

Success of Acupuncture and Acupressure of the Pc 6 Acupoint in the Treatment of Hyperemesis Gravidarum

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Key Words

Hyperemesis gravidarum · Acupuncture · Acupressure

Summary

Objective: The aim of this study was to evaluate the antiemetic effect of acupuncture (AP) and acupressure (APr) of the Pc 6 acupoint in pregnant women with hyperemesis gravidarum (HG). **Methods:** A prospective, placebo-controlled trial included 36 pregnant women with HG. Two methods of acupuncture were used: bilateral manual AP of the Pc 6 (Neiguan) acupoint (group 1, n = 10) and bilateral APr of the Pc 6 acupoint (group 2, n = 11); furthermore, superficial intracutaneous placebo AP (group 3, n = 8) and placebo APr (group 4, n = 7) was carried out. **Results:** Anxiodepressive symptoms occurred in 9 pregnant women with HG from group 1, 8 women from group 2, 7 women from group 3, and 5 women from group 4 ($p < 0.001$). The average gestation age at the occurrence of HG symptoms and the beginning of treatment was 7 weeks in group 1 and 8 weeks in groups 2, 3, and 4. Four women from group 1 and 7 women from groups 2, 3, and 4 needed intravenous compensation of liquid and electrolytes. The antiemetic metoclopramide was given intravenously to 1 woman from group 1, 2 women from group 2, 6 women from group 3, and 4 women from group 4. Promethazine was given to 1 woman from group 2, 1 woman from group 3, and to 3 women from group 4. The efficiency of the HG treatment with AP of the point Pc 6 was 90%, with APr of the Pc 6 63.6%, with placebo AP 12.5%, and with placebo APr 0%. **Conclusion:** Acupuncture ($p < 0.0001$) and acupressure ($p < 0.1$) are effective, nonpharmacologic methods for the treatment of HG.

Schlüsselwörter

Hyperemesis gravidarum · Akupunktur · Akupressur

Zusammenfassung

Fragestellung: Ziel dieser Studie war die Evaluation der antiemetischen Wirkung von Akupunktur (AP) und Akupressur (APr) des KS6-Punktes bei schwangeren Frauen mit Hyperemesis gravidarum (HP). **Methoden:** 36 schwangere Frauen wurden in die prospektive, Plazebo-kontrollierte Studie aufgenommen. Zwei AP-Methoden wurden angewendet: die bilaterale manuelle AP des KS6(Neiguan)-Punktes (Gruppe 1, n = 10) und die bilaterale APr des KS6-Punktes (Gruppe 2, n = 11); weiterhin wurde superfizielle intrakutane Plazebo-AP (Gruppe 3, n = 8) und Plazebo-APr (Gruppe 4, n = 7) durchgeführt. **Ergebnisse:** Anxiodepressive Symptome traten bei 9 schwangeren Frauen mit HG aus Gruppe 1, 8 Frauen aus Gruppe 2, 7 Frauen aus Gruppe 3 und 5 Frauen aus Gruppe 4 auf ($p < 0,001$). Das durchschnittliche Gestationsalter, in dem die HG-Symptome auftraten und in dem mit der Therapie begonnen wurde, war die 7. SSW in der ersten Gruppe und die 8. SSW in der 2., 3. und 4. Gruppe. Bei 4 Frauen aus der ersten Gruppe und bei 7 Frauen aus der 2., 3. und 4. Gruppe war eine intravenöse Kompensation von Flüssigkeit und Elektrolyten notwendig. Das Antiemetikum Metoclopramid wurde intravenös einer Frau aus Gruppe 1, 2 Frauen aus Gruppe 2, 6 Frauen aus Gruppe 3 und 4 Frauen aus Gruppe 4 verabreicht. Promethazin wurde einer Frau aus Gruppe 2, einer Frau aus Gruppe 3 und 3 Frauen aus Gruppe 4 verabreicht. Die Wirksamkeit der HG-Therapie mit AP des KS6-Punktes betrug 90%, mit APr des KS6-Punktes 63,6%, mit Plazebo-AP 12,5% und mit Plazebo-APr 0%. **Schlussfolgerung:** Akupunktur ($p < 0,0001$) und Akupressur ($p < 0,1$) sind wirkungsvolle, nichtpharmakologische Methoden für die Behandlung der HG.

Introduction

Nausea and vomiting are common complaints in early pregnancy. Even 74% of women report nausea persisting for a mean of 34.6 days. 'Morning sickness' is reported by only 1.8%, and nausea occurring at any time of the day by 80% of pregnant women. Only 50% of women experience relief after 14 weeks and 90% after 22 weeks of gestation [1, 2]. This occurs in 50%–80% of all pregnancies. In 1%–2% of all pregnancies, hyperemesis gravidarum (HG) with dehydration, ketonemia and weight loss is recorded. HG is a common complication of pregnancy which requires hospitalization. A variety of disorders have been postulated to be involved in the pathogenesis of HG, such as elevated chorionic gonadotropin level, thyroid dysfunction, altered gastrointestinal function, hypofunction of the anterior pituitary and adrenal cortex, psychosomatic factors (stress, inadequate information about pregnancy or delivery, problems in the marital relationship, and neurotic personal structure) [2, 3].

The methods used to control HG include drugs such as intravenous infusion of crystalloid solution (Ringer lactate), antiemetics (metoclopramide, tiethylperazine), antihistaminics (diphenhydramine, promethazine), sedatives (diazepam), antidepressants (amitriptyline), and neuroleptics (droperidol) with proved antiemetic effects, and nonpharmacological methods such as acupuncture (AP), acupressure (APr), and psychotherapy [2–9].

AP or APr stimulation of the Pc 6 (Neiguan) acupoint is a traditional Chinese method for the reduction of emesis; the effectiveness of this method has been proven [4, 10, 11].

The aim of this study was to evaluate the antiemetic effect of AP and APr of Pc 6 acupoint in pregnant women with HG.

Material and Methods

This prospective, randomized, double-blind, placebo-controlled clinical trial included 36 pregnant women with HG. Two methods of AP were used: bilateral manual AP of Pc 6 acupoints (group 1, $n = 10$) and bilateral APr of Pc 6 acupoints (group 2, $n = 11$); furthermore, superficial intracutaneous placebo AP (group 3, $n = 8$) and placebo APr (group 4, $n = 7$) was carried out. Neither the women nor the physician assessing therapeutic efficacy were aware of patient allocation to the AP/APr or placebo groups. During the initial orientation and interview, each woman completed a patient history form containing questions about psychological make-up and previous AP treatment. All women gave their informed consent to the treatment after they had been explained the functioning mechanism, indications, contraindications, and side effects of the AP method. The study was approved by the hospital Ethics Committee.

The Pc 6 (Neiguan) acupoint is located 2 cm above the transverse crease of the wrist, between the tendons of *m. palmaris longus* and *m. flexor carpi radialis*. The points were localized by anatomic palpation according to their classical descriptions [10]. AP treatments were conducted over 7 days for 30 min a day, and real APr of the acupoint Pc 6 was applied by pregnant women themselves for 30 min whenever they felt nausea throughout the day. Placebo APr was applied by pregnant women for 30 min 3 cm above the wrist, without acupoints. Real AP treatment consisted

of the insertion of thin solid sterile stainless-steel needles by the obstetrician bilaterally at the points with de-qi effect (colored skin and local and general sensation after acupuncture stimulation of the acupoint) [10]. Placebo AP treatment consisted of superficial intracutaneous insertion of the same type of needles by the obstetrician at points without de-qi effect. Pregnant women with a more serious HG picture with electrolytic dysbalance were administered intravenous crystalloid electrolyte infusion of Ringer lactate and 5% and 10% glucose (500–1,500 ml) for 3 days with antiemetics, e.g., metoclopramide (20 mg i.v.) and promethazine (25 mg i.m.). In the pregnant women admitted for the management of HG with infusions and antiemetics, therapy was prescribed by another, independent, non-AP practicing obstetrician.

The outcome criteria for AP or APr treatments were disappearance of the nausea symptoms and vomiting, and no need of medicamentous therapy for HG. Therapeutic efficacy was assessed on the basis of patient report and independent gynecologist's evaluation of the patient's clinical condition. Statistical testing of the frequency data was done by independent *t*-test, with probability values of < 0.05 considered statistically significant.

Results

All treated women were primigravidae. Demographic data (age, parity, and weight) are presented in table 1. Anxiodepressive symptomatology in early pregnancy occurred in 9 group 1, 8 group 2, 7 group 3, and 5 group 4 women, yielding a statistically significant percentage ($p < 0.001$). The median gestation age at the occurrence of HG symptoms and the beginning of treatment was 7 weeks in group 1 and 8 weeks in groups 2, 3, and 4. Four women from group 1 and 7 women from groups 2, 3, and 4 required intravenous fluid and electrolyte supplementation. The antiemetic metoclopramide was administered intravenously to 1 group 1 woman, 2 group 2 women, 6 group 3 women, and 4 group 4 women. Promethazine was administered to 1 woman from group 2, 1 woman from group 3, and 3 women from group 4. The efficacy of HG treatment was 90.0% with AP at the Pc 6 acupoint, 63.6% with APr at the Pc 6 acupoint, 12.5% with placebo AP, and 0% with placebo APr. The results showed that AP and APr at the Pc 6 acupoint bilaterally could significantly reduce the occurrence of HG (AP: $p < 0.0001$ and APr: $p < 0.01$).

Discussion

Acupuncture has been traditionally used in the treatment of HG in China and is increasingly applied in western countries. The action of AP in acute and chronic pain syndromes, allergies, addiction, and psychosomatic disorders could be explained through the role of central neurotransmitters and modulatory systems that are activated by acupoints (opioid, nonopioid, and central sympathetic inhibitory mechanisms). AP may activate central structures that control and coordinate sympathetic and parasympathetic responses to nociception and other neural traffic related to injury and disease. Its effects may also involve neuroendocrine mechanisms con-

Table 1. Success of acupuncture and acupressure in the treatment of hyperemesis gravidarum (n = 36; all patients were primiparas)

	Acupuncture Pc 6 acupoint	Acupressure Pc 6	Placebo acupuncture	Placebo acupressure
Number of cases	10	11	8	7
Age (mean ± SD)	20.4 ± 4.7	21.3 ± 3.1	20.8 ± 4.1	22.1 ± 3.9
Weight (mean ± SD)	46.9 ± 3.1	51.3 ± 5.1	50.4 ± 4.8	49.2 ± 5.1
Anxiety and depression symptoms	9	8	7	5
Gestational age, weeks; median (range)	7 (6–9)	8 (6–10)	8 (7–12)	8 (7–12)
Intravenous infusion during 3 days ¹	4	7	7	7
<i>Parenteral antiemetics</i>				
Metoclopramide 20 mg i.v./day	1	2	6	4
Promethazine 25 mg i.m./day		1	1	4
Success rate, %	90	63.6	12.5	0

¹Crystalloid solutions (Ringer lactate 1,000 ml, 5% glucose 500 ml, 10% glucose 500 ml).

trolled by the hypothalamic-pituitary-adrenocortical axis [4, 10, 11]. According to traditional Chinese medicine, vomiting in early pregnancy is mainly due to general weakness of the stomach qi ('vital energy') and reaction to the development of the fetus [10]. AP at the Pc 6 acupoint inhibits vomiting by pacifying the stomach qi and stops vomiting by easing the chest and relieving discomfort. AP at the St 36 acupoint (Zusanli) calms the ascending qi of the stomach and Ren 13 (Shangwan) is indicated in treating fullness in the epigastric region [10, 11]. The DuMai 20 acupoint (Baihui) with proved anxiolytic and sedation effects is indicated in chest pain, dizziness, blurred vision, lassitude and anxiety [11]. The majority of studies find AP and APPr methods very successful in treating nausea and excessive vomiting in pregnancy [1, 3, 8]. Our results show that HG plagues only the women pregnant for the first time and with low body weight (< 57 kg), although multiparae can also suffer from HG. Statistically important was the rate of anxiodepressive syndrome in pregnant women with HG ($p < 0.001$) as a psychosomatic factor in the etiopathogenesis of HG, also reported by Leeners et al. [3]. Acupressure or AP of the Pc 6 acupoint statistically significantly reduces vomiting in pregnancy as well as after chemotherapy, irradiation, anesthesia, and gynecologic surgeries [12]. Our study produced favorable preliminary results which, however, need to be confirmed in a larger group of subjects, in order to eliminate the impact of basal, expected oscillations. However, we think that the present study should be considered reliable for its double-blind design, so that the physician evaluating the efficacy of AP therapy was blinded for the method of AP performance, while the patients receiving placebo AP were unaware of it. In a study with a greater number of subjects, the risk of dysbalance between study groups would be eliminated and the possibility of using real AP in patients with a mild clinical picture would be reduced, although we believe it was not the case in the present study either. When the patients failed to respond to AP therapy and required infusion therapy

for dehydration, we think that the administration of infusion had no major impact on the study results, as it is merely substitution and not etiologic therapy. Accordingly, our results are highly relevant, making a large step forward in the non-medicamentous management of HG; however, a strictly individualized approach to each patient is mandatory, in combination with adjuvant tests to clearly define the possible limits and adverse effects of this therapeutic option.

Many authors [6] recommend bilateral APPr of the Pc 6 acupoint as a prophylaxis from postanesthesiologic vomiting and nausea as well as after epidural administration of morphine. In a controlled randomized study, Christer et al. [4] treated 33 pregnant women with HG with bilateral AP of the Pc 6 acupoint and compared them to a placebo group in which only superficial AP was performed. All women were hospitalized, had to rest, and were on antiemetic therapy. They achieved statistically significantly better results in the former group in terms of reducing the intensity of vomiting and nausea, but not in reducing their frequency. Three days after AP, 7 out of 17 pregnant women on bilateral AP of the Pc 6 acupoint and 12 out of 16 women from the placebo group were still vomiting. Knight et al. [7] proved the efficacy of AP for the treatment of HG in 95% of 55 pregnant women enrolled in their randomized, controlled study. In our study, the efficacy of AP treatment was 90%. Due to frequent nausea and excessive vomiting, pregnant women could not take peroral antiemetics, so rectal or parenteral route of antiemetic administration had to be used, which usually has sedative, antihistaminic or neuroleptic effects. The majority of these medications pass across the uteroplacental barrier. Taking into consideration the known factors of HP, AP seems to be a good method for the treatment of nausea and vomiting during pregnancy, because of its effect on the psychosomatic balance and its antiemetic effect [3], although AP has been considered contraindicated during pregnancy for causing an increase in the prostaglandin concentration, which in turn can cause premature uterine con-

tractions [13]. The Pc 6 acupoint has a specific antiemetic effect with sedative, anxiolytic, and myorelaxant consequences, without any proven harmful effects on the fetomaternal unit and without any unwanted side effects or increased teratogenic risk [14]. This has been confirmed by many studies. We recommend AP and APr of the Pc 6 acupoint (Neiguan) as a nonpharmacologic, inexpensive, and efficacious method in the management of HG. Better results have been achieved with AP than with APr, probably because of the known neurophysiologic effects of faster and stronger AP stimulation of the Pc 6 acupoint. APr stimulation of the Pc 6 acupoint is weaker and milder, however, it is recommended in pregnant women with less severe forms of HG, and especially for the treatment at home.

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