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The effect of acupressure applied to P6 acupuncture point on nausea, vomiting, and retching

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ABSTRACT

Purpose: The research was carried out to determine the effect of acupressure applied to the P6 acupuncture point on nausea, vomiting, and retching among pregnant women with hyperemesis gravidarum.

Methods: In the study, 64 were assigned to the control group and 64 to the intervention group. During their hospital stay, the pregnant women in the intervention group were given wristbands while the control group did not receive any application.

Results: According to index of nausea, vomiting, and retching, the morning nausea scores of the intervention group were higher compared to evening nausea scores on the 1st day while the control group had higher morning nausea scores than evening nausea scores on the 1st and 2nd days.

Conclusion: Acupressure applied to the P6 acupuncture point with a wristband did not completely eliminate nausea, vomiting, and retching caused by hyperemesis gravidarum, but it had a decreasing effect during certain periods of the day.

Key words: Acupressure, hyperemesis, nausea, nursing, vomiting

INTRODUCTION

Vomiting, nausea, and retching occurring, especially during the first trimester and affecting 70–85% of all pregnancies may sometimes be disturbing and stressful problem for the pregnant women.[1,2] Vomiting, nausea, and retching that affect considerably the quality of life of the pregnant women may not be cured completely despite antiemetic treatments. As alternatives, some non-pharmacological applications may be used alone or in conjunction with pharmaceutical agents to control nausea and vomiting.[1,3,4] It is reported in the studies conducted that acupressure applied to P6 acupuncture point, one of the non-pharmacological applications, is used as an independent nursing practice for the pregnant women with severe nausea, vomiting, and retching.

METHODS

Design

This is experimental study, aim to determine the effect of acupressure applied to P6 (Neiguan) acupuncture point on nausea, vomiting, and retching among the pregnant women with hyperemesis gravidarum receiving medical treatment to decrease nausea, vomiting, and retching complaints.

The research was conducted at women and birth hospital and children diseases Hospital located in Kayseri city center and Sivas State Hospital.

Participants

Sample size was calculated by biostatistics specialist using G-power package program and the following values were obtained: Effect size d = 0.5, α = 0.05 (error margin), 1–β = 0.80 (power), and $n_2/n_1 = 1$ (number of the samples of the groups were equal). A total of 128 subjects were included in the study; 64 assigned to the control group and 64 to the intervention group.

Procedure

The pregnant women who completed 16th week of pregnancy, were primipara, had the same treatment protocols, did not have any vision and auditory problems, could speak Turkish, accepted wristband and were volunteer were included in the study.

The study was conducted in two different but socioculturally similar cities to prevent interaction of the control group and intervention group and to obtain more reliable results since pregnant women with hyperemesis stayed at the same hospital services and generally shared same rooms.[5] The eligible pregnant women who met the criteria of the Kayseri women and birth hospital and children diseases hospital were assigned to the intervention group, whereas those who met the criteria of the septic service of the Sivas State Hospital were assigned to the control group.

The data were gathered simultaneously in the intervention group and control group to prevent differences that might be caused by seasonal effects.

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The intervention group and control group were similar in points of age group ($\chi^2 = 4.885$, $P = 0.180$), educational status ($\chi^2 = 5.239$, $P = 0.073$), pregnancy number (fisher = 6.667, $P = 0.152$), and gestational week (t = −1.366, $P = 0.174$). The groups were also similar in the routine treatments protocols.

During their hospital stay, the pregnant women in the intervention group were given wristbands (on the P6 acupuncture point of the wrist) while the control group did not receive any application.

Nausea, vomiting, and retching of both groups were assessed using index of nausea, vomiting, and retching (INVR) and visual analog scale (VAS). Two assessments were conducted with INVR and four assessments with VAS.

Data Collection

"Descriptive form of the pregnant women," "INVR," and "VAS" were used for the data collection. Furthermore, wristbands worn on P6 acupuncture point of both wrists of the pregnant women that reduced nausea or eliminated it completely by producing pressure on the wrists were used in the research.

Statistical Analysis

Statistical analysis of the data was performed using SPSS 20.0 package programming (IBM, SPSS, statistics). Categorical measurements were expressed using numbers and percentages while numerical measurements were displayed using means and standard deviations. The data were analyzed with Chi-square, Mann–Whitney U, Kruskal–Wallis, Friedman, Wilcoxon T tests, and correlation analysis. Level of significance was taken as 0.05 in all tests.

Ethics

Ethical approval of Ethical Committee of the Medicine Faculty of Erciyes University (IRB approval: 2008/181) and the necessary official permissions of Kayseri Health Directorate and Hospital Managements (B-10-4-ISN-4-38-48-25/) were obtained. All patients were informed of the purpose the study and their oral and written consents were obtained.

RESULTS

Demographic Characteristics

The average age of the participant women was 24.5 ± 4.5 in the intervention group and 26.0 ± 5.6 in the control group. 29.7% of the intervention group and 43.8% of the control group had high school degree or above ($P > 0.05$).

Mean pregnancy length of the participant women in the intervention group was 8.9 ± 2.6 weeks, whereas 9.5 ± 2.1 weeks in participant women of the control group. It was found out that 31.2 % of the current pregnancies of the women in the intervention group were the first pregnancies, whereas the first pregnancy rate among the women in the control group was by 18.8 % ($P > 0.05$) [Table 1].

Although there was the same number of pregnant women in both groups on the 1st day, there were more women in the intervention group than the control group on the 3rd day [Table 2].

Findings Related to Nausea, Vomiting, and Retching

The intervention group revealed higher nausea, vomiting, and retching scores on the 1st day of the research and there was statistically significant difference between the groups ($P = 0.039$) [Table 2].

According to INVR, morning nausea scores of the intervention group were higher compared to evening nausea scores on the 1st day while the control group had higher morning scores than evening nausea scores on the 1st and 2nd days ($P = 0.008$, $P < 0.001$, $P < 0.001$) [Table 3]. It was noted that there was not any difference in the severity of the nausea in the intervention group in terms of days, whereas nausea of the pregnant women in the control group gradually decreased ($\chi^2 = 7.111$, $P = 0.029$). Median nausea score on the 2nd day evening and 3rd day morning was found to be higher in the intervention group than control group and the difference between was statistically significant ($P = 0.006$, $P = 0.032$).

Median morning retching score on the 1st day was higher than evening among the both control group and intervention group ($P = 0.053$, $P < 0.001$). However, median morning retching score on the 3rd day was significantly higher among the intervention group than the control group ($P = 0.036$). It was seen that there was not any significant difference between the groups in the comparisons of the median vomiting scores but severity of the evening vomiting decreased in both groups compared to morning vomiting [Table 2].

According to VAS, the intervention group had the highest vomiting level in the morning of the 1st day while it was the lowest in the evening of the same day ($P = 0.018$). As for the control group, morning vomiting levels on the 1st, 2nd, and 3rd days were the lowest while vomiting level was the highest at noon and the difference between the groups was statistically significant ($P < 0.001$, $P < 0.001$, $P = 0.012$). Median noon and evening nausea scores, assessed using VAS, were lower in the intervention group compared to the control group, whereas median morning nausea scores were found to be higher in the intervention group [Table 2].

DISCUSSION

One of the most common problems seen during pregnancy is the early pregnancy nausea and vomiting etiology, of which is not exactly known.[6]

The present research that investigated the effect of acupressure applied to P6 acupuncture point on the hyperemesis revealed that the intervention group which received wristband application and the control group without any application had more morning nausea, retching, and vomiting compared to evening time [Table 3]. This result concurred with literature. Because nausea and vomiting in hyperemesis gravidarum are more intense in the mornings, it is called morning sickness.

When the intervention group and control group were compared according to INVR, there was not any significant difference between time periods of the 1st day in terms of nausea, retching, and vomiting, whereas it was found out in the intervention group that the scores of evening nausea on the 2nd day and morning nausea and retching on the 3rd day were higher. However, when assessed according to VAS, noon and evening nausea of the intervention group considerably decreased although their morning nausea was much more higher than the control group [Table 2].

In spite of the fact that morning nausea of the intervention group did not decrease, an important decrease seen in noon and evening nausea levels were thought to be resulting from the positive effect of acupressure. Although the differences between INVR and VAS results were remarkable when the second item of the INVR and the correlation between INVR and VAS was considered, it was noted that there was generally significant and positive correlation, that is, there was a positive similarity between the scales though both scales showed some differences. It was the researcher herself who conducted INVR while it was the pregnant women herself who conducted VAS. If we consider the fact that perception of the pregnant women was prioritized more; we may say that the acupressure application was ineffective in the mornings but at noon, in the evenings and even at nights it gave positive effects.

Table 1: Obstetric characteristics of distributions by pregnant women

Features	Intervention group *n*=64 (%)	Control group *n*=64 (%)	f or t	*P*
Week of pregnancy				
≥12	58 (90.6)	60 (93.8)	0.434	0.744
≤13	6 (9.4)	4 (6.3)		
Number of pregnancy				
1	20 (31.2)	12 (18.8)	6.667	0.152
≤2	44 (68.8)	53 (81.2)		
Week of pregnancy ($\bar{X}$ ±ss)	8.9±2.6	9.5±2.1	−1.366	0.174
Number of pregnancy ($\bar{X}$ ±ss)	2.2±1.3	2.7±1.3	−1.970	0.051
Number of abortions ($\bar{X}$ ±ss)	0.4±0.7	0.5±0.8	−1.231	0.221
Number of children living in $\bar{X}$ ±ss	0.8±1.0	1.2±1.0	−1.790	0.076

Table 2: Mean and median scores of nausea, vomiting, and retching of pregnant women according to INVR and VAS on 3 days

INVR	Groups of pregnant $\bar{X}$(ss) and median (min-max)								Comparison groups		
	Intervention group (*n*=64)				Control group (*n*=64)						
	1st day	2nd day	3rd day	*P*	1st day	2nd day	3rd day	*P*	1st day *P*	2nd day *P*	3rd day *P*
Nausea											
Morning	5.70 (3.31) 6.0 (0.0–12.0)	5.06 (2.61) 5.0 (0.0–11.0)	5.28 (2.84) 5.5 (0.0–9.0)	0.165[c]	6.02 (2.29) 6.0 (0.0–11.0)	5.00 (1.81) 5.0 (0.0–9.0)	3.37 (1.06) 3.0 (3.0–6.0)	0.029[c]	0.554[b]	0.781[b]	0.032[b]
Evening	4.50 (3.50) 4.0 (0.0–12.0)	4.59 (2.06) 4.0 (0.0–10.0)	3.50 (3.31) 3.0 (0.0–8.0	0.779[c]	3.73 (1.81) 3.0 (0.0–8.0)	3.22 (1.97) 3.0 (0.0–7.0)	1.25 (2.50) 0.0 (0.0–5.0)	0.282[c]	0.188[b]	0.006[b]	0.278[b]
P	0.008[a]	0.291[a]	0.180[a]		<0.001[a]	<0.001[a]	0.131[a]				
Vomiting											
Morning	2.33 (3.72) 0.0 (0.0–10.0)	2.44 (3.24) 0.0 (0.0–11.0)	2.57 (3.32) 0.0 (0.0–8.0)	0.441[c]	3.18 (2.29) 3.0 (0.0–6.0)	2.29 (2.13) 3.0 (0.0–7.0)	1.62 (1.76) 1.5 (0.0–4.0)	0.120[c]	0.105[b]	0.843[b]	0.681[b]
Evening	1.50 (2.89) 0.0 (0.0–10.0)	0.72 (1.75) 0.0 (0.0–7.0)	0.0 (0.00) 0.0 (0.0–0.0)	0.156[c]	1.14 (1.71) 0.0 (0.0–6.0)	1.13 (1.85) 0.0 (0.0–6.0)	0.75 (1.50) 0.0 (0.0–3.0)	0.607 [c]	0.713[b]	0.301[b]	0.317[b]
P	0.204[a]	0.023[a]	0.180[a]		<0.001[a]	0.005[a]	0.317[a]				
Retching											
Morning	2.93 (2.73) 3.0 (0.0–8.0)	2.28 (2.62) 1.0 (0.0–8.0)	3.07 (2.30) 3.5 (0.0–6.0)	0.420[c]	1.91 (1.79) 2.0 (0.0–6.0)	1.64 (1.76) 2.0 (0.0–7.0)	1.00 (1.06) 1.0 (0.0–2.0)	0.109[c]	0.148[b]	0.388[b]	0.036[b]
Evening	1.68 (2.58) 0.0 (0.0–8.0)	1.90 (2.24) 1.5 (0.0–7.0)	1.00 (2.00) 0.0 (0.0–4.0)	0.607[c]	1.12 (1.60) 0.0 (0.0–7.0)	1.13 (1.57) 0.0 (0.0–5.0)	0.50 (1.00) 0.0 (0.0–2.0)	0.264[c]	0.787[b]	0.177[b]	0.850[b]
P	0.053[a]	0.327[a]	0.785[a]		<0.001[a]	0.117[a]	0.1.000[a]				
VAS (nausea)											
Morning	3.62 (2.33) 3.5 (0.0–10.0)	4.80 (3.32) 4.0 (0.0–10.0)	1.50 (2.12) 1.5 (0.0–3.0)	0.135[c]	1.58 (2.04) 1.0 (0.0–8.0)	1.27 (1.35) 1.0 (0.0/–5.0)	1.25 (2.50) 0.0 (0.0–5.0)	0.223[c]	<0.001[b]	<0.001[b]	0.784[b]
Noon	2.32 (2.32) 2.0 (0.0–9.0)	2.61 (2.56) 2.0 (0.0–10.0)	2.20 (3.34) 1.0 (0.0–8.0)		5.89 (1.92) 6.0 (0.0–10.0)	5.22 (2.08) 5.0 (0.0–10.0)	6.75 (1.50) 7.0 (5.0–8.0)	0.050[c]	<0.001[b]	<0.001[b]	0.080[b]
Evening	2.15 (2.29) 1.0 (0.0–9.0)	2.85 (2.79) 2.0 (0.0–9.0)	0.33 (0.57) 0.0 (0.0–1.0)	0.264[c]	4.89 (2.10) 5.0 (0.0–10.0)	4.46 (2.03) 5.0 (0.0–8.0)	6.50 (1.29) 6.5 (5.0–8.0)	0.060[c]	<0.001[b]	0.007[b]	0.032[b]
Night	3.06 (2.52) 2.5 (0.0–9.0)	3.95 (3.12) 4.0 (0.0–10.0)	2.50 (2.12) 2.5 (1.0–4.0)	0.156[c]	3.20 (1.90) 3.0 (0.0–8.0)	3.14 (1.74) 3.0 (0.0–7.0)	3.50 (2.88) 3.5 (0.0–7.0)	0.420[c]	0.343[b]	0.533[b]	0.814[b]
P	0.018[c]	0.335[c]	0.120[c]		<0.001[c]	<0.001[c]	0.012[c]				

[a]Wilcoxon, [b]Mann–Whitney U, [c]Friedman test (line tests, Mann–Whitney U and Friedman, Kruskal–Wallis, and Friedman test were used in the column tests), INVR: Index of nausea, vomiting, and retching, VAS: Visual analog scale

Although there was not any study in our country that was conducted with pregnant women with hyperemesis, the study of Dundee *et al*.[7] investigating the effect of acupressure applied to P6 acupoint reported that six of the intervention group made up of 119 pregnant women, 30 of the control group and 11 of the placebo group had severe nausea and vomiting symptoms, and positive effects of acupressure on nausea were proved. Similarly, the results of the study of Shin and Song[8] which was investigating the effects of acupressure applied to P6 acupuncture point among 66 pregnant women with hyperemesis yielded that there was a significant decrease in nausea and vomiting. The study of Markose *et al*.[9] assessing 35 pregnant women with hyperemesis using INVR pointed out positive results of acupressure application. Just like acupressure, after nerve stimulation applied to P6 acupuncture point of 230 pregnant women; it was found out that their nausea and vomiting reduced according to INVR measurements.[10] When we analyzed many randomized controlled studies and results of more than 25 systematic meta-analysis, it was concluded that acupuncture was effective on pregnancy nausea.[11] Unlike the studies reporting that acupressure reduces nausea, there are also other studies that conclude that it is ineffective.[12,13] It was observed in a study conducted with 161 pregnant women that acupressure applied to P6 acupuncture point did not have any beneficial effects.

According to INVR, only morning nausea of the control group considerably decreased during following days. Except this, there were not significant differences in the intervention group and control group themselves in points of nausea, retching, and vomiting scores on the 1st, 2nd, and 3rd days [Table 2], which was similar in the VAS measurements. The perceived nausea levels of the pregnant women - uncovered using VAS - did not show any significant differences between the 1st, 2nd, and 3rd days. In light of these results, it was concluded that extending the duration of medical treatment as well as acupressure did not show any decreasing effect on nausea, retching, and vomiting.

CONCLUSIONS

As the result of the present research, acupressure applied to P6 acupuncture point with wristband did not completely eliminate nausea, vomiting, and retching caused by hyperemesis gravidarum, but it had a decreasing effect during the certain periods of the day.

Limitations

There are some limitations to this study. Since this study was performed in the Obstetrics Department of Women and Birth Hospital and Children Diseases Hospital located in Kayseri city center and Sivas State Hospital. The study population included a limited number of pregnant women with hyperemesis gravidarum.

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