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Acupressure or Acupuncture at Sanyinjiao (SP6) for Primary Dysmenorrhea

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Abstract

In traditional Chinese medicine, Sanyinjiao (SP6, 三陰交) has been used for the treatment of dysmenorrhea for long. The result of this study shows acupressure is better and more effective than acupuncture when time, cost, safety, side effects, and convenience are taken into consideration.

Keywords: Sanyinjiao (SP6); Acupressure; Acupuncture; Pattern

Introduction

In general, most people in Taiwan present themselves to the medical doctors first when they are in need of medical treatments. Part of this fact is because there are not sufficient scientific researches to prove the effects of the traditional Chinese medicine (TCM), acupuncture, or acupressure. Compared to the current acupuncture developments in Taiwan, acupuncture has gained more and more popularity in the past 40 years and been considered "essential health benefits" in the US [1].

Both acupuncture and acupressure are two common modalities of traditional Chinese medicine in the clinic. These two modalities, which have been practiced in the Chinese community for more than 2 millennia, are based on the theory of Yin-Yang balance to reduce pain and treat symptoms of the diseases. The most important key is that an experienced TCM practitioner or acupuncturist can only rely on four skills for diagnosis to identify the patterns and write up the prescriptions. In other words, patterns, which distinguish TCM from the Western medicine, should be the key concern for the CM and acupuncture practitioners in making the decisions of treatments [1].

Dysmenorrhea, defined as the occurrence of menstrual cramps with the pain of uterine, is one of the common problems during reproductive ages with a prevalence rate of 60-90% [2].

Dysmenorrhea, divided into primary dysmenorrhea and secondary dysmenorrhea in the Western medicine. Dysmenorrhea may usually occur before, during and/or after menstrual periods with the symptoms such as low pelvic discomfort/pain, low back pain/soreness, pain radiated to the anterior thighs, nausea, vomiting, diarrhea, headache, and sacral pain. The symptoms start 1 to 3 days before the onset of menses and can increase intrauterine pressure and decrease blood flow to the uterus to cause inflammation [3].

Primary Dysmenorrhea, which refers to the pain that is not associated with obvious pelvic disease and typically begins with the onset of the ovulatory cycle right after menarche. It has been reported the prevalence rate of primary dysmenorrhea is as high as 90% [4].

In general, the pain usually may begin within 1-2 years after the menarche and become more severe with time. In biomedicine, non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen, ketoprofen, mefenamic acid, and naproxen are generally given to patients 24 to 48 hours before and continued 1 or 2 days after menses to relieve or alleviate pain. In some cases, low dose estrogen-progesterone oral contraceptive can be considered for the suppression of ovulation. Dysmenorrhea may come back because NSAIDs cannot prevent recurrence of dysmenorrhea at all when patients stop birth control pills to get pregnant. In some server cases, surgery could be taken into consideration [4].

Clinical effectiveness and cost-effectiveness are the most important concerns for patients and healthcare providers. Acupuncture is viewed as a complementary medicine in the US, but it has been used for the several decades and seen as one of the tools for health. For costs, the Western medical community began taking the merits of integrating these therapies like acupuncture, acupressure, moxibustion, and cupping into consideration [1].

Methods

Search strategy

For acupressure, the combinations of acupressure SP6 primary dysmenorrhea and acupressure Sanyinjiao primary dysmenorrhea were used for searching the websites. The above method was used for searching with the combinations of acupuncture SP6primary dysmenorrhea and acupuncture Sanyinjiao primary dysmenorrhea.

Selection criteria

English articles were eligible for inclusion. Each research identified in the search was evaluated for the tools. Acupressure used in combination with medicines, other acupoints, moxibustion, Chinese herbs, and cupping were excluded. Acupuncture selected with electroacupuncture, other acupoints, moxibustion, Chinese herbs, medicines, and cupping were not included.

Results

A total of 10 articles were identified in the literature search. There were five types of research of acupressure and five studies of acupuncture.

Studies listed in (Table 1) show that the effects of acupressure at SP6 for pain relief were positive. Pain in these five studies could be alleviated "immediately" after the intervention. Moreover, the best effects could last for up 2 to 3 hours.

The reviews show that patterns, which play the key roles in the TCM for diagnosis and treatment, were not included, and the side effects were not discussed in the previous studies.

The outcomes of the researchers of acupuncture at SP6 are summarized in (Table 2). In the research by Shi [13], the differences of pain were significant between SP6 group and no acupuncture group.

The searches of acupuncture at SP6 for primary dysmenorrhea indicated that acupuncture could be effective for pain relief. The symptoms were improved and the pain was reduced after the intervention.

However, the TCM patterns and side effects were not included and discussed by the researches.

Discussion

Acupressure and acupuncture are two therapies on the basis of traditional Chinese medicine theories. It is beyond doubt that practicing acupuncture and acupressure must be based on the TCM theories. In other words, those who administer these two therapies need to stick to the philosophy that health is the presentation of the balance between Yin and Yang. Restorations

Table 1: Outcomes of acupressure at SP6 for primary dysmenorrhea

Acupressure at SP6 for pain relief			
Author(s)	TCM Pattern	Side effects	Outcomes
Mirbagher-Ajorpaz N, Adib-Hajbagher M, Mosaebi F. (2011) [5]	-	-	The significant differences were observed in pain scores between the two groups immediately and 3-hour after treatment.
Wong CL, Lai KY, Tse HM. (2010) [6]	-	-	There was a statistically significant decrease in pain immediately after the treatment.
Kashefi F. Ziyadlou S., Khajehei M, Ashraf AR,Fadaee AR. (2010) [7]	-	-	The pain severity of dysmenorrhea in acupressure group declined greater than control group at 30 minutes, 1, 2, and 3-hour after the intervention.
Jun EM, Chang S, Kang DH, Kim S. (2007) [8]	-	-	A significant difference in severity of dysmenorrhea between the two groups immediately after and for up to 2h post treatment.
Kashefi F, Khajehei M, Ashraf A, Jafari P. (2010) [9]	-	+	Acupressure at SP6 may be effective to alleviate primary dysmenorrhea. Side effects of acupuncture such as minor local bleeding or hematoma, needling pain, and vegetative symptoms are presented.

Table 2: Outcomes of acupuncture at SP6 for primary dysmenorrheal

Acupuncture at SP6 for pain relief			
Author(s)	TCM Pattern	Side effects	Outcomes
Armour M, Dahlen HG, Zhu X, Farquhar C, Smith CA. (2017) [9]	-	-	Acupuncture treatment reduced menstrual pain intensity and duration after three months of treatment and this was sustained for up to one year after trial entry.
Armour M, Dahlen HG, Smith CA. (2016) [10]	-	-	Most of the women in this study found improved symptom control and reduced pain.
Shi GX, Li QQ, Liu CZ, Zhu J, Wang LP, Wang J, Han LL, Guan LP, Wu MM (2014) [11]	-	-	The results showed that VAS scores of pain after acupuncture were significantly decreased comparing to before acupuncture treatment in all three groups. However, no significant differences were found among three groups at the beginning or end of acupuncture treatment
Chen MN, Chien LW, Liu FL (2013) [12]	-	-	These findings suggest that acupuncture at SP6 is not more effective than acupuncture at an unrelated acupoint in the relief from primary dysmenorrhea. Acupressure at SP6 may be effective in the relief from primary dysmenorrhea.
ShiGX, LiuCZ, Zhu J, GuanL, Wang DJ, Wu MM. (2011) [13]	-	-	There were significant differences in VAS scores between the SP6 and no acupuncture groups after intervention.

of the flow of energy to improve health depend on the Ying-Yang balance. This concept explains the symptoms of the body and the diseases are caused by imbalanced Yin-Yang or blockage of energy flow Qi in the body [1].

Acupoints, specifically chosen sites on the body surface for acupuncture and acupressure manipulation, can be stimulated to adjust the functions of organs for providing various therapeutic benefits [14].

Acupuncture triggers a stronger stimulation on the acupoints than acupressure to activate the body's innate healing ability. Acupressure, performed by the practitioner through stimulating the points on the surface of the skin by pressing with the hands, fingers, elbows or feet, is basically a non invasive acupuncture without the needles. Both healing therapies are using the acupoints to achieve the desired results. However, the main difference between these two healing forms is that an acupuncturist stimulates acupoints by inserting needles, whereas an acupressure practitioner stimulates the same acupoints by using finger pressure with body temperature.

Sanyinjiao (SP6, 三 (san)-陰(Yin)-交(jiao)),first discussed in Zhen Jiu Jia Yi Jing (The Systematic Classic of Acupuncture and Moxibustion, 針灸甲乙經), is on the Spleen Meridian of Foot Taiyin, and is the meeting point of three Yin meridians: Spleen, Liver, and Kidney. This Foot Taiyin meridian intersects the Conception vessel, enters the Spleen, connects with the Stomach, links with the Heart, passes through LV 14, and finally spreads over the lower surface of the tongue [15].

This acupoint, which is included in The Song of the nine needles for returning Yang (回陽九針歌), is used to benefit the Spleen and Kidney, transform dampness, and spread the stagnated Liver Qi. SP6is commonly used, based on the actions such as the tonification of Spleen and Stomach through resolving dampness, harmonization of Liver, regulation of urination and menstruation by invigorating Blood [16].

These three Zangs are closely connected with Blood that is the key in the menstruation and can be affected by the flow of Qi, as shown in (Table 3) [16].

The Zang (臟)-Fu (腑) theory, the Five Elements theory, and patterns are unique and absolutely different from those theories of the Western medicine. In general, those who have not learned TCM are usually confused with the functions of internal organs (Zang-Fu) in the TCM.

Kidney in the TCM is referred to as the "Root of Life" because it stores Essence (Jing, 精). Essence is the creator of life and the foundation for Yin and Yang. On the other hand, the essence the Kidney stores are the foundation of producing Marrow, which is often misunderstood because it cannot exactly correspond to bone marrow in the Western medicine. Essence can be transformed into Blood, and Blood nourishes Essence. In other words, both Blood and Essence interact with each other to maintain the Yin level for normal functions in the body [16].

The most important reason why this acupoint is frequently used for obstetric and gynecologic issues lies in Blood. This acupoint is used for the actions to [16]:

- Tonify the Spleen and the Stomach,
- Eliminate Dampness,
- Nourish the Blood and Yin,
- Regulate menstruation,
- Promote labor,
- Regulate urination,
- Benefit the genitals,
- Harmonize the Lower Burner
- Calm the Shen (神)

In the TCM, dysmenorrhea is categorized in the following patterns in (Table 4) [16].

A pattern (證) is the key to TCM, acupuncture, and acupressure. Unfortunately, patterns are seldom discussed or taken into consideration for research designs in the modern scientific researches. Instead, most current researches only focus on the diseases, which cannot examine the efficacy of TCM, acupuncture, and acupressure accurately.

This study shows that either acupuncture or acupressure at SP6 can induce a relief in pain during menstruation. The mechanisms of acupressure and acupuncture remain unknown, even though these two modalities have been studied for more than 50 years by researchers all over the world.

Medicines, such as ibuprofen, ketoprofen, mefenamic acid, and naproxen, are effective in the pain relief from dysmenorrhea. Unfortunately, the use of these can be costly and associated with side effects [2].

It is usually believed acupuncture is more effective than acupressure. Compared with acupuncture, the results of Mirbagher-Ajorpaz's [5] and Wong's [6] studies show the surprising "immediate" effects to reduce pain with acupressure.

Chen [12] reported acupressure at SP6 might be effective in the relief of pain resulted from primary dysmenorrhea and the factors that should be taken into consideration include participants' positions during the treatment, how primary dysmenorrhea was diagnosed, and manipulations.

Possible explanations for the mechanisms of acupuncture and acupressure at SP6 to reduce pain may be biochemical reactions, neuroendocrine activities, and immune system. Present researches selected are summarized in (Table 5).

Table 3: Functions of Zangs related to Blood

Zang	Functions
Liver	Storing Blood and regulating the volume of Blood
Spleen	Controlling Blood
Kidney	Controlling Bone

Table 4: TCM categorizations of dysmenorrheal

Deficiency	Excess
● Deficiency of Qi and Blood due to deficiency of spleen and stomach ● Severe illness leads to malnourishment of uterus and Chong and Ren channels. Deficient qi causes blood stasis. Liver and kidney deficiency due to congenital condition ● Over indulgence in sex activity or giving birth many times cause deficiency of essence and blood, leading to malnourishment of uterus, Chong and Ren channels	● Coldness retention in the uterus and Chong and Ren channels causes obstruction of flowing of qi and blood ● Congenital yang deficiency with yin coldness-excess cause deficient coldness in the Chong and Ren channels leading to blood stasis ● Damp-heat in Lower burner disturbs qi and blood

Table 5: Possible mechanisms of acupuncture and acupressure at SP6 to reduce pain

Author(s)	Paper title	Findings
da Silva MD, Bobinski F, Sato KL, Kolker SJ, Sluka KA, Santos AR (2015) [17]	IL-10 cytokine released from M2 macrophages is crucial for analgesic and anti-inflammatory effects of acupuncture in a model of inflammatory muscle pain.	Acupuncture at SP6down-regulated M1 macrophages (pro-inflammatory cells) and up-regulated M2 macrophages (anti-inflammatory cells and important IL-10 source), which plays an important role in immune responses.
Shi GX, Liu CZ, Zhu J, Guan LP, Wang DJ, Wu MM (2011) [13]	Effects of acupuncture at Sanyinjiao (SP6) on prostaglandin levels in primary dysmenorrhea patients.	No statistically significant differences were observed by changes in the prostaglandin levels
Chen HM, Chen CH (2004) [18]	Effects of acupressure at the Sanyinjiao point on primary dysmenorrhea	The findings suggest that acupressure at Sanyinjiao can be an effective, cost-free intervention for reducing pain and anxiety during dysmenorrhea by activating the endogenous opioid system.

Prostaglandin plays a key role in the generation of the inflammatory response. In the inflamed tissue, biosynthesis and release are significantly increased. Shi (2010) reported there were not statistically significant differences observed by changes in the prostaglandin levels. This outcome indicated acupuncture could control the release of prostaglandin to prevent the tissues from inflammation [19].

In the immune system, it is stated that a pain relief from dysmenorrhea was mediated by the release of endogenous opioids to down-regulated M1 macrophages and pro-inflammatory cells, and then up-regulated M2 macrophages and anti-inflammatory cells with the stimulation of acupuncture or acupressure.

It is confirmed and agreed on the stimulation at the acupoints with acupuncture could increase blood flow velocity of the peripheral arterioles and oxygenated hemoglobin [20,21]. On the other hand, Hsiu [21] reported that acupressure or acupuncture could modulate the blood circulation of the body surface. When blood circulation increased in the affected areas, pro-inflammatory response decreased with the regulation of inflammation process and growth factors [21].

The role of acupuncture in stimulating immune function, including increasing blood cell count containing hemoglobin and enhancing lymphocyte and natural killer cell activity, has been confirmed [22].

Hemoglobin in blood cell binds to either oxygen or carbon dioxide. This binding allows oxygen to be transported around our body to our tissues and organs, and carbon dioxide to be taken away. However, the number of hemoglobin relies on the functions of kidney in the TCM and the Western medicine [22].

The literature of oxygen metabolism, the theory of meridians, and Qi in the meridians highlights that both Qi and oxygen have informational, material, and functional features, and bear high similarity in physiological functions and pathological reactions [22].

One of the functions of the kidney is to set the hematocrit at a normal value of 45% to maximize oxygen delivery [23]. The rising formation of red blood cells, which are promoted by the hormone Erythropoietin (EPO) produced by the kidney, increases the oxygen-carrying capacity of the blood. However, it is stated that the production of Erythropoietin is determined by tissue oxygen pressure. In other words, the kidney is closely connected to the oxygen circulation [24,25].This statement highlights the functions of Kidney in the TCM. Kidney qi, to some extent, can be viewed as blood oxygen [1].

Blood circulation benefits the tissues to fight inflammation. This can explain either acupressure or acupuncture at SP6 is effective for primary dysmenorrhea because the Kidney meridian meets with the Liver and the Spleen meridians at this point.

The literature discussed above indicates Blood, which increases Erythropoietin (EPO) to promote oxygen capacity, plays a critical role in pain relief, as shown in (Figure 1). However, there are not any researches explaining the relationship between fingers' temperature and the effectiveness of acupressure.

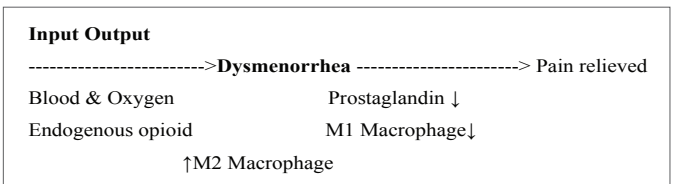

Figure 1: The functions of Qi and Blood in pain relief

Conclusion

Patients and health providers may take clinical effectiveness, cost-effectiveness, and side effects into consideration in deciding modalities. For safety, acupressure is non-invasive, non-pharmacologic, and has no side effects. With respect to time and convenience, this therapy is a self-manageable approach and can be applied by the patients themselves, family, friends, and health providers. In addition, it is cost-free and easy for patients to enhance the quality of life.

Compared with acupuncture that may cause side effects suggested by Kashefi [7], acupressure deserves recommendations for immediate effect, safety, cost-free, no side effects, and convenience.

On the other hand, whether or not Sanyinjiao (SP6) can be more effective in treating primary dysmenorrhea in combination with herbs or other acupoints needs further study.

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