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Article

Effect of Electroacupuncture ST 36 Zusanli, ST 25 Tianshu, ST 21 Liangmen, CV 12 Zhongwan, and Moxibustion CV 8 Shenque on Cases of Gastric Pain

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ABSTRACT

Gastric pain is a symptom felt as heartburn caused by inflammation of the gastric mucosa. Electroacupuncture and moxibustion therapy are therapeutic methods that have significant results in reducing gastric pain. This study aimed to determine the effect and difference of electroacupuncture therapy ST 36, ST 25, ST 21, CV 12 with electroacupuncture at points ST 36, ST 25, ST 21, CV 12 and CV 8 moxibustion on cases of gastric pain in Kutoharjo Village. Quasi-experimental research with Nonequivalent Control Group Design. A sample of 30 subjects was divided into 2 groups given electroacupuncture therapy and electroacupuncture therapy combined with moxibustion. Pain scale was measured using Numeric Rating Scale (NRS) before and after intervention. Data were analyzed using Mann-Whitney and Wilcoxon tests. The results showed a significant decrease in the NRS pain scale after intervention in both groups ($p<0.050$). The Mann-Whitney test showed a significant difference between the two groups ($p = 0.009$), with the electroacupuncture group with CV 8 moxibustion showing a more significant reduction in pain than the electroacupuncture group. Wilcoxon test showed a significant reduction in pain scale in both groups ($p<0.001$). This study shows that electroacupuncture with CV 8 moxibustion is more effective than electroacupuncture in reducing the gastric pain scale. These results show a significant value, which can be taken into consideration to reduce gastric pain.

I. INTRODUCTION

Gastric pain is a collection of symptoms felt as heartburn, which is usually accompanied by nausea, vomiting, fullness, and discomfort(1). Gastric pain is caused by inflammation of the gastric mucosa and submucosa. Untreated gastric pain will damage stomach function and risk gastric cancer and death. Gastric pain is caused by several factors, namely the type of food consumed, frequency and portion of meals, stress, consumption of coffee, alcohol, smoking, as well as gender and age(2).

The incidence of gastric pain in the world ranges from 1.8 - 2.1 million each year. The percentage of gastric pain in several countries, such as the UK was 22%, China was 31%, Japan was 14.5%, Canada was 35%, and France was 29.5%(3). The percentage incidence of gastric pain in Indonesia in 2019 had a percentage of 40.8%[4]. Gastric pain is included in the top 10 diseases found in hospital outpatients in 2011, which is a total of 24,716 cases, ranking sixth out of the top 10 most common outpatient diseases in hospitals in Indonesia, namely 88,599 cases(5).

Acupuncture in treating gastric pain has a significant effect and is closely related to molecular mechanisms, namely inhibiting infection, reducing stress, improving gastric function and mucosa, and reducing pain(6). Acupuncture also has an effect on esophageal motility, on the esophageal sphincter, and esophageal gastric acid load is reduced from 18% to 10% after acupuncture(7).Electroacupuncture is a technique in which certain points on the body called acupuncture points are electrically stimulated to activate tissues and modulate the function of certain organs to treat various disorders(8). Previous research with electroacupuncture therapy at Danzhong (CV 17), Zhongwan (CV 12), Pishu (BL 20), Weishu (BL 21), Qimen (LR 14), Zusanli (ST 36), Neiguan (PC 6) and Taichong (LR 3) points showed that there were significant changes in reducing symptoms of gastric pain(9).

Moxibustion is a traditional therapy using moxa burned over acupuncture points that are expected to treat and prevent disease(10). Research conducted shows that moxibustion at the points of Zhongwan (CV 12), Neiguan (PC 6), and Zusanli (ST 36) in gastritis patients has a therapeutic effect in reducing symptoms of gastric pain(11).

Based on the results of preliminary studies that have been carried out in November 2024, in 2023 there were 1650 cases of gastric pain that occurred at the Pati 2 Health Center. Then, in October, with observation and interview methods in Kutoharjo Village, Pati District, Pati Regency, 42 people suffered from gastric pain. Of the gastric pain sufferers, 18 people had undergone treatment at the Health Centers, and the other 24 people chose to be left to heal themselves".

II. METHODS

This study used a quasi-experimental research design, which is a research design that does not allow to control and/or intervention of all variables, except some variables. This design aims to investigate cause-and-effect relationships, how interventions affect research subjects(12)(13). The design uses Non-equivalent Control Group Design, which provides observations before and after treatment with experimental and control groups selected not randomly(14). The research was con

ducted in Kutoharjo Village, Pati District, Central Java, Indonesia, from October 2024 to May 2025. A total of 30 participants meeting the inclusion criteria were selected from the local population experiencing moderate to severe gastric pain (pain scale 4–9). Participants were non-randomly assigned to two groups of 15 each: the first group received electroacupuncture therapy at points ST 36 (Zusanli), ST 25 (Tianshu), ST 21 (Liangmen), and CV 12 (Zhongwan), while the second group received the same electroacupuncture therapy combined with moxibustion at point CV 8 (Shenque).

Treatments were administered six times over the intervention period. Inclusion criteria were: residents of Kutoharjo Village aged 30–75 years, experiencing moderate to severe gastric pain, not undergoing other treatments (e.g., medications, compresses, massage), and willing to sign informed consent. Exclusion criteria included pregnancy, declining health status, withdrawal from the study, or unwillingness to participate. The independent variable

was the type of therapy administered (electroacupuncture alone vs. electroacupuncture with moxibustion), and the dependent variable was the reduction in gastric pain intensity, measured using the Numeric Rating Scale (NRS) before and after the intervention. Ethical approval was obtained from the appropriate ethics committee, and all participants provided written informed consent.

III. RESULT

This study commenced with a preliminary phase and was conducted from October 2024 to March 2025, involving a total of 30 subjects. Table 1 presents the characteristics of the respondents, showing that the majority were male (16 subjects), with the highest number of participants (11 subjects) in the 61–70 years age group. The most common occupation was housewife, reported by 8 subjects. Before therapy, the highest frequency of reported pain was at a score of 4 on the Numeric Rating Scale (NRS), experienced by 12 subjects. Following therapy, the most frequently reported pain score was 0, observed in 14 subjects

Table 1. Characteristics of Respondents

Characteristic	EA with Moxibustion		EA Only	
	N	%	N	%
Gender				
Male	8	53.3	8	53.3
Female	7	46.7	7	46.7
Age				
31–40	0	0	2	13.3
41–50	4	26.7	1	6.7
51–60	4	26.7	6	40
61–70	6	40	5	33.3
71–75	1	6.7	1	6.7
Occupation				
Retired	1	6.7	4	26.7
Housewife	6	40	2	13.3
Handyman	4	26.7	1	6.7
Farmer	4	26.7	0	0
Trader	0	0	5	33.3
School Guard	0	0	1	6.7
Laborer	0	0	1	6.7
Civil Servant	0	0	1	6.7
Before Therapy				
4	7	46.7	5	33.3
5	4	26.7	2	13.3
6	2	13.3	7	46.7
7	1	6.7	0	0
8	1	6.7	1	6.7
After Therapy				
0	10	66.7	4	26.7
1	3	20	2	13.3
2	2	13.3	7	46.7
3	0	0	2	13.3

The Mann-Whitney U test in Table 2 was conducted to compare the post-intervention pain scores between the electroacupuncture (EA) group and the EA combined with moxibustion group. The results showed a statistically significant difference in post-test scores between the two groups (p=0.009), indicating that the combination therapy was more effective in reducing gastric pain than EA alone. However, no significant difference was found in the pre-test scores between the two groups (p=0.348), suggesting baseline equivalence before treatment.

Table 2. Mann-Whitney U Test

Group	N	p
Pre-test **EA vs EA+moxa**	30	0.348
Post-test **EA vs EA+moxa**	30	0.009

Furthermore, in Table 3, the Wilcoxon signed-rank test was used to assess the within-group differences in pain scores before and after treatment. The results demonstrated a significant reduction in pain scores in both the EA group and the EA with moxibustion group ($p < 0.001$ for both). These findings indicate that both interventions were effective in reducing gastric pain, with the combined therapy showing a superior outcome.

Table 3. Wilcoxon Test

Group	Mean Rank	p
EA	8.00	<0.001
EA + Moxa		

IV. DISCUSSION

In this study, the number of male subjects was more than women, namely 16 subjects and 14 subjects. Men rarely express pain, but that does not mean that men rarely feel pain, men just rarely show it(15). Men can be more at risk of developping gastric pain if they have a habit of smoking and consuming coffee(16). The highest number of ages was at the age of 61-70 years as many as 11 subjects. The age of gastric pain usually attacks the early elderly because at that age they are still productive but experience a deterioration in organ function. Old age also has a higher risk of developing gastric pain because the gastric mucosa tends to become thinner(17). The most common occupation of the total of both groups was housewife as many as 8 people. Work is not a factor that causes gastric pain, but rather the stress caused at work. The work schedule also affects diet, which is a factor that can trigger gastric pain(18).

The pain scale before therapy has the highest number of subjects on pain scale 4 (moderate pain scale), which is 12 subjects. The pain scale felt by each person varies with many factors that can affect it, such as gender, age, and even psychological(19). After being treated in the form of electroacupuncture and electroacupuncture therapy with moxibustion, the highest total pain scale in both groups was on a pain scale of 0, with as many as 14 subjects.

From the results of the Wilcoxon test, a significance value of p<0.001 was obtained, which significance value of p < 0.050, indicating that there is an effect of electroacupuncture therapy and electroacupuncture with moxibustion on reducing the scale of gastric pain. In the Mann-Whitney test, the significance value obtained in the post-test is p= 0.009, the significance value of p<0.050, which means that the research hypothesis testing Ha is accepted and H0 is rejected.

The administration of moxibustion at CV 8 Shenque point is also a local point to reduce gastric pain. Moxibustion in treating gastric pain is related to gastrointestinal peptide hormones. These hormones are hormones that function directly or indirectly to regulate and control gastric mobility(20).

Stabbing at ST 36 Zusanli in gastric pain is used to regulate the stomach and strengthen the spleen. The points ST 25 Tianshu, ST 21 Liangmen, and CV 12 Zhongwan are used as local points to reduce gastric pain(10). Giving electroacupuncture can provide electrical stimulation to activate tissues. Electroacupuncture can also modulate the function of certain organs to treat various disorders[8]. The decrease in pain scale in cases of gastric pain due to electroacupuncture produces an analgesic effect that is closely related to the increased release of endogenous opioid peptides(21).

V. CONCLUSION

The characteristics of the research subjects were mostly male, with 16 subjects, in the age range of 61-70 years as many as 11 subjects, housewife work as many as 8 subjects. On the pain scale before therapy, it was found that the highest score on a pain scale of 4 was 12 subjects. After therapy, the most pain scale on a pain scale of 0 was 14 subjects.

From the results of the Wilcoxon test, a significance value of p<0.001 was obtained, which means that there is an effect of electroacupuncture therapy and electroacupuncture with moxibustion on reducing the gastric pain scale. The Mann-Whitney test for post-test scores also showed a significant difference with a p-value of p=0.009, confirming the positive effect of the interventions.

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