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Acupuncture and its Effects on Infertility:

A Literature Review

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ABSTRACT

INTRODUCTION: Infertility is an issue that many males and females struggle with throughout adulthood. This paper will investigate an alternative method of treating infertility, acupuncture. Infertility is the inability for an individual to become pregnant after one year of trying or a female that has consecutive miscarriages and affects about 15% of couples. There are alternative therapies that have been explored to treat this problem, such as Traditional Chinese Medicine (TCM), acupuncture, and herbal and dietary changes. Many women search out another method to treat infertility due to failed in vitro fertilization (IVF). The application of TCM has shown increased menstrual cycles, positive attitudes towards TCM, increased incidences of successful pregnancies with acupuncture administered near the time of IVF of the embryo, and decreased infertility-related stresses.

METHODS: Several databases were searched when researching material, such as PubMed, EBSCO Host, Elsevier Science.

DISCUSSION: The literature shows that infertility is a problem amongst couples and that these couples are seeking alternative treatments and therapies. Of these therapies, acupuncture (sometimes referred to as Traditional Chinese Medicine) is frequently chosen. Primary and secondary types of infertility are defined in the literature as well as a variety of etiologies. The research has shown that in most cases, acupuncture has improved the "imbalances" a female may be experiencing hormonally and that it also stimulates increased blood flow to reproductive organs. Acupuncture and infertility is a poorly researched topic that provides a multitude of limitations.

KEY WORDS: acupuncture, infertility, Traditional Chinese Medicine (TCM), CAM.

INTRODUCTION

Infertility is defined as “the inability to conceive a pregnancy within 1 year”⁶ of unprotected intercourse or “the inability to achieve a live birth.”¹¹ Infertility is a common problem that affects approximately 7-17% of all couples who are seeking to have children.¹ Turning to complimentary and alternative medicine (CAM) has become a more common solution rather than attempting other methods, such as in vitro fertilization or other assisted reproductive technologies that tend to be expensive, evasive, and time consuming.⁴ The National Institute of Health (NIH) released a consensus in 1997, years after acupuncture flooded into the United States and became largely popular, and stated that “acupuncture is a promising modality for treating a wide range of conditions.”⁶ The consensus also stated that they found adequate scientific evidence to support incorporating acupuncture with conventional medicine.⁶

CAM has many components, one being Traditional Chinese Medicine (TCM). TCM is defined as “a comprehensive system for the assessment and treatment of acute and chronic disorders, as well as for preventative health care and maintenance.”² Classically, TCM is made up of several therapies: pelvic physical therapy, hypnosis, yoga, homeopathy, and spiritual healing¹, but the two main components typically utilized by women struggling with infertility are: Chinese Herbal Medicine (CHM) and acupuncture.

Ancient Chinese history provides a book, *The Complete Book of Effective Prescriptions for Diseases of Women*, and shows that CHM and acupuncture have been effective in treating numerous gynecological issues: infertility, dysmenorrhea, and abnormal uterine bleeding, to name a few.² Another medical classic, *Treatise on Febrile Diseases*, shows the use of acupuncture in treating infertility as early as 200 A.D..²

Acupuncture can be explained by the following: the needle punctures the skin and the initial contact sends “an electrical signal that runs from the sensory nerves to the spine and back out along motor nerves.”³ This technique works for a variety of symptoms and conditions. Therefore, with an infertility patient, the electrical signal would then lead to and stimulate blood flow to the appropriate reproductive organs.³

This literature review will examine the effectiveness of TCM, in particular acupuncture, on a variety of infertility issues.

DISCUSSION

Causes of Infertility

TCM has the philosophy that all living things have two opposite, but complementary, forces: Yin and Yang. When Yin and Yang are in balance this is called homeostasis. Therefore, disease is the imbalance of the Yin and Yang. The human body is full of Qi, or vital energy. It is responsible for warmth, protection, and the production and distribution of fluids and blood within the body.⁶

According to TCM theories, there are a multitude of syndromes that cause infertility. First, infertility can be caused by a deficiency in the liver and kidney organs,² called “Yin deficiency” or “Yang deficiency.”⁸ The liver organ stores blood and “reproductive essence” and the kidney organ stores the Qi. Therefore, a weakness or imbalance in one of these organs, will result in an imbalance in the other organ.⁶ This causes an endocrine disruption in the body and therefore an overall hormonal imbalance. Stagnant Qi,² called “Qi Stagnation,” and “Stasis of Blood”⁸ is another syndrome of infertility. Although hormone balance is normal, the lack of circulation makes reproduction impossible. The stagnant blood is found in the form of endometriosis in the female body. The last syndrome is called Damp-heat,² also called

“Dampness of the Lower Burner.”⁸ This syndrome causes improper functioning of the internal organ systems. Damp-heat is similar to inflammation, therefore it must be eliminated for proper functioning and for sexual reproduction to occur.²

Potential Predictors of Patients

There are a variety of characteristics that potentially predict how likely an infertile couple will be to trying a form of CAM. These predictors include a variety of genetic factors as well as socio-economic statuses. Some of these predictors are: married couples, Caucasian, college graduates, annual household income of less than \$100,000, most common infertility diagnosis as an isolated female factor, and a mean duration of infertility of approximately two years.¹

A certain persona of patients choose to pursue complementary and alternative medicine, such as acupuncture. Some of these patients are dissatisfied with or have received poor outcomes with their current care, have a need for more control in their healthcare decisions, are looking for care of chronic illnesses, the perceived naturalness of complimentary and alternative medicine is appealing to them, or the personalized nature of the interaction with the TCM practitioners and individualized treatment protocols are something they desire.¹⁴ Other characteristics that are strong predictors of women, in particular, choosing a TCM practitioner for infertility care, are their “strong desires for motherhood,” negative experiences with assisted reproductive technologies and other therapies, and their positive experiences, whether it be personal or word-of-mouth, of complementary and alternative medicine.¹⁴

How It Works

Research shows that acupuncture helps to “normalize the hypothalamic-pituitary-ovarian axis.”² Acupuncture consists of pathways, or meridians, within the body where Qi and blood flow. Along each pathway are acupuncture points. The points are needled, which then “regulates

the flow of Qi and blood in the meridian system, rectifies the disturbance and dysfunction of organs in the body, and restores their normal function.”¹⁷ This therefore regulates the female’s hormones, improves the circulation of Qi, and increases blood flow to the uterus³ and ovaries.¹⁰ It also has the ability to regulate the gonadotropin-releasing hormone that induces ovulation and improves the uterine blood flow and menstrual changes of endometrium.²

TCM uses a larger, dynamic mode of diagnosing infertility conditions. Overall general health, pulse and tongue examinations, menstrual health, such as blood color, texture and flow, duration and frequency, temperature variation, and pain, are all used by TCM practitioners to better understand, and ultimately treat, infertility sufferers.¹¹

Acupuncture also helps to reduce anxiety, stress, immunological disorders, and polycystic ovary syndrome. It has overall health benefits such as increased energy, increased relaxation and calmness, reduction in the reliance of prescription drugs, quicker healing from surgery and increased self-awareness, sense of wholeness, balance, centeredness, well-being, increased self-efficacy, and an overall change in life.⁵

A research study was performed in which practitioners with decades of experience in acupuncture were interviewed and researchers wanted to develop an “infertility protocol” that could be used worldwide. Researchers came to the realization that acupuncture treatments go beyond needling the skin. They include a therapeutic relationship with the patient, diet and lifestyle advice, as well as the addition of Chinese herbal medicine. It also takes years of work by the practitioner to become knowledgeable in the variety of underlying causes of infertility. They must also be able to take on the spiritual and emotional states the patients are experiencing when they seek TCM treatment.¹³

Variety of Study Results

There are a variety of research studies that incorporate TCM, especially acupuncture, into their treatment protocols to evaluate the effectiveness and its ability to treat a variety of infertility conditions.

One study showed the benefits of acupuncture by combining it with Korean Herbal Medicine and moxibustion for unexplained fertility conditions. Patients were given a multitude of herbal treatment packages, moxibustion on the acupuncture point CV8, and herbal acupuncture on the points CV4, BL19, and BL22. Of the women that completed the study, there was a pregnancy success rate of 60.9%.⁴

Another study measured women's perceptions of acupuncture and then combined acupuncture with IVF. After numerous interviews and treatments, the majority of the women's perceptions were "very high" and were ranked 9 or 10 on a scale of 1 to 10 (with 10 = very helpful) when asked how helpful acupuncture was in helping them to become pregnant. The results showed 6 of the 8 participants became pregnant after treatment, but research results from this particular study cannot show if the success rates were due to the acupuncture or the acupuncture and IVF combined.⁵

Acupuncture can also help with male infertility as shown in at least one study. Researchers treated the experimental group of infertile men, for 5 weeks, 2 times a week. Compared to the control group, the treated group showed increases in total functional sperm fraction, percentage of viability, and total motile sperm per ejaculation.⁷

A Norwegian study selected fertile and infertile women to participate in a study. Each female received individualized acupuncture points that were associated with her condition and then treated. Points were chosen based not only on the female's specific infertility condition, but also on the acupuncturist's experience. Points that were coincidentally found to be needed on

all infertile women were: CV4, CV3, and ST29. Therefore, researchers concluded these points are important to include in all acupuncture treatment protocols for any infertile female patient.⁸

Another study approached females and infertility from a psychosocial approach. This study contained two groups: one being a control group of infertile women and the other being infertile women who received acupuncture treatments. After six treatments, the treated group described a physical and psychological sense of relaxation and calmness, as well as a changed perspective in relation to coping skills. They stated their focus toward pregnancy changed; they had a reduction in anxiety, change in attitude, and a change in communication with their partners about their infertility. Others experienced positive benefits with a plan to pursue IVF treatments following the acupuncture study. These researchers also found common points used on all the infertile subjects. These points were: HT5, HT7, PC5, and PC6. It is suggested that these points would psychologically benefit other infertile patients.⁹

A South Australian study gathered a group of infertile women, interviewed them, treated them with acupuncture, and then gathered their opinions on TCM. Twenty-five women participated in the study. They had a variety of reasons for participating in the study: some were unsuccessful with IVF previously, others were seeking another way to achieve pregnancy besides IVF, some wanted to try a less invasive therapy, or others just wanted to understand the underlying causes of infertility before pursuing any form of treatment. The women were treated with acupuncture, Chinese herbal remedies, and given lifestyle and dietary advice. All of the women reported changes in the menstrual cycle after a few months of treatment. These changes included regulation of temperature pattern and cycle length, as well as changes to blood and mucus quality. At the end of the study, 5 women had given birth with successful pregnancies, 1 was currently pregnant, and 5 others had conceived by going through IVF treatments following

their TCM treatment protocols after previous unsuccessful IVF attempts. The women also demonstrated positive experiences and opinions of TCM, such as adequate fertility education and awareness.¹¹

A study focused on infertile men suffering from severe oligoasthenozoospermia; researchers examined the effects on sperm when acupuncture was used as the only form of treatment. After the acupuncture treatments, researchers found a significant increase in sperm motility as well as improved sperm concentration. The results encourage infertile men with the primary cause of oligoasthenozoospermia to seek acupuncture treatment.¹²

Another study performed evaluated the effects of electro-acupuncture and its ability to reduce the pulsatility index (“impedance in the blood flow to the uterine arteries”). The researchers believed the electro-acupuncture inhibited the sympathetic outflows at the uterine spinal levels. After treating 10 infertile women with electro-acupuncture on the following acupuncture points: bilateral BL23 and BL28, and bilateral SP6 and BL57, it was found that eight treatments were enough to show a significant reduction in the pulsatility index immediately following the eighth treatment and 10 to 14 days after the conclusion of all the treatments. Researchers concluded that pulsatility index levels can be reduced to a more optimal level (for conception) in the uterine arteries via electro-acupuncture only.¹⁵

A similar study was performed by a different group of researchers more recently, examining the effects of electro-acupuncture on uterine and ovarian blood flow. Measurements of blood flow were taken on 10 infertile women via doppler ultrasonography. All the women were down-regulated with gonadotropin-releasing hormone to avoid other hormonal effects. After treatment, it was found that electro-acupuncture does reduce blood flow impedance to normal levels in the uterus and ovaries. It also discussed optimal frequency levels of 2Hz or

10Hz burst, depending on what stimulator is used. The final finding was that needles stuck in the abdomen or leg muscles were more responsive to the stimulation due to the somatic innervations of the uterus and ovaries, and because “the effect was mediated via ovarian sympathetic nerves, via supraspinal reflexes.”¹⁶ This research supports earlier research stating that electro-acupuncture does appropriately effect reproductive organs’ blood flow in infertile women.

Researchers performed a study on 24 females with polycystic ovary syndrome. They hypothesized that electro-acupuncture would induce ovulation in women with this condition. They stimulated the acupuncture points BL23 and BL28 bilaterally and PC6, TE5, and GV20 unilaterally, stimulating the unilateral points five times during each treatment. There were a total of 10 to 14 total treatments given to each participant. After the study, it was determined that 9 women experienced a “good effect” with the electro-acupuncture. This meant that their measured basal body temperature disclosed repeated ovulations, or pregnancy, during the treatment timeframe or the three months following the cessation of treatment. The other women experienced “no effect.” After further investigation by the researchers, it was found that the 9 women who benefitted from the electro-acupuncture all had a significantly lower body mass index, a lower waist and hip circumference ratio, decreased insulin, testosterone, and testosterone/sex hormone binding globulin ratio, and a higher serum sex hormone binding globulin. The other significant finding was that all the women, both with “good” and “no effects,” experienced increases in their serum prolactin levels, decreased LH/FSH ratios, decreased serum testosterone levels, and decreased plasma Beta-endorphin. Researchers concluded that electro-acupuncture was beneficial to women with polycystic ovary syndrome as long as they were “less androgenic and less metabolically affected.”¹⁵

Another study researched acupuncture and its effects on “hormonal disturbances” on polycystic ovary syndrome and anovulation. Researchers used repeated 2Hz low burst frequency electro-therapy. The results showed that the electro-therapy treatments had long-lasting effects on endocrinological parameters (or “hormonal disturbances”) and anovulation. These results were explained that the electro-acupuncture “modulates activity in the sympathetic nervous system and that there is a functional interaction between activity in the nervous and the endocrine systems.”¹⁶ Researchers in this study insisted that more randomized controlled trials are needed to gain an even better understanding.

Researchers performed a similar study checking the efficacy of electro-acupuncture for ovulation induction on 24 oligo/amenorrheic women with polycystic ovary syndrome. After treating participants, results showed an improvement from 15% to 66% in ovulatory cycles up to three months after the completion of the acupuncture treatments. Researchers also noted that the more responsive patients had a lower body mass index, waist-to-hip circumference ratio, serum T concentration, serum T/sex hormone-binding globulin ratio, and serum basal insulin level. It was concluded that acupuncture is an appropriate alternative or adjunct therapy for patients suffering from ovulatory issues.¹⁸

An auricular acupuncture study examined 45 infertile women with ovulatory dysfunction that were treated weekly. Researchers noted a frequency of some stimulated acupuncture points, such as: gonadotropin point, ovarian point, uterus point, gestagen point, kidney point, hypothalamic-pituitary area points, spleen point, secondary psychosomatic points, and omega points. Researchers used either gold or silver needles. They also had a control group that was treated with drug therapy. The results showed that acupuncture patients had more frequent ovulatory cycles, but the pregnancy rates were not significantly different between groups.¹⁹

The above studies show the numerous positive outcomes that acupuncture has had on a variety of infertility issues, both male and female. Most of the studies measure the bodily effects, such as ovulation or blood flow, but not pregnancy rates or outcomes of these positive results.

CONCLUSION

When considering alternative treatment options for those struggling with infertility, CAM has become more appealing to infertile couples, not only for the effectiveness, but also because of the noninvasiveness, its non-time-consuming, the safety, the minimal side effects, and the cost effectiveness of each treatment.⁴ It is also noteworthy that acupuncture can treat patients both physically and emotionally. This is significant because with infertility comes grief, depression, anxiety, and chronic stress.⁹

Acupuncture treatments do not always have to involve needles. Some patient may have a needle-phobia and therefore would not even consider acupuncture for infertility treatment. Because of this, it is necessary to note that there are other ways to treat acupuncture points and get the same effects as using needles. Acupressure, transcutaneous electrical nerve stimulation, moxibustion, and laser are all other ways to stimulate acupuncture points and still receive the desired effects.¹⁰ More research needs to be done with these alternative stimulants.

There are a multitude of limitations that apply when it comes to acupuncture research studies. First and foremost, there is a lack of research available in this area because it is a poorly investigated topic. TCM is a topic that is under-researched but has become more popular as a treatment option. Therefore, researchers must continue to investigate and produce sufficient evidence supporting its efficacy. It was found that the studies need to be more dimensional,

meaning they should include control groups, double-blind studies, placebo-controlled groups, adequate designs, and appropriate sample sizes.

As important as it is to seek results, it is also important to maintain a control group to evaluate the differences. Many of the studies reveal to the participants what group they are assigned to, therefore this has an affect on the participants and causes a treatment-result bias. One research article found included a placebo-controlled group. This group was treated with non-penetrating needles. The only problem with this is that the acupuncture point is still being stimulated, even though the skin is not punctured. This concept is similar to acupressure. This can skew the data and results. Researchers need to keep these limitations in mind when formulating the next round of studies and experiments.

Other acupuncture-related factors that need to be monitored with research are the frequency of treatments, the points that the needles are placed in and stimulating, if the practitioner utilizes gold or silver needles during treatment, as well as the amount of time the needles are left in the skin to stimulate. These should all be considered when developing research studies.

As many of the research articles stated, acupuncture treatments must be individualized for each patient seeking care. Not all patients present with the same underlying cause of infertility, therefore they cannot all be given identical “acupuncture recipes” as a treatment. Some of the research suggested appropriate acupuncture points to treat when addressing a patient with a particular condition, but it is up to the practitioner to develop a treatment protocol of acupuncture points that will best benefit the patient and his/her condition.

Therefore, the research shows that acupuncture does help with some infertility conditions, such as polycystic ovary syndrome, anovulation, and male infertility, just to name a

few. It is both an adequate treatment and an appropriate adjunct therapy to other treatments the patient may be pursuing.

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