

Acupuncture Treatment for POI Resulted in Successful IVF: A Case Report



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Abstract

This article presents a case report of a primary infertility patient diagnosed with Premature Ovarian Insufficiency (POI), who failed three attempts of IVF and two IUI treatments. After which acupuncture was used as a treatment and produced a successful IVF. The patient, a 36-year-old woman, presented at our clinic with high FSH 35, low AMH <0.1, AFC 4, and primary infertility for more than 1.5 years. She wanted to improve her ovarian reserve, egg quality, and her chances of successful IVF. The patient received 27 acupuncture treatments over the course of 8 months, which resulted in pregnancy. This case suggests that acupuncture is an effective treatment for IVF patients with POI.

Keywords: Premature Ovarian Insufficiency; In Vitro Fertilization; Acupuncture; Low AMH; Infertility

Abbreviations: AFC: Antral Follicle Count; AMH: Anti-Mullerian Hormone; ET: Embryo Transfer; FSH: Follicle-Stimulating Hormone; HCG: Human Chorionic Gonadotropin; IUI: Intrauterine Insemination; IVF: In Vitro Fertilization; POI: Premature Ovarian Insufficiency; POR: Poor Ovarian Response; TCM: Traditional Chinese Medicine

Introduction

Primary Ovarian Insufficiency (POI) is defined as a disorder that occurs when a woman's ovaries stop functioning before age 40. The diagnostic criteria of POI include: amenorrhoea or oligomenorrhoea for at least four months and increased Follicle-Stimulating Hormone (FSH) levels > 25 IU/l measured twice (with a four-week interval), according to the European Society of Human Reproduction and Embryology (ESHRE) Bologna criteria [1]. The diagnostic criteria of poor ovarian response (POR) refers to when a woman has a poor response to IVF stimulation of her ovaries, which is defined as having at least two of the following three characteristics: (i) maternal age \geq 40 or any other risk factors for POR; (ii) a previous POR such as a history of cycle cancellation or fewer than four oocytes retrieved after gonadotropin stimulation; and (iii) an abnormal ovarian reserve test, i.e. AFC less than five to seven follicles or AMH below 0.5-1.1 ng/ml.

General information

The first consultation was on July 18, 2020. A 36 year-old woman, G0P0A0, had been diagnosed with POI (cause unknown), had already had 3 failed attempts of IVF-ICSI and 2 IUI in 2019, and her husband's semen analysis showed low sperm count and motility. Her main complaint was difficulty in getting pregnant:

the couple had been trying for 1.5 years. Her main symptoms included: light and short periods, her menstrual cycle varied between 24-26 days with light bleeding that lasted 3 days only; hot flashes with night sweats; cold hands and feet in the winter; discolored skin patches due to vitiligo disease on the hands, legs, breasts, head, and back; constipation, bowel movements once every 2-3 days; her tongue was stiff and red with a white coating; the sub-lingual veins were dark red; her pulse was thin and weak.

TCM Diagnosis: Primary infertility due to kidney essence deficiency, spleen qi deficiency, liver qi stagnation, Chong-Ren imbalance and blood stasis.

Acupuncture Treatment Strategy: Strengthen and enrich kidney yin, nourish spleen qi, regulate liver qi, rebalance yin and yang, and promote the flow of blood and qi (Table 1).

Methods

The IVF procedure involves several steps such as ovarian stimulation, egg retrieval, sperm retrieval, fertilization and embryo transfer. The strategy for acupuncture that supports IVF protocol has four steps.

Table 1: Summary of IVF attempts 2019-2021.

Date of IVF	Acupuncture	Number of oocyte retrievals	Number of embryos and grade	ET	Result
Mar-19	NO	0	0		N/A
Jun-19	NO	2	1 day 2	NO	Embryo died
Jan-20	NO	2	1 day 2	NO	Embryo died
Sep-20	YES	3	1 day 3, Grade1	YES	Failed in implantation
Dec-20	YES	2	1 day 3, Grade1	NO	Frozen embryo
Dec-21	YES	1	1 day 3, Grade1	YES	Blood test positive

Table 2: Summary of the tests after IVF-ET and during pregnancy in 2022.

Description of test/exam	Results
1 st Beta in Jan 9 (14dp3dt)	β-HCG 44.8 mIU/ml
2 nd Beta in Jan 16 (21dp3dt)	β-HCG 1842 mIU/ml
1 st Ultrasound in Jan 16	A gestational sac of 5mm
2 nd Ultrasound in March 8 (12w5d)	Fetal heart rate:158bpm
Panorama Test (NIPT) in March 10 (13w)	Low risk
	Sex: boy
	Due date: September 15, 2022

Step 1: Preparation 3 months before IVF procedure to regulate the menstrual cycle

Acupoints:

Group 1

St 25 (Tianshu), St36 (Zusanli) nourish stomach qi.

Li4 (Hegu), Liv3 (Taichong) calm liver yang, regulate qi and blood, unblock the meridians.

Ki3 (Taixi), Ki12 (Dahe) invigorate kidney qi.

Sp6 (Sanyinjiao), Sp9 (Yinlingquan) invigorate spleen and replenish qi.

Sp4 (Gongsun), Pc6 (Neiguan) adjust Chongmai qi and blood.

Rn 4 (Guanyuan), Rn 6(Qihai), Rn 12(Zhongwan) strengthen primordial qi, regenerate vitality

EX-CA1 (Zigong) raise and regulates uterine qi.

Group 2

Back shu points (Bl13, Bl18, Bl20, Bl21, Bl 23) regulate the qi and blood of five Zang

Baliao (Bl31, Bl32, Bl33, Bl34) regulates the qi and blood of the bladder channel and Baogong.

Group 3

Auricular points: Zigong (TF2), Shenmen (TF4), Endocrine (CO18), Liver (CO12), Spleen (CO13), Kidney (CO10)

Frequency: one time a week, 12 times a treatment course.

Step 2: From IVF ovarian stimulation to egg retrieval (9-15 days)

The purpose of this phase is to improve the sensitivity of the body to react well to drugs and reduce the side efforts of the hormone injections. The common side effects of HCG injections are irritability, breast tenderness, hot flashes, headaches, nausea, blurred vision, etc.

Acupoints: group 1, 2, and 3 as step 1.

Step 3: After the embryo transfer to Beta HCG test (14 days) to increase endometrial receptivity

Acupoints:

Group 4

Du20 (Baihui), Sishengchong, Yintang, RN17 (Danzhong), Rn 12 (Zhongwan), Rn 6 (Qihai), Rn 4 (Guanyuan), St28 (Shuidao), Pc6 (Neiguan), St36 (Zusanli), Ki3 (Taixi), Liv3 (Taichong). Ear points: Shenmen (TF4), Kidney (CO10), Spleen (CO13).

Frequency: 1 time a week.

Step 4: After the confirmation of pregnancy

The purpose of continuing acupuncture is to reduce the possibility of miscarriage and complications during pregnancy.

Acupoints:

Group 4

In each session, some variable points were added based on the patient's different symptoms; for example, headaches,

GB20 (Fengchi), GB41 (Zulingqi); insomnia, Anmian (Ex-HN16); constipation, Erbai (Ex-UE2); lower back pain, SI3 (Houxi).

Frequency: one time a week during the first trimester; 1time a month during the second and third trimester.

Manipulation

After disinfecting all points with a cotton ball dipped in alcohol, the order of inserting the needles is from the lower limbs to the abdomen, starting on the left side and finishing on the right side. Disposable sterile needles, size 0.25x25mm, are used and are inserted perpendicularly in all points to a depth 10 to 15mm. A KWD-808 I electro acupuncture instrument is connected at ipsilateral Ki12 and ZIGONG, Baliao (Bl31-34), and set to a continuous wave, the intensity of which is based on the patient's preference. Needles remain inserted for 30 minutes each session, acupuncture points are needled bilaterally and alternately, and a TDP lamp is used on the belly during the session.

The position during pregnancy for acupuncture varies based on the comfort of the patient; the patient either lies on her back or on her left side.

Results

After receiving 12 acupuncture treatments during the preparation period, the patient's menstruation cycle extended to 27-28 days; the patient's overall health improved; for example, better energy, good mood, deeper sleep, the night sweats stopped, regular bowel movements once a day, kidney and spleen qi improved, and liver qi had been regulated. She had a better response in the following three attempts of IVF in 2020-2021. Three of her of day-3 embryos were grade 1. Finally, she got pregnant from the last IVF-ET in December 2021. She passed the Panorama test and is expecting a healthy boy in mid-September 2022. See table 2 of the summary of the tests after IVF-ET.

Discussion

Based on TCM theory, the acupuncture protocol to treat women who suffer from infertility due to low ovarian reserve is to focus on treating the qi in the spleen, stomach and kidney [2], reference to which is found in the following sources. The importance of stomach qi in aging is found in the ancient treatise of Traditional Chinese Medicine (TCM), The Yellow Emperor's Classic of Internal Medicine (in Chinese: 黄帝内经): "for women at thirty-five years old, the yangming/stomach and large intestine channels that govern the major facial muscles begin to deplete". Related to the spleen and stomach, the treatise The Theory of the Spleen and Stomach (in Chinese: 脾胃论) by TCM Master Li Dongyuan from the Ming Dynasty states that "all diseases are caused by the decline of the spleen and stomach". And lastly, the centrality of the kidneys to pregnancy was written about during the late Qing Dynasty by the renowned TCM doctor Zhang Xichun in the Medical Records of Chinese and Western Medicines (in Chinese: 医学衷中参西录):

"Both male and female fertility depends on the essence of kidney. Therefore, kidney essence is the basis of fertility; the kidney qi is the key to achieving a perfect pregnancy. The exhaustion of Tiangui (kidney essence) mainly dominates the rise and fall of reproductive function under the influence of kidney qi".

Although acupuncture has been practiced as a therapeutic modality in the East for more than two thousand years in China, it has only been widely used in the West to support *In Vitro* Fertilization (IVF) since 2002 when Dr. Zhang Mingmin integrated acupuncture with IVF when he worked with the German researcher Dr. Paulus. Their research results showed that the number of pregnancies was 42.5% for those assisted with acupuncture compared to 26.3% in the control group which did not receive acupuncture. This was the first article on the increase in clinical pregnancy rate due to the use of acupuncture during IVF [3]. In this case study, the patient presented with a high FSH level and low AMH, which caused Poor Ovarian Response (POR) to IVF medications. The method of acupuncture used in this case is based on the study of classic literature, and is combined with clinical experience and aims at the pathogenesis in TCM of POI and its three basic etiologies: kidney essence deficiency, Chong-Ren imbalance, and spleen and stomach weakness [2]. Meanwhile, for the treatment of POI, it is first necessary to protect the spleen qi while tonifying kidney qi. At the same time as receiving acupuncture, the patient is asked to regulate their diet and adjust their lifestyle by eliminating raw food, cold drinks, sugar and alcohol, going to sleep early, and doing regular exercise.

The principle of treatment is to invigorate the kidney essence, regulate Chong Ren channels, and tonify the spleen and stomach qi through specific abdomen channels like Ren, kidney, spleen, stomach channels points and the Zangfu back Shu points of the bladder channel, and through the holographic theory of auricular points. The different acupuncture points in the ear correspond to specific parts of the human body and internal organs such as the endocrine system, the uterus, liver, spleen, and kidneys. The acupuncture protocol used, in this case, both body and auricular points in order to replenish kidney essence, regulate Chong Ren and invigorate spleen and stomach qi, with the aim of regulating the patient's menstrual cycle, improving egg quality, drug sensitivity and endometrial receptivity. As a result, the patient finally had a successful IVF-ET and became pregnant.

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