

Moxibustion for nausea and vomiting in pregnancy

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ABSTRACT

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Background: Nausea and vomiting are common symptoms that occur for 70-80% of pregnant women. Alternative treatments such as herbal medicine, acupressure and moxibustion have been suggested to control pregnancy-induced nausea-vomiting.

Objective: This study is to observe effects of moxibustion at P6 and ST36 point on nausea and vomiting in pregnancy.

Methods: This study applied a quasi experimental study by pretest-posttest design on two groups of study. Moxibustion in this study was a heat stimulation technique at P6 and ST36 points for 5 days (7 minutes per day). The P6 point was located on the inner wrist, 2-3 fingers above the wrist between the tendons and the ST36 point was located on 4 fingers below the lower limit of the patella. A random sampling was conducted for 30 pregnant women with gestational age <16 weeks of pregnancy that randomly was divided into 2 groups, or 15 women for each group. Instruments used to measure the nausea and vomiting applied Pregnancy Unique-Quantification of Emesis (PUQE) and B-endorphin.

Results: Moxibustion at the P6 point could reduce symptoms of nausea and vomiting ($p < 0.05$). However, Moxibustion at the ST36 point was not effective in reducing symptoms of nausea and vomiting in pregnancy ($p > 0.05$).

Conclusion: Moxibustion can more effective at P6 point than at ST36 point in reducing symptoms of nausea and vomiting in pregnancy.

Latar Belakang: Mual muntah merupakan gejala umum yang terjadi pada 70-80% ibu hamil. Perawatan alternatif seperti pengobatan herbal, akupresure dan moksibusi telah banyak digunakan untuk mengatasi mual dan muntah pada kehamilan.

Tujuan: Tujuan studi ini untuk menjelaskan pengaruh moksibusi pada titik P6 dan ST 36 terhadap mual muntah pada awal kehamilan.

Metode: Desain penelitian ini adalah penelitian kuasi eksperimental dengan pretest-posttest design pada dua grup penelitian. Moksibusi dilakukan dengan teknik stimulasi panas pada titik P6 dan ST36 dalam 5 hari (7 menit perhari). Titik P6 terletak di pergelangan tangan bagian dalam, 2-3 jari (2 cun) diatas pergelangan diantara tendon dan Titik ST 36 terletak 3 cun (4 jari) di bawah batas bawah patela. Sebanyak 30 ibu hamil usia kehamilan <16 minggu yang telah dipilih dengan random sampling dibagi menjadi 2 grup (15 ibu hamil tiap grup). Instrumen yang digunakan untuk mengukur mual muntah adalah Pregnancy Unique-Quantification of Emesis (PUQE) dan kadar B-endorphin. Analisis statistik yang digunakan adalah uji T dan korelasi pearson.

Hasil: Penelitian ini menunjukkan bahwa moksibusi pada titik P6 dapat menurunkan gejala mual

muntah pada usia kehamilan <16 minggu ($p<0.05$). Moksibusi pada titik ST36 tidak efektif untuk menurunkan gejala mual muntah pada awal kehamilan ($p>0.05$).

Kesimpulan: *Moksibusi pada titik P6 lebih efektif dibandingkan pada titik ST36 dalam menurunkan gejala mual muntah pada awal kehamilan.*

INTRODUCTION

Nausea and vomiting are common symptoms that occur for 70-80% of pregnant women. The symptoms of nausea and vomiting usually begin at gestational age of 2-4 weeks after fertilization; its peak occurs at 8-12 weeks of gestation. Symptoms of nausea and vomiting begin to decline at 16 weeks of gestation and disappear at 20 weeks of gestation. The Nausea and vomiting in pregnancy are physiological symptoms, and they often are considered as normal effects of pregnancy. Pregnant women, who cannot maintain an adequate hydration, a fluid balance and a fulfilment of nutrition in pregnancy, can turn into a pathological condition such as hyperemesis gravidarum (HEG). Pregnant women with HEG are able to have weight loss, dehydration and electrolyte imbalances, so they need to be hospitalized.^{1,2}

Management of nausea and vomiting that often used is by regulating diet, eg.-use of ginger, acupressure, acupuncture, moxibustion and hypnosis. Some antiemetic drugs for nausea and vomiting such as phenothiazine, thiorazine, compazine have been shown to increase 7% risk of birth defects. A use of large doses of pyridoxine (B6 vitamin) has been associated to reversible peripheral neuropathy (weakness, numbness or tingling). For non-pregnant adults, Moxibustion was considered safe, inexpensive and non-invasive to help reducing symptoms of nausea and vomiting.³

Moxibustion is a heat stimulation technique at acupuncture points. Moxa (a tool used for moxibustion) consists of two types, namely cone moxa and cylinder moxa. The moxa contains dried plants called *Artemisia vulgaris*. Leaves of *Artemisia vulgaris* were bitter and spicy functioning to activate Yang-Qi, opening 12 main meridian pathways, making the Qi, and

smoothing blood circulations. Moxibustion for nausea and vomiting is conducted at point Neiguan (P6) and point Zusanli (ST 36). The P6 point can affect the heart, chest, and stomach, which is indicated in angina pectoris disease, palpitations, heartburn, nausea, vomiting, malaria and stiff fingers. The ST36 point can affect gastric organs indicated by abdominal pain, nausea and vomiting gastroenteritis, diarrhoea, malaise, and fatigue.⁴

Moxibustion can stimulate releases of B-endorphin (endogenous morphine). B-endorphins can block the neurokinin-1, acetylcholin, dopamine and histamine receptor impulses in a vomiting centre and CTZ. Blocked receptor surplus results a decrease of stimulation at the CTZ and the vomiting centre so that symptoms of nausea and vomiting decreased. The alternative treatments such as acupuncture and moxibustion have been suggested to control pregnancy-induced nausea and vomiting.^{4,5} Therefore, this study is to observe effects of moxibustion at P6 and ST 36 on nausea and vomiting in pregnancy.

METHODS

Ethical Clearance

This research was conducted after getting a result of ethical test from Ethics Committee of Health Research, Faculty of Medicine, Sultan Agung Islamic University 023/B.1-KEPK/SA-FKG/II/2019.

Subject and Design

Subjects in this study were obtained from the Health Center of Semarang city. This study applied a quasi experimental study by pretest-posttest design on two groups of study. Its inclusion criteria were primigravida, 20-35 years old with normal pregnancy (<16 weeks), willing to be a respondent, having nausea and vomiting symptoms. Using a random sampling, a number of 30 pregnant women with gestational age <16 weeks of pregnancy were divided into two groups, P6 and ST36 group, by 15 pregnant women in each group.

Moxibustion and PUQE

The moxibustion was set at P6 point and ST36 point for 5 days (7 minutes each day). The P6 point was located on the inner wrist, 2-3 fingers above the wrist between the tendons, and the ST36 point was located 4 fingers below the lower limit of the patella.

Instruments used to measure the nausea and vomiting were Pregnancy Unique-Quantification of Emesis (PUQE) and B-endorphin hormone levels. The B-endorphin level examination used a saliva samples from pregnant women by applying ELISA method. The saliva of pregnant women was obtained before and after given moxibustion.

The PUQE was to assess severity of the nausea and vomiting by focusing on duration of the nausea, number of retching and vomiting episodes and overall welfare score within 24 hours immediately before the assessment. The PUQE had a minimum score of 3 and a maximum score of 15. A score of ≤ 6 could indicate mild nausea and vomiting; meanwhile 7-12 could be moderate, and ≥ 13 could be severe nausea and vomiting.

ELISA method for B- Endorfin

B-EP reagent was prepared. 50 μ L or standard

sample were added to the well, immediately by adding a 50 μ L Biotinylation Detection solution for each well. Incubated for 45 minutes at 37°C. Inhalation and washing dishes 3 times. The HRP conjugate solution was added 100 μ L and Incubated for 30 minutes at 37°C. Inhalation and washing dishes 5 times. 90 μ L substrate reagent was added. Incubated for 15 minutes at 37°C. Then 50 μ L Stop Solution was added. Read the plate at 450 nm immediately.

Statistical analysis

The analysis in this study used a t-test and Pearson correlation. The t-test was used to analyse significant differences in B-endorphin levels and PUQE scores before and after treatments. The Pearson was used to analyse correlations of B-endorphin levels and PUQE scores before and after treatments.

RESULTS

Moxibustion at the P6 point significantly decreased the PUQE scores (8.51 vs 3.98, $p < 0.05$). However, moxibustion at the ST36 point did not affect PUQE scores (7.94 vs. 7.24, $p > 0.05$, Table 1).

Table 1. PUQE Scores and Levels of B-Endorphin before and after Intervention.

Variable	Pre-test		Post-test		p-value
	N	Mean \pm SD	N	Mean \pm SD	
P6 point PUQE score	15	8.51 \pm 0.07	15	3.98 \pm 0.11	0.000*
ST36 point PUQE score	15	7.94 \pm 0.09	15	7.24 \pm 0.10	0.184
P6 B-Endorphin level	15	36.30 \pm 0.59	15	85.11 \pm 0.57	0.045*
ST36 B-Endorphin level	15	72.44 \pm 0.68	15	45.70 \pm 0.68	0.304

* $p < 0.05$

There was a correlation between the P6 point PUQE score and the P6 B-Endorphin level (p -value=0.028). Strength of the correlation between PUQE scores and B-endorphin levels was moderate ($r = -0.4$). Direction of

the correlation between PUQE scores and B-endorphin levels was negative, meaning that the lower was PUQE score and the higher level was B-endorphin.

Table 2. The Correlation of PUQE Score and B-Endorphin Level

Variable	P6 point PUQE score	p-value
	Pearson correlation (r)	
P6 B-Endorphin level and P6 PUQE score	-0.4	0.028*
ST36 B-Endorphin level and P36 PUQE score	-0.2	0.343

DISCUSSION

This study showed that moxibustion for 5 days (7 minute each days) at P6 point could decrease symptoms of nausea and vomiting. The findings of this study are in line with a previous study by Rithirangsrroj finding that there was a decrease of nausea and vomiting in a stimulated group at P6 point and significantly had side effects lower than a group given oral ondansetron.⁶ The results of this study is also similar to Molassiotis's study demonstrating that P6 point stimulation was more effective in decreasing symptoms of nausea and vomiting compared to antiemetic.⁷ Then the results of this study are not in accord to a study conducted by Yilmaz that reported no significant differences between an intervention group and a control group. However, P6 stimulation was considered to be more effective in reducing levels of nausea and vomiting compared to a placebo group.⁸

There was a correlation between PUQE scores and B-Endorphin levels. The lower of PUQE score, the higher of B-endorphin level. The results of this study are in accordance to Adlan's study indicating that P6 point significantly decreased levels of nausea and vomiting and shortened periods of care for patients in a hospital due to nausea and vomiting in pregnancy.⁹ Another study conducted by Ellila also delivered that there were significant different frequencies of nausea and vomiting before and after stimulation in P6.¹⁰ However, a study by Dupuis is not in line with the results of this study concluding that P6 point stimulation was safe, but it did not provide significant changes to reduce symptoms of nausea and vomiting.¹¹

Vomiting reflex occurs due to activation of a vomiting centre. The vomiting centre can be

activated directly by signals from cerebral cortex (a condition when fear or anxiety), signals from sensory organs (a condition of seeing something nauseating or smelling bad), and signals from the vestibular apparatus of the inner ear (nausea due to certain movements or drinks). The vomiting centre can also be activated indirectly by certain stimuli that can activate the Chemoreceptor Trigger Zone (CTZ). Activation of the CTZ can be triggered by signals from the stomach and small intestine. Acetylcholine, dopamine, neurokinin-1, and histamine on the CTZ identify substances that have potentials to be dangerous and to transmit impulses to the vomiting centre to trigger the vomiting so that dangerous substance can be released.^{4,12}

Moxibustion can stimulate release of B-endorphins. The B-endorphin is an endogenous Morphine. It can block neurokinin-1, aceticolin, dopamine, and histamine receptor impulses that bind to substances in the vomiting centre and CTZ. Blocked receptor surplus can result a decreased stimulation at the CTZ and the vomiting centre; therefore, symptoms of nausea and vomiting can decrease. Moxibustion is a safe, inexpensive and non-invasive way to help reduce symptoms of nausea.^{4,13}

According to a philosophy of traditional Chinese medicine, nausea and vomiting occur when there is a blockage of a vital energy channel flowing down. The P6 point affected lining of the heart, diaphragm, and stomach. The ST 36 point affected the stomach and intestine organs. Moxibustion on P6 and ST 36 point can be believed to improve vital energy that is a basic material of human life in the stomach and digestive tract, so that the stomach and digestive tract can work normally. The P6 and ST

36 point are considered as key points in reducing symptoms of nausea and vomiting. The P6 point affected the heart, chest, and stomach that were indicated in angina pectoris disease, palpitations, heartburn, nausea, vomiting, malaria, and stiff fingers. The ST 36 point affected the gastric organs indicated by abdominal pain, nausea, vomiting, gastroenteritis, diarrhoea, malaise, and fatigue.^{4,14} The results of this study can be used to complement holistic care of midwifery services, especially in pregnancy care services to overcome discomfort for pregnant women for nausea and vomiting.

CONCLUSION

Moxibustion at the ST36 point was not effective in reducing symptoms of nausea and vomiting in early pregnancy ($p>0.05$). Moxibustion was more effective at the P6 point than at the ST36 point in reducing symptoms of nausea and vomiting in pregnancy.

CONFLICT OF INTEREST

There is no conflict of interest.

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None declare.

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