



The Effect of Acumoxa Therapy on Blood Pressure in Gestational Hypertension

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Abstract. Gestational hypertension (GH) adverse effects on pregnancy and fetal development, but there are still a few non-pharmacological interventions that can control blood pressure. The study aimed to examine the impact of acumoxa therapy on reducing blood pressure among patients with GH. Thirty-four patients were admitted to three community health centers in Brebes Regency. We selected and randomly divided samples into two groups, such as the experimental group and the control group. This study's participation was pregnant women randomly allocated to the experimental group ($n= 17$) and control group ($n=17$). The intervention group received acumoxa therapy. The control group received acupressure therapy at the same time of 5 minutes at each point in 3 sessions per week for four weeks. The points used between the intervention and control groups were almost the same. Acupoints HT 7 and LI11 are given acumoxa and acupressure. Point GV20 is only covered by pressure, and point KI3 is only moxibustion. Of the 34 women who completed the study, those who received acumoxa had significantly lower mean arterial pressure (MAP) (mean difference = 8 mmHg, $p<0.05$). Acumoxa therapy is an effective non-pharmacological method for reducing blood pressure in patients with gestational hypertension.

Keyword: acupressure, moksibustion, gestasionalhypertension



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INTRODUCTION

Gestational hypertension is the leading cause of maternal death worldwide, with a mortality rate of 10% (1-2). The prevalence of gestational hypertension occurs 5% - 10% in pregnant women, and It could increase by 25% in pregnant women with a history of hypertension (3-4). Chronic hypertension or gestational hypertension could also develop to the preeclampsia, eclampsia, and even death. Therefore, effective management is needed to prevent severe complications.

Treatment with antihypertensive drugs is essential to reduce complications that occur. However, those drugs' side effect has long-term effects for both mother and fetus, such as placental abruption, kidney failure, bleeding, and intracerebral hemorrhage (5). For minimizing the impact, non-pharmacological has been recommended, such as listening to natural sounds, deep breathing relaxation, aromatherapy (6), and administration of conjoined pumpkin extract (7) but from the results of these studies only decreased systolic blood pressure. In contrast, diastolic blood pressure is still relatively high.

Acumoxa therapy is a combination of acupressure and moxibustion to increase the therapeutic effect. Acumoxa therapy is provided by combining the suppression and burning of the moxa stem at the acupuncture point. The delivering the acupoint was similar to acupressure and moxibustion, which distinguishes only its method. Acupressure and moxibustion therapy is commonly used to improve maternal health, reducing nausea and vomiting (9). It also influences the breech delivery (10), reduces labor pain, and speeds up the delivery process (11).

OBJECTIVE

The study aimed to examine the effects of acumoxa on reducing blood pressure among patients with gestational hypertension.

METHODS

We conducted a quasi-experimental, pre-test, and post-test with a non-equivalent control group. The samples were gestational hypertension women. Thirty-four total samples were allocated in the experimental group and control group.

The purposive sampling was applied to select the appropriate samples. The experimental group patients received acumoxa therapy, and patients in the control group received acupressure therapy. Participants were included if they met the following criteria: 1) age between 20 and 35 years; 2) women with gestational hypertension with systolic blood pressure was ≥ 140 mmHg and ≥ 90 mmHg for diastolic blood pressure; 3) gestational ages 20 weeks and 38 weeks; 4) hypertension patients without proteinuria or severe hypertension.

This study's research instruments are as follows: 1) an observation sheet of blood pressure measurement to obtain MAP value by measuring systolic and diastolic blood pressure; 2) blood pressure measurement devices using digital sphygmomanometer OMRON brand 7120 series.

The intervention received the group acumoxa within three sessions/week, and the control group also received the acupressure for three sessions/week. In the treatment group acumoxa, three sessions per week were conducted for four weeks for 12 sessions. Four standard acupuncture points (GV20, HT7, LI11, and KI3) were selected by doctorate and researchers who have an acupuncture and moxibustion specialist license in Solo in a consensus process based on several previous studies (12). Each acumoxa point was treated five during each session minutes, with a frequency of 5 seconds and rest 1 second, then proceed with indirect moxibustion was 5 minutes. The GV20 point is only acupressure but not moxibustion. Moxibustion was replaced at point KI3. The total treatment time for each session was 30 minutes.

In the treatment control group, the treatment process was precisely the same as those for treatment group acumoxa, but in the control group, no moxibustion is done, and the point being pressed is only (GV20, HT7, and LI11).

The participants' demographic and clinical characteristics were described using means and standard deviations for continuous variables, frequencies, and percentages for categorical variables. An independent t-test or chi-square test examined differences in features between the intervention and control groups. A paired t-test was used to analyze within-group outcome differences between the pre-test and post-test

This study protocol was approved before study onset by the institutional review boards of the faculty of medicine Sebelas Maret university/Dr. Moewardi hospital in Surakarta (approval no 569/VII/HREC/2019). Written informed consent was obtained from all of the participants. All participants had the right to withdraw from the trial at any time.

RESULTS

Between July 2019 and September 2019, 34 patients with gestational hypertension were found who met the inclusion criteria. Subject characteristics were showed in table 1. Meanwhile, the results of the analysis of MAP variables in table 2.

Data analysis of respondent characteristics based on maternal age showed that the highest maternal age in the intervention group was 26-30 years (17.6%) and the control group was 20-25 years (17.6%). At age ≥ 25 , 9.9% higher had gestational hypertension than the age group <25 years (13). This occurs because the trophoblast is absorbed into the circulation, which triggers an increased sensitivity to angiotensin II, renin aldosterone resulting in blood vessel spasm and resistance to salt and water, which causes hypertension.

Table 1. Distribution of respondent characteristics

Characteristics	group of Respondent		Total		p-value
	Intervention	Control	n	(%)	
	n (%)	n (%)			
Age					
20-25	4 (11.7)	6 (17.6)	10	29.4	0.908
26-30	6 (17.6)	5 (14.7)	11	32.4	
31-35	3 (8.8)	3 (8.8)	6	17.7	
36-40	4 (11.7)	2 (5.8)	6	17.7	
41-45	0	1 (2.9)	1	2.9	
Total	17	17	34	100	
Parity					
Primigravida	9 (26.5)	9 (26.5)	18	52.9	1.000
Multigravida	8 (23.5)	8 (23.5)	16	47.1	
Total	17	17	34	100	

Table 1 explained that the highest age in the range of 26-30 years was 11 people (32.4%) for the highest parity characteristics in primigravida mothers as many as 18 people (52.9%).

Table 2 Mean difference of Arterial Pressure (MAP) among the intervention group and the Control Groups.

Variable	Group		t	p-value
	Akumoksa	Control		
MAP	Mean ± SD	Mean ± SD		
Pre - pre	120.43 ± 11.55	122.21 ± 10.36	-0.475	0.638
Post-post	97.01 ± 5.083	105.35 ± 6.047	-4.349	0.000*
Δ - Δ	-23.41 ± 9.28	-16.86 ± 7.02	-2.318	0.027*

Based on the results of the independent t-test statistical test in table 2, it can be explained that there is a significant difference in the average MAP between the intervention group and the control group with $p = 0.027$. The conclusion drawn from the statistical test results is that there is a significant difference in the MAP gain score between the intervention and control groups. The intervention group was effective against MAP compared to the control group.

DISCUSSION

The results of this study indicate that acumoxa significantly reduces the MAP value. Arteries are blood vessels that send oxygen and nutrients to all vital and peripheral organs in the body. The amount of blood pumped by the heart through the arteries depends on arterial stiffness. The more rigid the arteries, the wider the pulse pressure, the harder the heart's work to pump blood to the arteries to compensate for the lack of blood in the peripheral blood pressure increases. Hardening of the arterial wall can be characterized by the rise in systolic blood pressure and pulse pressure but low diastolic blood pressure (14). In gestational hypertension, physiological changes in the cardiovascular system result in an imbalance of blood volume and cardiac output to peripheral vasodilation, which affects the arterial wall, increasing MAP with increasing blood pressure.

Acumoxa is a combination of acupressure and moxibustion to decrease the blood pressure level into the normal range. A previous study found that acupressure at the Taicong point effectively reduced blood pressure for 30 minutes (15).

Acupressure is one of the complementary treatments by pressing the acupuncture points using a fingertip or certain media following the principles of acupuncture to achieve the same therapeutic effect. In general, the mechanism of acupressure is the same as acupuncture. In practice, acupressure stimulates several senses of the nervous and autonomic nervous system and induces blood circulation flow. The mechanism of increasing the blood flow depending on the pressure of nerve fibers and vasoactive neuropeptides. It impacts on vasodilation and decreases in blood pressure due to brain and hemodynamic activity (16).

Acupressure at point GV 20 activates the sympathetic nervous system, thereby stimulating the production of endorphins. In contrast, acupressure at LI 11 reduced the tyrosine hydroxylase activity to reduce pain, stress, and slow the heart rate (12),(17).

The effect on acupoint depends on changes in the temperature of acupoint arising from the burning of moxa. The result of heat caused by burning moxa can cause pain in response to the inflammatory process (18). Moxibustion carried out for 40-60 minutes can increase the pain threshold as an increase in burning moxa increases the therapeutic effect. Burning impact on vasoconstriction at the point of combustion. The resulting vasodilation around the point and flowing peripheral arterial blood flow and microvascular permeability (19).

In this study, acumoxa stimulates hemodynamic function. This can be seen from the level of arterial stiffness. The stimulatory effect occurs during and after the

intervention, characterized by a decrease in heart rate, which response to reduced blood pressure.

When the skin's surface is heated, tissue temperature increases, causing the mast cells to degranulate. Cell degranulation helps increase capillary hydraulic pressure and capillary permeability, resulting in increased blood circulation (20).

Acumoxa is one of the traditional treatment methods for the prevention and treatment of disease. This study indicates that acumoxa at points GV 20, LI 11, HT 7, and KI 3 can reduce arterial pressure in the average patient with hypertension. Further research is needed to improve therapy's effectiveness in assessing the therapeutic effect's duration arising after the intervention, dosage, adherence, and long-term outcome of acumoxa.

Another study examined the effect of relaxation therapy on the blood pressure level. The findings showed the positive impact of the intervention on reducing the blood pressure within 2 to 3 weeks' intervention. It was indicated that the intervention stimulated the heart rate to respond to blood pressure reduction.

CONCLUSION

Acumoxa is one method that can significantly reduce blood pressure in patients with gestational hypertension. In this study, the decline in MAP values in the two groups has not reached the standard.

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