure decreased systolic blood pressure but did not affect diastolic pressure (8). An important issue in our study is that we used an acuband in the placebo (control) group. Thus, the patients in this group may have expected the acuband to be effective. Moreover, awareness of being under investigation may have affected the results. Lewith et al. have also pointed out that using a placebo the same as the intervention group (when using alternative and complementary medicine) may result in changes in physiologic parameters such as pulse rate and blood pressure (11). If so, such effect may have a role in the not statistically significant result in this study. In conclusion, this study showed that P6 acupressure had no statistically significant effect on post-operative pain, and vital signs of patients after small abdominal surgeries. Further investigations with larger samples and no placebo are warranted.

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Authors' Contribution

Mohsen Adib-Hajbaghery (MAH) was responsible for the study conception and design, supervised the study and made critical revisions to the paper and prepared the last revision of the manuscript. Mahmood Etri (ME) performed the data collection, literature review, data analysis, and prepared the first draft of the manuscript.

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The authors declare that theyhave no competing interests.

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