Chapter 8: TCM's promotion to Assisted Reproductive Technology (ART)

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General introduction on Assisted Reproductive Technology (ART): ART is the medical technology which its inventor, British scientist **Prof Robert Edwards** (27 September 1925 – 10 April 2013), was awarded the Nobel Prize for Physiology or Medicine in 2010; ART has made a revolutionary progress to treat Infertility, so it has been becoming the mature and routine treatment to Infertility in Conventional modern / western medicine in UK and throughout the world. Initially, there was not a high successful result from ART, but its successful rate has gradually been increased in last few years. During this procedure, TCM plays an unignorably supportive role which should be paid more attention.

There are 5 main treatments in ART:

IUI – Intra-Uterine Insemination: IUI is one of the simplest forms of Assisted Reproductive Technology. It involves collection of the sperm, preparing the sperm in the lab and then inserting the prepared sperm into the uterus (womb) of the woman close to the time of ovulation. It is usually only suitable for selected couples and those without fertility problems, such as single women and same-sex couples.

IVF – In Vitro Fertilisation: IVF is the most typical form of ART. In general, it is the collection of sperm from the male and eggs from the woman, which are then placed together in a petri dish in the laboratory. The embryologists then observe if fertilization takes place and following this if the embryo undergoes cell division (cleavage). Good quality embryos are inserted back into the uterus of the woman at any time from day 2 to day 5. There are three kinds of IVF: **Natural Cycle IVF** which is performed in a woman's natural cycle without drugs during fertility treatment; **Conventiona**l IVF in which a high dosages of fertility drugs are in order used to stimulate the growth of multiple follicles and embryos; and **Mild IVF** which is performed in a woman's natural cycle. Only small dosages of Fertility drugs are given with the aim to produce high quality eggs, not high quantity.

IVM – In Vitro Maturation: immature eggs are collected from a woman's ovaries during a natural (unstimulated) cycle; then they are matured in the laboratory; after they have reached sufficient maturity, an ICSI is performed on them to achieve fertilization. This technique is suitable to ladies who suffer from weaker storage of their ovaries.

Vitrification – 'The Fast-freezing Method' is the method which is created to freeze eggs, sperm and embryos. In this way, gametes and embryos can be kept in the laboratory for performing an insertion again in a convenient time.

ICSI – Intra-Cytoplasmic Sperm Injection: which is used to achieve normal fertilisation where there is a male factor problem. It involves an embryologist selecting a single sperm, removing the tail and then injecting it into the egg.

8.1 TCM's promotion to Assisted Reproductive Technology (ART):

Since the first report by **Stener-Victorin et al. in 1999** suggested that acupuncture can increase the clinical pregnancy rate (CPR) of IVF, the application of acupuncture to assisted reproductive technology (ART) has attracted great interests from the international communities. More than hundred clinical trials evaluating acupuncture, even Traditional Chinese medicine (TCM) in IVF, have been performed in recent years. Acupuncture and moxibustion, transcutaneous electrical acupoint stimulation and electric acupuncture，auricular acupressure，herbal medicine, diet therapy and nutrition，including whole system of TCM treatment are in order reported. Their details as here.

8.1.1 Acupuncture:

There are many infertility centres in Europe countries that supply acupuncture as their routine adjuvant treatment to ART**. Nedeljković M et al (2013)** in Germany reported that modalities of acupuncture treatments in assisted reproductive technology and made a comparison of treatment practice in Swiss, German, and Austrian fertility centres with findings from randomized controlled trials. They surveyed 180 infertility centres: Acupuncture was offered by 33 (38.4%) of all responding fertility centres (n = 86; responder rate = 47.8%). In 39.4% the selection of acupuncture points is standardized or semi-standardized (24.2%) and 27.3% of the centres drew on individual TCM-diagnosis. Body acupuncture using needle stimulation was mentioned most frequently (84.8%). Some clinics reported additional use of auricular acupuncture (24.2%) and moxibustion (21.2%). Treatment providers were mainly physician-acupuncturists (84.8%). Compared to the RCTs, strong differences have been found in point selection, mode of stimulation, and professional background of treatment providers.

- **Acupuncture and Moxibustion:**

The medical teams in China have been researching on acupuncture widely and in depth to prove its effects as acupuncture is practiced in China as a part of the main stream medical therapies. In the research conducted by **Chen Q & Hau C (2015),** 114 patients of IVF-ET treated with standard long-term program at luteal phase were randomized into an observation group and a control group, 57 cases in each one. In the observation group, at the beginning of ovulatory induction, moxibustion was applied to Ren8 (Shenque) and acupuncture was to Ren3 (Zhongji), Ren4 (Guanyuan), Ren6 (Qihai), Ext (Zigong) Sp10 (Xuehai), etc. till the transfer time for one session of treatment. Totally, 3 sessions were required. In the control group, no intervention of acupuncture and moxibustion was applied. The endometrial morphology, subendometrial blood flow index, the levels of serum estradiol (E2), progesterone (P) and luteinizing hormone (LH) on the day of injection of human chorionic gonadotropin (hCG), the dosage and time of gonadotropin (Gn), oocyte count, high-quality embryo number, embryo cultivation rate and clinical pregnant rate were observed in the two groups. They found that In IVF-ET treatment, acupuncture and moxibustion affect estrogen level on hCG day, improve high-quality embryo rate, endometrial blood flow state and morphology so that the endometrial receptivity is increased and the method is expected to be the supporting therapeutic approach for the improvement of IVF-ET outcome.

Villahermosa D et al in Brazil (2013) evaluate the effectiveness of acupuncture and moxibustion as an adjuvant treatment in women undergoing in vitro fertilisation (IVF) when embryo implantation has failed. A prospective, randomised controlled clinical trial was conducted with 84 infertile patients who had had at least two unsuccessful attempts of IVF. The patients were randomised in three groups: control (n=28), sham (n=28) and acupuncture (n=28). The sample size was calculated by assuming a pregnancy rate of 10% when embryo implantation had failed. The pregnancy rates of the current IVF cycle were evaluated by measurement of blood β human chorionic gonadotrophin (βhCG) and subsequent transvaginal ultrasound. Acupuncture was performed on the first and seventh day of ovulation induction, on the day before ovarian puncture and on the day after embryo transfer. In the acupuncture group, patients were treated with moxibustion at nine acupuncture points (BL18, BL22, BL23, BL52, Ren3, Ren4, Ren5, Ren7, Du 4) and needling at 12 points. In the sham group needles were inserted in eight areas that did not correspond to known acupuncture points. They found that the clinical pregnancy rate in the acupuncture group was significantly higher than that in the control and sham groups (35.7% vs 7.1% vs 10.7%; p=0.0169). So they confirmed that acupuncture and moxibustion increased pregnancy rates when used as an adjuvant treatment in women undergoing IVF, when embryo implantation had failed.

Magarelli PC et al (2009) determine whether changes in serum cortisol (CORT) and PRL are affected by acupuncture (Ac) in Ac-treated IVF patients. 67 reproductive-age infertile women undergoing IVF had their blood samples checked for serum CORT and serum PRL. Patients were grouped as controls (IVF with no Ac) and treated (IVF with Ac) according to acupuncture protocols derived from randomized controlled trials. Serum levels of CORT and PRL were measured and synchronized with medication stimulation days of the IVF cycle (e.g., day 2 of stimulation, day 3, etc.). Reproductive outcomes were collected according to Society for Assisted Reproductive Technology protocols, and results were compared between controls and those patients treated with Ac. They found that CORT levels in Ac group were significantly higher on IVF medication days 7, 8, 9, 11, 12, and 13 compared with controls. PRL levels in the Ac group were significantly higher on IVF medication days 5, 6, 7, and 8 compared with controls. So they confirmed there was a beneficial regulation of CORT and PRL in the Ac group during the medication phase of the IVF treatment with a trend toward more normal fertile cycle dynamics.

Hullender Rubin LE et al in USA (2013) retrospectively review clinic records to evaluate the effect of the Craig protocol in both donor and nondonor IVF cycles on four outcomes: (1) live births; (2) biochemical pregnancies; (3) adverse outcomes; and (4) live births in nondonor cycles across age groups established by the Society for Assisted Reproductive Technology. The study design was a retrospective chart review. Patients underwent fresh, donor (*N*=70) or nondonor (*N*=402) IVF-ET. The Craig protocol included the following points before ET: Du20, Ren6, ST29, SP8, PC6, LV-3; *Shenmen* and Brain on the left ear; and Uterus and Endocrine on the right ear. After transfer the points were LI-4, SP-10, ST-36, SP-6, KI-3; Uterus and Endocrine on the left ear; and *Shenmen* and Brain on the right ear. Live births (LB) beyond 24 weeks' gestation was the main outcome measure. In *nondonor* IVF cycles, there were no differences in LB across age groups (odds ratio [OR] =1.04, 95% confidence interval [CI] 0.68–1.57), biochemical pregnancies (OR=0.60, 95% CI 0.27–1.33), or adverse outcomes (OR=0.63, 95% CI 0.31–1.26). In *donor* cycles, LB were higher in the acupuncture group (relative risk=1.31, 95% CI 1.02–1.71). In this observational study, the Craig protocol was not found to lower IVF LB. In fact, the Craig protocol was associated with higher LB in donor cycles. These findings should be considered cautiously because better designed, randomized research is needed.

- **Transcutaneous electrical acupoint stimulation and Electric acupuncture:**

Transcutaneous electrical acupoint stimulation refers to the use of the electrode patch of acupuncture machine to give an electrical stimulation on the epidermis around acupuncture

points which may be conveniently applied, and suitable to patients who are frightened to be pierced by needles; Electric acupuncture refers to linking an electrode to the needle handle of acupuncture which can enhance treating power of acupuncture and may give a stronger stimulation to the acu-points and relevant areas, and meridians. Both of them can treat ladies with hormonal disorder for promoting their level on the relevant hormonal items and result in higher successful rate of IVF.

Zeng Y et al (2015) investigate the effect of transcutaneous electrical acupoint stimulation (TEAS) on ovarian reserve in patients with diminished ovarian reserve undergoing in vitro fertilization and embryo transfer. A total of 240 patients were randomly divided into the electrical stimulation with the acupuncture machine TEAS treatment (TES), comforting false of machines' placebo (FHP), artificial endometrial cycle treatment (AEC), and control (CON) groups. They divide 56 patients in TES, 56 in FHP, 54 in AEC, and 60 in CON in the study, respectively. The electrode patch of Han's device (Medical Technology Co., Ltd. Nanjing Jisheng) was affixed to these acupoints (Ren3, Ren4, Ext (Zigong), St25, Bi23, Du3, and Du4). Treatment began at a frequency of 2 Hz and a tolerable strength of 20–25 mA; it lasted for 30 min and was given once a day. After three courses, the treatment continued during the ovulation cycle until the day of egg retrieval.

They found that Antral follicle count and anti-Müllerian hormone (AMH) levels were increased, whereas the estradiol level (E2), follicle-stimulating hormone level (FSH), and follicle-stimulating hormone/luteinizing hormone ratio (FSH/LH) were significantly decreased after treatment in the TES and AEC groups. After treatment, the number of oocytes retrieved and average number of embryos transferred were higher in the TES and AEC than in the CON and FHP groups. Clinical pregnancy rate in the TES group was markedly higher than values obtained for the other three groups <TES 42.31 (22/52), AEC 32.0 (16/50), FHP 22.00 (11/50), CON 1.57 (11/51) >. So they proved that TEAS and AEC treatments could improve basal endocrine levels in patients, and increase the number of oocytes retrieved and high-quality embryos. TEAS treatment could improve the clinical pregnancy rate in patients with decreased ovarian reserve during in vitro fertilization and embryo transfer cycles.

R Zhang et al (2011) observed a total of 309 patients, less than 45 years old, undergoing cryopreservation embryos transplant or fresh cycle IVF with or without intracytoplasmic sperm injection (ICSI) with transcutaneous electrical acupoint stimulation (TEAS). The subjects were randomly allocated to three groups: mock TEAS treatment: 30 minutes after ET (group I, n = 99); single TEAS treatment: 30 minutes after ET (group II, n = 110); and

double TEAS treatments: 24 hours before ET and 30 minutes after ET (group III, n = 100). They searched the Clinical Pregnancy Rate (CPR), embryos implantation rate (EIR) and live birth rate (LBR). They found that the CPR, EIR, and LBR of group I (29.3%, 15.0%, and 21.2%, respectively) were significantly lower than those in group II (42.7%, 25.7%, and 37.3%, respectively) and group III (50.0%, 25.9%, and 42.0%, respectively). So they believe that transcutaneous electrical acupoint stimulation, especially double TEAS, significantly improved the clinical outcome of ET.

- **Auricular acupressure (AA):**

The study delivered by **Qu F et al (2014)** was to explore whether auricular acupressure (AA) can relieve anxiety during the period from trans-vaginal oocyte retrieval to the embryo transfer in IVF treatment and whether AA can improve the outcomes of IVF. 305 infertile patients with tubal blockage who were referred for IVF were included. The women were randomized into a control group with 102 cases in which the patients only followed the routine procedure of IVF treatment; a Sham-AA group with 102 cases in which Triple Energizer (CO17, located in the cavum conchae), Stomach (CO4, located at the commissure of superior concha and inferior concha, just below the disappearance of the crus of the helix) and Large Intestine (CO7, located at the inner 1/3 of the crus of the helix, lying at the lower portion of the superior concha) were selected in Sham-AA group; and an AA group with 101 cases in which Shenmen (TF4, located at the bifurcation of the crura of antihelix), Endocrine (CO18, located at the bottom part of the incisura intertragica), and Internal Genitals (TF2, located at the middle point of anterior portion of the triangular fossa) were selected. The subjects were asked to press the acupoints four times a day (08:00, 12:00, 16:00 and 20:00 h respectively) with 15 min each time by themselves. The strength should make the local auricle congestive, flushed and ache. The AA was conducted on the two ears simultaneously. The AA treatment consisted of six days (from 12:00 h of one day before TVOR to 20:00 h of the next day of ET). The anxiety levels were rated with Spiel Berger's State Trait Anxiety Inventory and the Amsterdam Preoperative Anxiety and Information Scale. Data of clinical pregnancy rate (CPR), implantation rate (IR) and live birth rate (LBR) were obtained. The levels of neuropeptide Y (NPY) and transforming growth factor alpha (TGF-alpha) in the follicular fluids were detected with ELISA which play important roles in regulation of ovarian functions and follicular growth. After treatment, in AA group, the levels of state anxiety, preoperative anxiety and need-for-information were significantly lower, whereas CPR, IR, LBR and NPY levels in the

follicular fluids were markedly higher than Sham-AA group and control group. Clinical pregnancy rate (%): 59/101 (58.42%), 40/102 (39.21*), 41/102 (40.20%); Implantation rate (%): 78/211 (36.97%), 51/202 (25.25%), 52/206 (25.24%); Live birth rate (%): 53/101 (52.48%) 31/102(30.39%), 32/102 (31.37%) So they concluded that AA could help to reduce anxiety levels associated with IVF and improves the outcomes of IVF partly through increasing the levels of NPY in the follicular fluids

Madaschi C et al (2010) and **Cheong YC et al (2013)**, suggest that acupuncture treatment had no influence when performed immediately before and immediately after embryo transfer, on clinical outcomes overall. In a subgroup analysis, when the embryo was not affected by an ovarian or seminal influence, a benefit was noted. In the research conducted by **Andersen D et al (2011),** a total of 635 patients undergoing IVF or intracytoplasmic sperm injection (ICSI) were included. For 314 patients, embryo transfer was accompanied by acupuncture according to the principles of traditional Chinese medicine. In the control group, 321 patients received placebo acupuncture using a validated placebo needle. In the acupuncture group and the placebo group, the ongoing pregnancy rates were 27% (95% CI 22-32) and 32% (95% CI 27-37), respectively. Live birth rates were 25% (95% CI 20-30) in the acupuncture group and 30% (95% CI 25-30) in the placebo group. They had a completely negative result with acupuncture.

Domar AD et al (2009) believed that the use of acupuncture in patients undergoing IVF was not associated with an increase in PRs but the patients were more relaxed and more optimistic. . **Manheimer E et al (2013)** believed that the subgroup finding of a benefit in trials with lower, but not higher, baseline pregnancy rates (the only statistically significant subgroup finding in our earlier review) has been confirmed in this update, and was not explained by any confounding variables evaluated.

Analysis:

Some reports confirm that the positive effects on acupuncture promotion to ART for ladies with lower ovary reserve and for ladies who had failed IVF history, for increasing endometrial blood flow state, assisting the endometrial receptivity; for rising the clinical pregnancy rate and for reducing anxiety levels associated with IVF and improving the outcomes of IVF; But some of studies had negative results from their researches; and some believe that acupuncture does not possess significant effect…… It seems that the most important challenge for TCM is to research on how to magnify its effects with modern techniques. Authors believe that the effect from acupuncture may be produced in different techniques,

different capability of practitioners, suitable times to be done, so how manage acupuncture technique in the best state may be the key point to increase its effective level. If the acupuncture can be doing well, its effect should be appeared.

8.1.2 Chinese Herbal medicine:

The practice of using Chinese herbal medicine to promote ART has been reported more in last 10 years. The main aim of the researches is to increase clinical pregnancy rate (CPR) and live birth rate (LBR) from ART.

Lu LR and Wu KM (2015) explored the factors impacting the pregnancy rate and the live birth rate, which mainly include ovary function disorder and low endometrial receptivity, which can cause the difficulty in embryo implantation, early miscarriage and pregnancy failure. So they summarized that the traditional Chinese medicine (TCM) practitioners have made active efforts in assisting IVF-ET, and achieved great advances in improving the ovary reaction, treating the ovarian hyper stimulation syndrome (OHSS), improving the follicle, embryo quality and endometrial receptivity and protecting the foetus, which had been summarized in this article.

Guo J et al (2013) study the effect of Chinese herbal medicine (Shen tonifying, blood nourishing and activating CMHSTBNA 补肾养血活血方) on the cycle of controlled ovarian hyper stimulation (COH) of assisted reproductive technique (ART). A large sample randomized control trial was performed. Infertility women patients, younger than 42 years (infertility due to tubal factor and/or male factor were not involved) were randomly assigned to the CMHSTBNA intervention group (abbreviated as the treated group) and the control group, 184 cases in each group. All underwent COH. Those in the treated group received assist therapy of CMHSTBNA from the menstrual period day 2 -3 of COH to the day of oocytes retrieved. The serum hormone level [including oestrogen (E2), progesterone(P), luteal hormone (LH) on the day of human chorionic gonadotrophin (hCG) administration], the medication days and dosage of gonadotropin (Gn), the number of oocytes retrieved, the fertilization rate, and the good-quality embryo rate were observed and compared with the control group. They found that the endometrial thickness on the day of oocytes retrieved was 10.85 +/- 1.63 mm in the treated group, larger than that in the control group (10.50 +/- 1.49 mm) ($P < 0.05$). The good-quality embryo rate and the frozen rate were 48. 9% and 39. 7% respectively in the treated group, superior to those of the control group (45. 4% and 35. 8% respectively), showing statistical difference ($P < 0.05$). On the day of hCG administration, favourable tendency was shown in the serum levels of

oestrogen (E2), progesterone (P), luteinizing hormone (LH), the medication days and dosage of Gn, the number of oocytes retrieved, the fertilization rate, and the cleavage rate, however showing no statistical difference when compared with the control group (P >0.05). They thought that the combined application of CMHSTBNA and gonado-trophic hormones in COH cycle could elevate the embryo quality, improve the endometrial state, thus laying foundation for successful in vitro fertilization /intracytoplasmic sperm embryo transfer, although not significantly.

There are such cases of Chinese herbal medicine promoting ART to be reported, in different aspects:

- **To improve endometrial receptivity:**

Guo J et al (2011) explored the effects of Chinese medicine in improving uterine endometrial blood flow for increasing the successful rate of in vitro fertilization and embryo transfer. Endometrial blood flow is directly related to endometrial receptivity thereby affecting in vitro fertilization and embryo transfer (IVF-ET) outcomes. They confirmed that traditional Chinese medicine (TCM) can play a role to improve endometrial growth, so to promote embryo transfer. Studies have confirmed that formula based on reinforcing kidney and increasing Essence and and activating blood (补肾益精活血方)

Tusizi (Semen Cuscutae Chinensis),
Shudihuan (Radix Rhemanniae Glutinosae Praeparata),

Fupenzi (Fructus Rubi Chingii),
Shanzhuyu (Fructus Corni Officinalis)
Roucongrong (Herba Cistanches Deserticolae),

Gouqizi (Fructus Lycii),

Huangqi (Radix Astragali Membranacei),

Shanyao (Radix Dioscoreae oppositae),
Baizhu (Rhizoma Atractylodis Macrocephalae),

Xiangfu (Rhizoma Cyperi Rotundi),

Danggui (Radix Angelicae Sinensis),

Chuanxiong (Radix Ligustici Wallichii),

Chishao, (Radix Paeoniae Rubrae),

Danshen (Radix Salviae Miltiorrhizae),

Jixueteng (Caulis Milletiae Reticulatae);

can promote the formation of uterine endometrial blood vessels by adjusting a variety of vessel growth factors, and regulating nitric oxide level for inhibition of vascular smooth muscle contraction of the uterus. Treatments based on differentiation of syndromes are key to the theory of TCM.

Ding CF et al (2014) study the effect and potential mechanism of Chinese Herbal formula (Modified Cangfu Daotan Decoction MCDD 苍附导痰汤) on endometrial receptivity in infertility patients with polycystic ovarian syndrome (PCOS). A total of 298 women having normal ovulation who underwent artificial insemination were recruited as the control group, and they received no drug therapy. Another 355 infertile patients with PCOS who received ovarian stimulation therapy were recruited as the treatment group. Then they were further assigned to the treatment group I (195 cases) and the treatment group II (160 cases) according to random digit table. Patients in the treatment group I received clomiphene (CC) + human menopause gonadotropin (HMG) +human chorionic gonadotropin (HCG), while those in the treatment group II received CC + HMG + HCG and additionally took MCDD. The therapeutic course for all was three menstrual cycles. The pregnancy ratio, the endometrial thickness, and spiral artery pulsatility index (PI), resistance index (RI), and homeostasis model assessment-insulin resistance (HOMA-IR) were measured. Furthermore, the uncoupling protein 2 (UCP2) level was tested by Western blot. After one year follow-up, the pregnancy rate was 16.1% (48/298) in the control group, 23.1% (37/160) in the treatment group I, and 33.8% (66/195) in the treatment group II. Compared with the control group, the pregnancy rate was significantly increased in the treatment group II ($P < 0.05$). So they confirmed that MCDD was found to be capable of increasing the pregnancy rate of infertile patients with PCOS, which might be associated with improving endometrial blood flow and insulin resistance, increasing the UCP2 expression, and finally improving the endometrial receptivity.

Lian F et al (2013) explored the effects of Chinese medicines for tonifying the kidney on DNMT1 protein expression in endometrium of infertile women during implantation period. They found during the IVF of infertile patients, the Chinese herbal formula for tonifying the Kidney, serving as an adjunct treatment, could reduce Gn dosage and treatment duration, alleviate clinical symptoms, and improve the clinical pregnancy rate. The increased level of DNMT1 protein expression after treatment may lead to enhanced endometrial receptivity. This finding may explain the improvement in clinical pregnancy rate.

- **to increase ovaries reserve function:**

Zhang Z et al (2015) study clinical efficacy of Chinese Herbal Medicine (smoothing Gan reinforcing Shen (SGRS) method 疏肝补肾方) in treating poor response of diminished ovarian reserve (DOR) patients in in vitro fertilization and embryo, transfer (IVF-ET). Totally 84 DOR patients undergoing IVF-ET were assigned to the experimental group (SGRS Chinese herbs as adjuvant therapy) and the control group according to random digit table, 42 in each group. Patients in the control group received controlled ovarian hyper stimulation (COH) and IVF-ET. Those in the experimental group additionally received basic

formula of SGRS method, one dose per day. The dose and use time of recombinant follicle-stimulating hormone (r-FSH) were recorded during ovarian process. The total dose of r-FSH, the E2 level on HCG injection day, the serum E2 level on the oocyte retrieval day, the number of retrieved oocyte, the number of oocytes in M II, the number of oocytes with 2PN, the number of portable embryos, and the number of good quality embryos were all positively correlated with Chinese medical adjuvant therapy ($P < 0.05$, $P < 0.01$). Compared with the control group, serum E2 levels on the HCG injection day and the oocyte retrieval day obviously increased, the number of retrieved oocytes, the number of oocytes in M II, and the number of portable embryos were increased more in the experimental group with statistical difference ($P < 0.05$, $P < 0.01$). There was no statistical significance in the clinical pregnancy rate or the miscarriage rate between the two groups ($P > 0.05$). So they believe that SGRS Chinese herbs as adjuvant therapy could improve ovarian responsiveness of DOR patients undergoing IVF-ET, increase the number of retrieved oocytes, elevate the quality of oocytes and the number of embryos.

Ushiroyama T et al (2012) studied clinical efficacy of macrophage-activating Chinese mixed herbs (MACH) in the improvement of embryo qualities in women with long-term infertility of unknown aetiology. In this study, macrophage activating Chinese herbs (MACH) were evaluated for their effects on embryo qualities in women who were undergoing repeated IVF-ET because of long-term infertility. 30 women, who had significantly low rates of developing good quality cleaved embryos and did not become pregnant after three or more cycles of Assisted Reproductive Technology (ART) procedure, were included in the study. Oral administration of MACH significantly increased the percentage of good quality early stage blastocysts (the number of grade 1 or grade 2 cleaved embryos/the number of retrieved oocytes) from 18.7 ± 16.2% to 36.1 ± 27.1% (1.9-fold increase, $p < 0.01$). The rate of good quality early stage blastocysts increased in all patients. In 19 patients who desired embryo transfer using late stage blastocysts, MACH significantly increased the percentage of late stage blastocysts from the initial value of 14.8 ± 11.2% to 21.1 ± 23.1% (1.4-fold increase, $p < 0.05$). The rate of embryonic progress into late stage blastocyst increased in 52.6% (10/19) of the patients. Furthermore, treatment with MACH significantly decreased the plasma follicle stimulating hormone (FSH) concentration on the day of oocyte retrieval from 14.4 ± 3.2 to 10.5 ± 2.4 mIU/ml ($p < 0.05$). No adverse events were observed with MACH supplementation, and there was no patient dropout. Administration of MACH resulted in improved embryo quality in the difficult cases. The present study demonstrates a new benefit of this herbal blend for women with refractory infertility of unknown aetiology.

Chang XF et al (2011) studied the effect and mechanism of Chinese herbal formula (Bushen Tiaojing Recipe 补肾调经方) on improving oocyte and embryo qualities in patients undergoing in vitro fertilization-embryo transfer (IVF-ET) at the super-ovulatory cycle. Fifty-eight tubal infertility patients undergoing IVF-ET were randomly assigned to two groups. 30 patients in the treatment group were treated with Bushen Tiaojing Recipe and GnRHa/FSH/hCG, and 28 patients in the control group were treated with GnRHa/FSH/hCG. Contents of GDF-9 in the mature follicular fluid were detected by Western blot. The expressions of GDF-9 in granulose cells were detected by Real-time PCR. The dose of gonadotropin (Gn), the number of oocytes obtained, the fertilization rate, the oocyte cleavage rate, the high quality embryo rate, and the pregnancy rate were compared. They

found that the contents of GDF-9 in the follicular fluid and its expression in granulosa cells were significantly higher in the treatment group than in the control group ($P<0.05$). The number of oocytes obtained, the fertilization rate, the high quality embryo rate, and the pregnancy rate were significantly higher in the treatment group than in the control group. There was no significant difference in the dose of Gn or the oocyte cleavage rate. So they confirmed that Bushen Tiaojing Recipe could improve the pregnancy rate of IVF-ET. Its mechanism might be through regulating the GDF-9 contents in the follicular fluid and granulosa cells.

Hullender Rubin L and Marx BL (2012) observed a case study of a 34-year-old patient with a 5-year history of infertility caused by DOR (diminished ovarian reserve) and for whom clomid failed in 2005. TCM treatment, including acupuncture and herbal therapy, lasted from January 2007 to April 2007. After 4 months of TCM treatment, the patient returned to biomedical care. Pregnancy was not achieved during three more clomid cycles, although she had improved her levels of FSH (from 14.5 mIU/mL to 8.7 mIU/mL) and AFC (from 10-12 to 16-18 total). After 3 more cycles with clomid, her FSH level increased to 16.8 mIU/mL and her AFC level was <10. So it was concluded that more research is needed to discern that demographically which patients benefit best from multiple, serial clomid interventions. In addition, it is important to investigate more-integrative treatments for patients with DOR, including assisted reproductive techniques, acupuncture, and Chinese herbs.

- **to rehabilitate the patients with failure of IVF treatments:**

X Xu et al (2015) explore the effect of traditional Chinese comprehensive therapy (TCCT) on promoting gestation in patients who previously failed in vitro fertilization and embryo transfer (IVF-ET) because the TCM patterns of kidney deficiency, liver stagnation, and blood stasis (KLB) exist. They recruited 67 patients in this study and divided the patients into two groups: a trial group with 35 patients and a control group with 32 patients. The trial group was given TCCT with the oral herbal liquid from decocted prescription:

Tusizi (Semen Cuscutae Chinensis)),

Gouqizi (Fructus Lycii),

Chaihu (Radix Bupleuri Chinensis),

Baihe (Bulbus Lilii Lancifolii);

The rectum drop of herbal prescription:

Tusizi (Semen Cuscutae Chinensis),

Chuanxuduan (Radix Dipsaci Asperoidis),

Nanshashen (Radix Adenophorae Tetraphyllae),

Chenpi (Pericarpium Citri Reticulatae);

Ear points stimulation--- Gan (CO12), Pi (CO13), Shen (SC6), Shenmen (TF4), Neifenmi (CO18), Xin (IC5), Zigong (TF2), and Jiaogan (AH4) daily, which were gently massaged 4 to 6 times per day, 1 to 2 mins each time. Those points on the ears were treated for 4-5 days before IVF-ET, then the patients were administered IVF-ET or awaited natural pregnancy. The herbal prescription for miscarriage prevention composed of

Tusizi (Semen Cuscutae Chinensis),

Chuanxuduan (Radix Dipsaci Asperoidis),

Nanshashen (Radix Adenophorae Tetraphyllae),

Chenpi (Pericarpium Citri Reticulatae)

Above herbs were given after IVF-ET for 14 days. The control group was administered IVF--ET without TCCT 3 months after the previous IVF-ET or natural pregnancy attempt.

After treatment with TCM comprehensive therapy, 7 patients in the treatment group became pregnant, while there were no successful conceptions in the control group. The difference in clinical pregnancy rate in the initial cycle and transfer cycle of IVF were significantly different ($P < 0.05$). The trial group had a significantly higher conception rate than that of the control group ($P < 0.05$). So they confirmed that TCCT can promote the natural pregnancy rate in patients with previously failed IVF-ET. TCCT could increase patients' fertilized egg number, fertilization rate, pregnancy rate, and clinical pregnancy rate after another IVF-ET treatment.

- **to treat and prevent OHSS:**

Liang RN et al (2008) observe the clinical effect of Chinese herbal formula (Bushen Houxue BSHX 补肾活血汤) method combined with ultrasound-guided follicle aspiration (MFA) in treating refractory polycystic ovary syndrome (PCOS) and avoiding the risk of OHSS. 44 patients with PCOS were randomly assigned to two groups by randomizing digital table, 20 in the observation group and 24 in the control group. MFA was performed on both groups, and the decoction of BSHX, which consisted of

Tusizi--Semen Cuscutae Chinensis 20g,

Shudihuang--Radix Rhemanniae Glutinosae Praeparata,

Zaojiaoci—Gleditsia Sinensis Lam15g,

Sangjisheng—Taxillus Chinensis (DC.)Danser,

Taoren-- (Semen Pruni Persicae)10g.

Yinyanghuo—Herba Epimedii15g,

Buguzhi—Psoralea Corylifolia10g,

Yuzhu--solomonseal rhizome Polygonatum 10 g,

Dusuanlan--Pleione bulbocodioides 10 g,

Shuweicao-- Salvia militiorhiza20 g,

Gancao—Glycyrrhizae Uralensis6g)

Above herbs was given to the observation group one dose every day for 14 days every menstrual cycle. Changes of follicle stimulating hormone (FSH), luteinizing hormone (LH), and testosterone (T) were determined before and after MFA. The impacts on quantity of HMG used, number of sinus follicle, mature follicle, incidence of ovarian hyper stimulating syndrome (OHSS), luteinized unrupture follicular syndrome (LUFS) and pregnancy rate were also observed.

MFA were performed for 42 cycles in the observation group and 56 cycles in the control group. Levels of T, LH and LH/FSH ratio were markedly reduced after aspiration, showing significant difference as compared with those before treatment in both groups ($P < 0.01$), and difference of LH/FSH between groups was of statistical significance ($P < 0.01$). In the observation group, 18 patients (90.0%) had their sinus follicle decreased to < 10 after MFA, while in the control group, it reached <10 in 22 patients (91.70%), all were different to those before treatment ($P < 0.01$). In the observation group, the quantity of HMG used for promoting ovulation was (585.0 +/- 195.0) IU, number of mature follicle at the day of HCG injection was 1.1 +/- 0.3, while in the control group, the corresponding data were (1470.0 +/- 532.5) IU and 3.1 +/- 1.4, all with significant difference between groups ($P < 0.01$). None of OHSS and 1 case of LUFS occurred in the former group, while 1 mild OHSS and 2 LUFS in the latter. After ovulation promoting therapy and in the 3-month consecutive follow-up period, pregnancy was found in 8 out of the 18 patients in the observation group (one twins and 7 single), with the pregnancy rate of 44.4%; while in the control group, 7 in 22 (2 twins and 5 single) was found, the pregnancy rate being 31.8%. They believe that BSHX method combined with MFA is a safe and effective treatment for refractory PCOS. The combined usage of Chinese herbal medicine could significantly reduce dosage of HMG used for promoting follicle and the production of multiple mature follicles, thus avoiding the risk of OHSS.

- **to release psychiatric disorders (anxiety, depression, stress et al) following ART**

Sun ZG et al (2012) assess the effects of acupuncture combined Chinese herbal formula for tonifying shen and soothing gan (CHMTSSG 补肾疏肝) on the anxiety and depression of patients with in vitro fertilization and embryo transplantation (IVF-ET), and to observe the treatment outcomes. Totally 97 IVF-ET patients were randomly assigned to two groups, the acupuncture combined with CHMTSSG (group A, 51 cases) and the Western medicine treatment group (group B, 46 cases). The long protocol of IVF-ET in a mid-luteal phase was performed in all patients. Patients in group A received acupuncture and CHMTSSG (Erzhi tiangui granule 二至天癸颗粒 and Xiaoyao granule 逍遥散) during the process of ovarian hyper stimulation, while those in group B only received the routine IVF-ET. The changes of self-rating anxiety scale (SAS) and Beck depression inventory (BDI) score

were observed. The endometrial thickness, typing, and endometrial blood flow resistance index (RI) on the day of injecting HCG, the number of retrieved oocytes, the rate of high quality oocytes, the fertilization rate, the rate of high quality embryos, and the clinical pregnancy rate were respectively compared between the two groups.

They found that the scores of SDGDS, SAS, and BDI were improved more obviously in group A than in group B, showing statistical difference ($P < 0.01$). There was no statistical difference in the endometrial thickness on the day of injecting HCG between the two groups ($P > 0.05$). The proportion of type A endometrium was 74.5% (38/51 cases) in group A and 45.7% (21/46 cases) in group B, showing statistical difference between the two groups ($P < 0.01$). The RI was significantly lower in group A (0.48 +/- 0.03) than in group B on the day of injecting HCG (0.52 +/- 0.06, $P < 0.01$). There was no statistical difference in the number of retrieved oocytes and the fertilization rate between the two groups ($P > 0.05$). The rate of high quality oocyte, the rate of high quality embryos, and the clinical pregnancy rate were all improved more significantly in group A than in group B, showing statistical difference between the two groups ($P < 0.05$). So they believe that Acupuncture combined CHMTSSG could obviously alleviate unfavourable emotions such as anxiety and depression in patients with IVF-ET, effectively improve the treatment outcomes. Its effects might be correlated with lowering the excitability of the sympathetic nervous system, elevating the quality of oocytes, and improving the endometrial receptivity.

- **to treat and prevent miscarriage:**

Liu Y et al (2006) study the effect of Chinese herbal medicine Chinese Herbal Formula (Gutai Decoction GTD 固胎汤) on the miscarriage rate of in vitro fertilization and embryo transfer (IVF-ET). They observed 247 women who had received IVF-ET and had beta-human chorionic gonadotropin (beta-HCG) > 25 IU/L on the 14th day after transferring. All were treated conventionally with progesterone 20 - 80 mg per day after transferring and if necessary the treatment was supplemented with Progynova 2 - 4 mg per day, with the medication withdrawn gradually from the 9th week of pregnancy till stopped completely. Among them, 131 cases received GTD medication additionally, for 109 cases of whom the medication started from the 2nd day of transferring (taken as Group A) and for the other 22 cases from the 14th day after transferring (taken as Group B); the other 116 cases with no additional GTD treatment given were taken as the control group, with the medication lasting to the 12th week. The miscarriage rate in them was observed. They found that the miscarriage rate in Group A, Group B and the control group was 12.84%, 13.64% and 23.28%, respectively; the difference between the GTD treated groups and the control group was significant ($P < 0.05$). So they thought Chinese medicine GTD could reduce spontaneous abortion rate in women receiving IVF-ET.

- In summary, all the above studies of Chinese herbal medicine treatment for ART provided positive results in improving endometrial receptivity, increasing ovaries reserve function, rehabilitating the patients with failure of IVF treatments, treating and preventing OHSS, and releasing psychiatric disorders (anxiety, depression, stress et al) following ART,

and in treating and preventing miscarriage, et al. Most of these research projects are done by researcher teams in China

8.1.3 Diet and Nutrition:

1) Vitamins and minerals for preparation and promotion of ART:

Some nutrition supplements can promote the success rate of ART from clinical reports.

Available researches are as below:

- **Folic acid:**

The fact that folic acid intake can promote successful rate of live birth from ART has been proved by researchers in USA**. Gaskins AJ et al (2014)** observe 232 women (median age 35.2 years, median folate intake 1,778 micrograms/day), and their high folate intake was associated with high rates of implantation, clinical pregnancy, and live birth. The adjusted percentages (95% confidence interval [CI]) of initiated assisted reproductive technology cycles resulting in a live birth for women by increasing quartiles of folate intake were 30% (95% CI 21-42%), 47% (95% CI 35-59%), 42% (95% CI 30-35 and 56% (95% CI 43-67%) (P for trend=0.01). Live birth rates were 20% (95% CI 8-31%) higher among women in the highest quantity of supplemental folate intake (more than 800 micrograms/day) than among women in the lowest quantity (less than 400 micrograms/day). Higher supplemental folate intake was associated with higher fertilization rates and lower cycle failure rates before embryo transfer (P for trend=0.03 and 0.02). So they confirm that the higher intake of supplemental folate was associated with higher live birth rates after assisted reproductive technology treatment.

The source of folic acid from food (Zhai 2012):

Green leafy vegetable, beans, peas, raw spinach and asparagus;

Whole grains, such as brown rice, enrich breads, pasta and lentils;

Fruits such as oranges, grapefruits and pineapples;

Fortified bread and breakfast cereals.

- **Multinutrient supplement (folic acid, selenium, vitamin E, catechins , glycyrrhizin, diosgenin, damiana and omega-3-fatty acids):**

Nouri K et al (2017) observed the process of 100 women undergoing IVF/ICSI, who were prospectively randomized to receive either a multinutrient supplementation named PROfertil® female that included folic acid, selenium, vitamin E, catechins, glycyrrhizin, diosgenin, damiana and omega-3-fatty acids (study group; n = 50), or 400 µg folic acid (control group; n = 50). Outcome parameters were embryo quality on day 3 after oocyte retrieval (good quality vs. poor quality) and the clinical pregnancy rate. In an intention-to-

treat analyses, a higher rate of women with at least one good quality embryo (with at least 6 cells and a fragmentation rate <20%) were found for the study (29/50, 58.0%) compared to the control group (18/50, 36.0%; p = 0.045 in chi-square test; relative risk 1.611, 95% CI 1.009-2.597). In conclusion, a multinutrient supplementation that includes folic acid, selenium, vitaminE, catechins, glycyrrhizin, diosgenin, damiana and omega-3-fatty acids seems beneficial in terms of embryo quality.

- **B-complex vitamin—inositol:**

Garg D et al (2016) observed that Insulin-sensitizing compounds such as inositol, a B-complex vitamin, and its stereoisomers (myo-inositol and D-chiro-inositol) were studied as an effective treatment of PCOS. Administration of inositol in PCOS has been shown to improve not only the metabolic and hormonal parameters but also ovarian function and the response to assisted-reproductive technology (ART). Accumulating evidence suggests that it is also capable of improving follicle genesis and embryo quality and increasing the mature oocyte yield following ovarian stimulation for ART in women with PCOS. In the current review, the evidence which was collated and the current knowledge on ovarian stimulation and ART outcomes following inositol treatment in women with PCOS undergoing in vitro fertilization (IVF) and/or intracytoplasmic sperm injection (ICSI) was proved.

- **Vitamin D**

Abadia L et al (2016) examined the association between circulating 25-hydroxyvitamin D [25(OH) D] concentrations and the outcome in women undergoing assisted reproduction technologies (ARTs). They randomly selected 100 women undergoing infertility treatment with ART enrolled in an ongoing prospective cohort study who underwent 168 treatment cycles. Serum 25(OH) D concentrations were measured in samples collected from women between days 3 and 9 of gonadotropin treatment. Generalized linear mixed models were used to evaluate the association of 25(OH) D concentrations with ART outcomes while adjusting for potential confounders and accounting for repeated treatment cycles per woman.

Median (range) serum 25(OH) D concentrations were 86.5 (33.5-155.5) nmol/L. 91 % of participants consumed multivitamins. Serum 25(OH) D concentrations were positively related to fertilization rate. The adjusted fertilization rate for women in increasing quartiles of serum 25(OH) D were 0.62 (95% CI: 0.51, 0.72), 0.53 (95% CI: 0.43, 0.63), 0.67 (95% CI: 0.56, 0.76), and 0.73 (95% CI: 0.63, 0.80), respectively (P-trend = 0.03). This association persisted when analyses were restricted to women with serum 25(OH) D between 50 and 125 nmol/L when models were further adjusted for season of blood draw and when analyses were restricted to the first treatment cycle. However, 25(OH) D concentrations were unrelated to probability of pregnancy (P-trend = 0.83) or live birth after ART (P-trend = 0.47). So they believe that Vitamin D may be associated with higher fertilization rates, but this apparent benefit does not translate into higher probability of pregnancy or live birth.

- **Antioxidant supply (vitamin C, vitamin E and carotenoids):**

Palini S et al (2014) monitored the plasma antioxidant status in women undergoing a long agonist protocol of ovarian stimulation at three different time points: at baseline (T0), after pituitary suppression (T1) and on the day of oocyte retrieval (T2). The antioxidant composition of follicular fluid samples collected on T2 was also evaluated. Significant decrease ($P < 0.05$) of plasma vitamin C, vitamin E and carotenoids was found between T1 and T2 but not between T0 and T1. At T2, high plasma vitamin E was associated with high numbers of total and mature oocytes retrieved per patient, which, in turn, were favourable for achieving pregnancy. Accordingly, women who became pregnant presented higher vitamin E concentrations both in plasma and FF than those who did not. In conclusion, this study confirmed the occurrence of significant modifications of the plasma antioxidant profile during ovarian stimulation with gonadotrophins; at the same time, it was found that both systemic and follicular antioxidant status may be related to IVF/ICSI outcome.

- **Coenzyme Q10 (CoQ10) :**

Turi A et al (2012) assess the presence and concentration of CoQ10 in human follicular fluid in relation to oocyte fertilization.CQ10 content was measured in follicular fluid obtained from 20 infertile women undergoing ovarian stimulation program for in vitro fertilization. CoQ10 levels were assayed by high-performance liquid chromatography system and normalized for follicular cholesterol and protein levels. Oocyte morphology and embryo grading were assessed. CoQ10/Protein levels resulted significantly in mature versus dysmorphic oocytes. Similarly, CoQ10/Cholesterol was significantly higher in grading I-II versus grading III-IV embryos. This study is the first demonstration of the presence of CoQ10 in the human follicular fluid. Although the biological and endocrine mechanism of CoQ10 in the follicular fluid and its correlation with oocyte and embryo development is unclear, a new step may be the administration of CoQ10 in infertile women to evaluate the biological and reproductive outcomes.

2 Some natural foods for preparation to promote ART: (Zhai 2012)

Tea: tea-drinking is a well-established part of Chinese culture and tea also belongs to Chinese herbal medicine; when tea is consumed correctly, it should be able to support the bodily balance and promote the preparation for ART, or even a natural pregnancy.

Green tea: the leaves are wilted and crushed. Green tea is not oxidized, so it is cool in its nature which is suitable to be taken by people who stays in a hot nature in general, or who have heat accumulated in the body: such as stress, nervousness and difficulty to sleep. Green tea should release the excessive heat which cools down the stomach and relaxes the mind.

Black tea: the leaves are wilted, sometime crushed and fully oxidized. Most people in the West are familiar with black tea. It is classified in TCM as warm in its nature, and is also called red tea in Chinese. Black tea should warm up your stomach and general body, so it is suitable to be consumed more by people who stay in a cold, deficiency state, such as longer menstruation, dysmenorrhea, stomacheche, and cold at hands and feet.
Oolong tea: Wulong or oolong tea fails somewhere between green tea and black tee. It undergoes a natural drying and fermenting procedure and is high in polyphenols, which are present in antioxidants. It is particularly good for the digestion and reduction of high blood pressure, so it is suitable to be taken by the ladies who are conceiving with many gastrointestinal reaction.
White tea: is made by the buds of the white peony plant and is the least oxidized of all kinds of tea. It is good to nourish spleen and kidney Yin, so it is very suitable to be taken by people who are trying to conceive. It is neutral, neither hot nor cold.

Chinese tea is classified based on their nature, and many other kinds of herbal tea should be drunk, such as Jasmin tea, Peppermint Tea, Chamomile Tea, Lemongrass & Ginger Tea, Date Tea…. all kinds of flower tea are neutral and balanced.

Nuts:
Walnuts, peanuts, cashew nuts, great almonds and all nuts belong to herbal medicine which can strengthen kidney qi and nourish kidney yin. They also contain full protein, so they are suitable to be taken by ladies preparing to be conceived.

Water melon seeds, sunflower seeds, pine tree seeds and all seeds of fruits and vegetables can strengthen kidney in TCM as well, and they also moisture the small and large intestine to promote the bowel movements.

8.1.4 Exercise:

Gaskins AJ et al (2016) evaluated whether pre-treatment physical and sedentary activity is associated with the outcomes of IVF. The Environment and Reproductive Health Study is an ongoing prospective cohort study that enrols subfertile couples at Massachusetts General

Hospital Fertility Centre. Time spent in physical or sedentary activities in the year before IVF treatment was self-reported using a validated questionnaire. This analysis included 273 women who underwent 427 IVF cycles. They engaged in a median of 2.8 h per week of moderate-to-vigorous activities. Time spent in moderate-to-vigorous physical activities and total metabolic equivalent task hours before IVF was not associated with probability of implantation, clinical pregnancy or live birth. Of the specific physical activities, only greater time spent in aerobics, rowing, and on the ski or stair machine was associated with higher probability of live birth. Time spent in total and specific sedentary activities was not associated with clinical outcomes of IVF. Physical activity is unlikely to have a deleterious effect on IVF success and certain forms of vigorous activity may be beneficial.

Palomba S et al (2014) assessed the relationship between regular physical activity and reproductive performance in obese infertile patients who receive assisted reproduction cycles with stable bodyweight. A total of 216 obese infertile women at their first time assisted reproduction attempt with stable body mass index (BMI) and available data on their physical activity carried out up to the beginning of the treatment cycle were enrolled in this observational cohort study. Clinical and biological data were recorded and analysed. There were 41 obese patients who did regular physical activity and 175 obese controls who did not. Total pregnancies (16/41, 39.0% versus 28/175, 16.0%, respectively; P = 0.002) and live births (10/41, 24.4% versus 13/175, 7.4%, respectively; P = 0.004) were significantly higher in patients who did physical activity regularly compared with those who did not. After adjusting for confounders, in obese infertile patients who did physical activity regularly, the relative risks for a clinical pregnancy and live birth were 3.22 (95% CI 1.53-6.78; P = 0.002) and 3.71 (95% CI 1.51-9.11; P = 0.004), respectively. In conclusion, regular physical activity carried out before an assisted reproduction cycle is significantly related with improved reproductive performance in obese infertile patients, irrespective of bodyweight loss. Body weight loss improves not only spontaneous pregnancy rates but also those of assisted reproductive techniques (ARTs). The results demonstrate that the chances to obtain a pregnancy and a baby are 3-fold higher in obese infertile patients who do physical activity regularly in comparison with those who do not, suggesting that regular physical activity before ART cycles improves the reproductive performance in obese women irrespective to body weight loss.

8.1.5 **Psychological recuperation**:

Ying l et al (2015, 2017) recognized the couples suffered from the process, experiencing physical and emotional pain, struggling with the urgency and inflexibility of bearing a child, and experiencing disturbances in their daily routines and work. The development of Partnership and Coping Enhancement Programme (PCEP) was targeted mainly at the

domains of the partnership mediators of stress with the preliminary Endurance with Partnership Conceptual Framework (P-EPCF) which consisted of two sections: partnership and coping, and would be delivered to infertile couples on the day of embryo transfer. The main focus of the programme are to facilitate mutual sharing and support in infertile couples, and to improve their individual and dyadic coping strategies while undergoing IVF treatment, especially in the period of waiting for the results of a pregnancy test and after the disclosure of a negative treatment outcome. The programme is couple-based, consisting of experience sharing, psychoeducation, meditation exercise, skill practise and supplemental written materials.

They found the Partnership and Coping Enhancement Programme (PCEP) for couples undergoing in vitro fertilization treatment was developed according to the guideline of the MRC framework. It is recommended that a pilot study be conducted to evaluate its feasibility and to model the process and outcomes of the programme.

Lin Y et al (2016) investigated the relationship between somatic symptoms, sleep disturbance and psychological distress in women who underwent oocyte pick-up and in vitro fertilisation-embryo transfer. The mean age of 100 participants was 34·54 (SD = 3·94) years old. They experienced abdominal distention, breast engorgement, nausea, faintness, diarrhoea, sleep disturbance and psychological distress when they received in vitro fertilisation-embryo transfer; these results were apparently higher than those receiving oocyte pick-up. In addition, sleep disturbance was the most significant factor involved in psychological distress during oocyte pick-up and in vitro fertilisation-embryo transfer therapies. The most serious indicator of the women's psychological distress during oocyte pick-up and in vitro fertilisation-embryo transfer treatment is anxiety. So they believed that developing various strategies to improve both sleep quality and psychological distress for infertile female patients should be paid attention to.

8.1.6 Whole system of TCM treatment:

TCM is a medical system with many therapies involved. In order to achive a treating level that is strong enough, many kinds of therapies should be combined. **Hullender Rubin LE e al (2015)** summarized Impact of whole systems traditional Chinese medicine on in-vitro fertilization outcomes. Patients undergoing IVF may receive either acupuncture or whole-systems traditional Chinese medicine (WS-TCM) as an adjuvant IVF treatment. WS-TCM is a complex intervention that can include acupuncture, Chinese herbal medicine, dietary, lifestyle recommendations. In this retrospective cohort study, 1231 IVF patient records were reviewed to assess the effect of adjuvant WS-TCM on IVF outcomes compared among three groups: IVF with no additional treatment; IVF and elective acupuncture on day of embryo transfer; or IVF and elective WS-TCM. The primary outcome was live birth. Of 1069 non-donor cycles, WS-TCM was associated with greater odds of live birth compared with IVF

alone (adjusted odds ratio [AOR] 2.09; 95% confidence interval [CI] 1.36 to 3.21), or embryo transfer with acupuncture only (AOR 1.62; 95% CI 1.04 to 2.52). Of 162 donor cycles, WS-TCM was associated with increased live births compared with IVF alone (odds Ratio [OR] 3.72; 95% CI 1.05 to 13.24, unadjusted) or embryo transfer with acupuncture only (OR 4.09; 95% CI: 1.02 to 16.38, unadjusted).

A total of 1231 fresh cycles took place, in which an embryo transfer occurred.

Non-donor cycles numbered 1069, donor cycles numbered 162.

In the non-donor cycles, 580 patients were in the usual care group, 370 in the ACU group and 119 (12%) in the WS-TCM group. The proportion of live births was significantly higher in the **WS-TCM group (61.3%)** compared with either the usual care (48.2%) or ACU groups (50.8%);

Of the donor cycles, 104 recipients in usual care group received an embryo transfer, together with 37 in the ACU group and 21 in the WS-TCM group. On the outcome of live births, **85.7% of the WS-TCM** group, 62.5% of the usual care and 59.5% of the ACU group had a live birth, but this was not significantly fewer than usual care or ACU groups.

No ectopic pregnancies occurred in the WS-TCM group for this cycle type

Overall, IVF with adjuvant WS-TCM was associated with greater odds of live birth in donor and non-donor cycles. These results should be taken cautiously as more rigorous research is needed.

8.1.7 Management of TCM therapies:

- **The time of TCM's intervention and support to ART:**

  Acupuncture is performed around of IVF-ET:

Zheng CH et al (2012) reviewed twenty-three trials (a total of 5598 participants) to observe the condition around the time of ET (embryo transfer): The pooled CPR and LBR results from the studies in which acupuncture was performed around the time of the ET showed no significant differences between all acupuncture groups and all controlled groups; around the time of OA (oocyte aspiration) the pooled CPR and LBR results from the studies in which acupuncture was performed around the time of the OA showed no significant differences between all acupuncture groups and all controlled groups; The pooled CPR (clinical pregnancy rate) result around the time of the COH (controlled ovarian stimulation) from all acupuncture groups was significantly higher than that from all controls.

From above observation, although acupuncture can produce a better clinical pregnancy rate,

only doing acupuncture around IVF-ET seems not to produce a significantly positive result. What time will be right to start acupuncture that can give the most support to ART?

The best time to start TCM to give a good enough support for ART:

1 TCM should start since you make a pregnancy plan. You should recognize your state: whether you are over the best age to conceive, whether you have a long history of taking contraceptive pills, whether your relevant organs are in unsatisfactory state, whether you suffer from a gynaecological disease……..If you have these conditions, you should understand that you may not have an easy ART treatment, and it would be better to take acupuncture or TCM for preparation, then go ahead towards a suitable form of ART.

It may take 2-1 years, or 1 year, or a half of year, or only 3-4 months according to your unbalanced state before you should get ART. You should visit acupuncturist, or TCM practitioner, or TCM consultant for gaining a treating plan according to the particular state of you.

2 If you suffer from a gynaecological disease, even you have had a gynaecological operation, you should understand that you may not have recovered back to the best state because you need to regulate your whole body until you are in the best state, and then you can gain a successful result. For example, after an endoscopic operation for endometriosis, you may not be in an adequate state to get an IVF. You can accept TCM preparation until you gain balance, and then you should be able to get a successful IVF.

3 If you have a history to fail IVF or another ART treatment, you should not continue to get another one immediately. It would be better to get acupuncture, or TCM to help you to rehabilitate from the failed operation. When you return to the best state, you will be ready for IVF or other ART.

You should start your TCM treatment at least 3-4 months before performing IVF-ET.

- **The model of TCM's intervention and support to ART:**

**** TCM preparation following menstrual circles**: the details of the Cycle regulation in the treatment of infertility in TCM has been introduced in Chapter 5, but we will also take this routine treating model as preparation to ART. **Jiang D (2014)** reported her experience of practicing in UK on this protocol.

Acupuncture treatment:

Main points: Ren 8 （Shen que） with moxibustion

Ren 6 （Qi hai）, Ren 4 （Guan yuan） or Ren 3 （Zhong ji）

St 29 （Gui lai ）or St 28 （Shui fen ）or Ext 18 (Zi gong)

Lu 7 (Lie que), Ki 6 (Zhao hai).

Points' complement according to differentiation of patterns from TCM:

Priority of Kidney yin deficiency (Liver qi stagnation and Kidney yin deficiency):

TH 5 wai guan, GB 41 zu lin qi Ki 10 yin gu, Ki 3 tai xi, Ki 2 ran gu, Liv 3 tai chong.

Priority of Kidney yang deficiency (Spleen qi and Kidney yang deficiency):

St 36 zu san li, St 25 tian shu, Sp 9 yin ling quan, Sp 6 san yin jiao, Ki 3 tai xi, Ki 6 zhao hai.

Chinese herbal medicine:

Chinese herbal medicine is commonly used to support acupuncture treatment. Both combined together will help the individual patient to reach the expected treatment outcome. In many cases, women received regular acupuncture alone for over a year. Whilst they felt better, they were still unable to conceive since the treatment was insufficient, despite the fact that the acupuncture had been carried out correctly. Chinese herbal medicine is given in many cases for better treatment.

Chinese herbal medicines can be selected in various forms:

1 **As patent herbal formulae**: Although we can no longer use patent preparations in UK and Europe due to legal restrictions, we can prescribe our treatment with reference to these famous ancient formulae.

2 **As concentrated herbal powders**: These are suitable for individual prescriptions. They can be prescribed corresponding to the different stages of the menstrual cycle, which will strengthen the treatment effect.

3 **As dry herbs for decoction**: This form possess stronger treatment power than powders, which makes them particularly suitable for the organic diseases or more severe, complex cases.

Treatment method:

According to the TCM differentiation of syndromes, the herbs will be selected following each week of the menstrual cycle.

	Treating principle	Priority on kidney yin def		Priority on kidney yang def	
		Patent	Powder/Dry herb	Patent	Powder/Dry herb
The first week	Tonification of kidney and spleen to promote follicles growth	Guipi Wan / Zhibaidihuang Wan	Nvzhenzi(Fructus Ligustri Lucidi), Hanliancao (Herba Ecliptae Prostratae), Heshouwu (Radix Polygoni Multiflori), Gouqizi (Fructus Lycii), etc.	Bazhen Wan / Wujibaifeng Wan	Xianmao (Rhizoma Curculiginis Orchioidis), Yinyanghuo (Herba Epimedii), Xuduan (Radix Dipsaci Asperi), Tusizi (Semen Cuscutae Chinensis), etc.
The second week	Nourish Yin essence, and move stasis blood to support egg's maturation and ovulation	Zhibaidihuang Wan / Taohongsiwu Wan	Shudihuang (Radix Rhemanniae Glutinosae Praeparata), Danshen (Radix Salviae Miltiorrhizae), Taoren (Semen Pruni Persicae), Honghua （Flos Carthami Tinctorii）, etc.	Wujibaifeng Wan / Bazhenyimu Wan	Danggui (Radix Angelicae Sinensis), Zishiying (Fluoritum), Taoren (Semen Pruni Persicae), Honghua (Flos Carthami Tinctorii), etc.

The Third Week	Warm Yang and nourish Yin to promote progesterone's growth	BazhenWan / Jinguishenqi Wan	Shudihuang (Radix Rhemanniae Glutinosae Praeparata), Roucongrong (Herba Cistanches Deserticolae), Heshouwu (Radix Polygoni Multiflori), Gouqizi (Fructus Lycii),etc.	Nuangongyunzi Wan / Buzhongyiqi Wan	Bajitian (Radix Morindae Officinalis), Tusizi (Semen Cuscutae Chinensis), Danggui (Radix Angelicae Sinensis), Aiye Folium Artemisiae Argyi , ect.
The Forth Week	Push the stagnated Qi through and move stasis blood to regulate menstruation; tonification of kidney and spleen to protect foetus	Chaihushugan Wan / Jiaweixiaoyao Wan / Guipi Wan	Danshen (Radix Salviae Miltiorrhizae), Xiangfu (Rhizoma Cyperi Rotundi), Chishao (Radix Paeoniae Rubrae), Zelan (Herba Lycopi Lucidi), ect.	Xiaoyao Wan / Xuefuzhuyu Wan	Danggui (Radix Angelicae Sinensis), Xiangfu (Rhizoma Cyperi Rotundi), Chuanxiong (Radix Ligustici Wallichii), Zelan (Herba Lycopi Lucidi), ect.

Note: 1 the protocol should start with the first day of menstruation.

2 You can prescribe individually or follow the patent formula as a guide.

**** Classical TCM formulae for promoting pregnancy and preparing for ART** (Xia G et al 2000):

1 Classical and current formulae which warm uterus and release excessive cold:

1) Yulinzhu (毓麟珠，Jingyue's Collections, 景岳全书):

Renshen (Radix Ginseng) 20,
Baizhu (Rhizoma Atractylodis Macrocephalae) 20,

Fuling (Sclerotium Poriae Cocos) 20,

Baishao (Radix Paeoniae Lactiflorae) 20,
Chuanxiong (Radix Ligustici Wallichii) 10,
Zhigancao (Radix Glycyrrhizae Uralensis) 10

Danggui (Radix Angelicae Sinensis) 30,

Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 30,
Tusizi (Semen Cuscutae Chinensis) 30,

Duzhong (Cortex Eucommiae Ulmoidis) 20,

Lujiaoshuan (Cornu Cervi Degelatinatum) 20,

Chuanjiao (Pericarpium Zanthoxyli Bungeani)20

Above herbs with the percentage of their doses according to the initial formula should be mixed and made into pills with honey.

2) Tiaojingzhongyu Decoction (调经种玉汤，Current and Classical Medical Judge, 古今医鉴)

Danggui (Radix Angelicae Sinensis) 12，

Chuanxiong (Radix Ligustici Wallichii) 12,
Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 18,
Fuling (Sclerotium Poriae Cocos) 10,
Chenpi (Pericarpium Citri Reticulatae) 10,

Xiangfu (Rhizoma Cyperi Rotundi) 10,
Wuzhuyu (Fructus Evodiae Rutaecarpae) 12,

Rougui (Cortex Cinnamomi Cassiae) 6,

Ganjiang (Rhizoma Zingiberis Officinalis) 10,
Mudanpi (Cortex Moutan Radicis) 10,
Yanhusuo (Rhizoma Corydalis) 10,

Aiye (Folium Artemisiae Argyi) 6.

Above herbs should be decocted as herbal juice.

3) The formula to reinforce Kidney and promote ovulation: (补肾促排卵汤， tested formula from Prof Guicheng Xia in Nanjing University of TCM, Practice Formulae of TCM Gynaecology,实用妇科方剂学)

Danggui (Radix Angelicae Sinensis) 10,
Chi /Baishao (Radix Paeoniae Rubrae/ Radix Paeoniae Lactiflorae) 10,

Shanyao (Radix Dioscoreae oppositae) 10,

Shanzhuyu (Fructus Corni Officinalis) 10

Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 10,
Mudanpi (Cortex Moutan Radicis) 10,

Fuling (Sclerotium Poriae Cocos) 10,

Chuanxuduan (Radix Dipsaci Asperi) 10

Tusizi (Semen Cuscutae Chinensis) 10,
Lujiaopian (Cornu Cervi) 10 (boiled at the earlier),
Wulingzhi (Excrementum Trogopteri seu Pteromi) 10,
Honghua (Flos Carthami Tinctorii) 6,
Ziheche (Placenta Hominis) 10.

Above herbs should be decocted into juice for ladies in Kidney deficiency with difficult ovulation.

4) The formula to promote progesterone production: (助黄体生成汤，Clinical Practice on endocrine gynaecology, 临床实用妇科内分泌学)

Shilian (Semen Nelumbinis) 12
Shanzhuyu (Fructus Corni Officinalis) 10
Shanyao (Radix Dioscoreae oppositae) 15,
Sanjisheng (Ramulus Loranthi) 15,
Gouqizi (Fructus Lycii) 15,
Nvzhenzi (Fructus Ligustri Lucidi) 15
Hanliancao (Herba Ecliptae Prostratae)15,
Fupenzi (Fructus Rubi Chingii) 10
Yinyanghuo (Herba Epimedii) 10.
Chuanxuduan (Radix Dipsaci Asperi) 10

Above herbs should be decocted into juice for ladies in Kidney deficiency with lower activity of progesterone.

2 Classical and current formulae which clear excessive heat and nourish Yin:

1) The decoction for nourishing Yin: (育阴汤，tested formula from Prof Bailing Han in Heilongjiang University of TCM in TCM Gynaecology of Bailing 百灵妇科)

Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 10,
Shanyao (Radix Dioscoreae Oppositae) 10,

Chuanxuduan (Radix Dipsaci Asperi) 10
Sangjisheng (Ramulus Loranthi) 10,
Huainiuxi (Radix Achyranthis Bidentatae) 10,
Baishao (Radix Paeoniae Lactiflorae) 10,
Shanzhuyu (Fructus Corni Officinalis) 10
Muli (Concha Ostreae) 12,
Duzhong (Cortex Eucommiae Ulmoidis) 10,
Tusizi (Semen Cuscutae Chinensis) 10,
Haipiaoxiao(Os Sepiae seu Sepiellae)12,
Guiban (Plastrum Testudinis) 12,

Biejia (Carapax Amydae Sinensis) 12.

Above herbs should be decocted into juice for ladies in Kidney Yin deficiency who need to prepare for ART.

2) The decoction for nourishing Yin and anti-immune:(滋阴抑亢汤， Practice Formulae of TCM Gynaecology, 实用妇科方剂学):

Danggui (Radix Angelicae Sinensis) 10,
Chi/Baishao (Radix Paeoniae Rubrae/ Radix Paeoniae Lactiflorae) 10,
Shanyao (Radix Dioscoreae oppositae) 10,

Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 10,
Shanzhuyu(Fructus Corni Officinalis) 10,
Mudanpi (Cortex Moutan Radicis) 10,

Fuling (Sclerotium Poriae Cocos) 10,
Zhumagen (Radix Boehmeriae) 15,

Gancao (Radix Glycyrrhizae Uralensis) 6,
Chaihu (Radix Bupleuri) 5,
Puhuang (Pollen Typhae) 6 (separated packaged)

Above herbs are decocted into juice for ladies staying in Kidney Yin deficiency who possess positive results from anti-sperm.

3 The classical and current formulae which remove stagnated Qi and release excessive dampness and phlegm:

1) Guangsi Wan: (广嗣丸 Essence on Gynaecological Herbs. 女科要药)：

Chenxiang (Lignum Aquilariae Resinatum) 3,

Dingxiang (Flos Caryophylli) 3,

Wuzhuyu(Fructus Evodiae Rutaecarpae)3,

Rougui (Cortex Cinnamomi Cassiae)3,
Baiji (Rhizoma Bletillae Striatae) 3,
Shechuangzi (Fructus Cnidii Monnieri) 6,
Mubiezi (Semen Momordicae Cochinchinensis) 6,
Xiangfu (Rhizoma Cyperi Rotundi) 6,
Sharen (Fructus Amomi) 6,
Xixin (Herba cum Radice Asari) 6

Above herbs are mixed with honey and made into small pills in the size of mung beans which are put into vagina as preparation for conception.

2) The decoction for releasing the stagnated liver Qi and promoting conception: (疏肝助

孕汤，New Chinese Medicine, 新中医)

Chaihu (Radix Bupleuri) 10,
Yujin (Tuber Curcumae) 10,
Qingpi (Pericarpium Citri Reticulatae Viride) 10,
Chishao (Radix Paeoniae Rubrae) 10,

Baishao (Radix Paeoniae Lactiflorae) 10,
Huainiuxi (Radix Achyranthis Bidentatae) 1 0,

Xiangfu (Rhizoma Cyperi Rotundi) 12,
Yanhusuo (Rhizoma Corydalis) 12,
Wangbuliuxing (Semen Vaccariae Segetalis) 12,
Lulutong (Fructus Liquidambaris Taiwanianae) 12,
Danggui (Radix Angelicae Sinensis) 12,
Chuanshanjia (Squama Manitis Pentadactylae) 12,

Lujiaoshuang (Cornu Cervi Degelatinatum) 12

Above herbs are decocted into juice which should be taken 7 days successively since the third day after the blood completely cleared from last period, one course per month to prepare for ART.

4 The classical and current formulae which eliminate blood stasis and stagnated Qi:

1) GuizhifulingWan: (桂枝茯苓丸，Essence in the Gold Cabinet, 金匮要略)：

Guizhi (Ramulus Cinnamomi Cassiae) 10,
Fuling (Sclerotium Poriae Cocos) 10,
Mudanpi (Cortex Moutan Radicis) 10,

Taoren (Semen Pruni Persicae) 10,

Chishao (Radix Paeoniae Rubrae) 10,

Above herbs are mixed and made into pills ladies who suffer from fibroids in the uterus, Cysts or Polypus at the cervix, abdominal and vaginal inflammation and who are trying to conceive or waiting for ART.

2) Pills of Making life turned (回生丹，Life Salvaged from the refractory diseases, 万病回春)：

Dahuang (Radix et Rhizoma Rhei) 500，

Sumu (Lignum Sappan) 60，

Honghua (Flos Carthami Tinctorii) 90,

Heidou (Semen Glycine Max) 200,

Danggui (Radix Angelicae Sinensis) 30,

Chuanxiong (Radix Ligustici Wallichii) 30,

Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 30,

Fuling (Sclerotium Poriae Cocos) 30,

Cangzhu (Rhizoma Atractylodis) 30,

Xiangfu (Rhizoma Cyperi Rotundi) 30,

Wuyao (Radix Linderae Strychnifoliae) 30,

Yanhusuo (Rhizoma Corydalis) 30,

Taoren (Semen Pruni Persicae) 30,

Puhuang (Pollen Typhae) 30,

Niuxi (Radix Cyathulae Officinalis) 30,

Baishao (Radix Paeoniae Lactiflorae) 15,

Gancao (Radix Glycyrrhizae Uralensis) 15,

Chenpi (Pericarpium Citri Reticulatae) 15,

Muxiang (Radix Aucklandiae Lappae) 15,

Sanleng (Rhizoma Sparganii Stoloniferi) 15,

Wulingzhi (Excrementum Trogopteri seu Pteromi) 15,

Qianghuo (Rhizoma et Radix Notopterygii) 15,

Diyu (Radix Sanguisorbae Officinalis) 15,

Shanzhuyu (Fructus Corni Officinalis) 15,

Renshen (Radix Ginseng) 10,

Baizhu (Rhizoma Atractylodis Macrocephalae) 10,

Qingpi (Pericarpium Citri Reticulatae Viride) 10,

Mugua (Fructus Chaenomelis Lagenariae) 10,

Liangjiang (Rhizoma Alpiniae Officinari) 12,

Ruxiang (Gummi Olibanum) 3,

Moyao (Resina Commiphorae Myrrhae) 3.

Dahuang (Radix et Rhizoma Rhei) is grinded into fine powders, mixed with vinegar for simmering to a cream form; the rest of above herbs are also grinded into fine powders which are mixed with Dahuang cream together into pills. These pills are taken with alcohol for ladies who have been conceived, but with embryo under-growing in the uterus, or dead in the uterus.

- **The contraindication of TCM's intervention**:

Although acupuncture and herbs belong to natural therapies, and will do no harm to the bodies, there are still people who may not be suitable to be given these treatments. So we should be extra careful in identifying those who are not suitable for these treatments.

For acupuncture:

These people as follows should not be given acupuncture treatment, or extra care has to be taken in deciding whether it is necessary to give acupuncture to him /her or not:

1 It is better to not to do acupuncture to people who have no confidence in acupuncture, or those who have some potential prejudice to acupuncture, or those who do not completely trust acupuncture can do her good. Thorough introduction to acupuncture should be given, until a good understanding of acupuncture and a positive attitude is achieved.

This is because acupuncture treatment gives a stimulation that requires the acceptor to fully corresponds to the treatment to get a significant result; when the mind is in a positive state, the whole of body will also correspond well.

2 Extra care has to be taken in deciding whether it is necessary to give acupuncture to those who become nervous easily; or those who had failed acupuncture that did not deliver expected results in the past

3 It is better to not to do acupuncture to people who suffer from diseases and health states related to the difficulty to make blood coagulation.

4 Extra care has to be taken in deciding whether it is necessary to give acupuncture to those with diabetes who suffer from the ulcer (s) or refractory infection on the skin.

5 The areas with infection, ulcers or scars, are not suitable for needling.

For moxibusion:

Moxibution is always given to assist with acupuncture treatment, so its contraindication should include above items the same as acupuncture, in addition to these as below:

1 It is better to not to do moxibution to those who are displaying a strong warm constitution, such as very hot feeling, red face, easy to sweat, thirsty, etc.;

2 It is better to not to do moxibution to those who is diagnosed with a hot pattern in TCM, for example when Liver heat flares up, or when there is stronger stomach heat manifested as being angry, upset easily, having bitter taste, a lot of acnes on face and body, et al;
3 It is better to not to do moxibution to those who suffer from dermatological diseases, such as very severe and active Eczema or Psoriasis; easy to bleed et al.
4 In doing moxibustion the practitioner should be very careful to avoid burning skin.
5 Don't do any moxibution in the building or area that prohibits smoke, or alternatively use the smoke-free moxa. If a normal moxa is performed in a separated area, the amount of smoke and its smell for the patient and the practitioner should be carefully considered.
6 It is better to not to do moxibution to those who suffer from a bad constipation;

Moxibustion can be used on excessive cold, stagnation, and blood stasis; it can also reinforce most of the deficiency patterns, due to its warming effect and the fact that it can promote a good circulation. But in above conditions the patients can't put more heat on.

For Chinese herbal medicine:
1 It is better to not to give Chinese herbal medicine to people who have no confidence in it, or those who have some potential prejudice to it, or those who do not completely trust it. Thorough introduction to Chinese herbal medicine should be given, until a good understanding of it and a positive attitude is achieved.
2 Trust between the patient and the TCM practitioner need to be formed before making prescriptions.
3 Chinese herbal medicine are better not to be prescribed to those who have a severe allergic state or disease, especially if they are allergic to plants.
Due to be a position of acupuncturist or TCM practitioner in the West as complementary and alternative medicine practitioner, the arrangement of our treatment should follow the patients' will, and we should avoid any occasion where we need to persuade, or even force the patients to accept our treatment.

- **The necessary management of TCM during and after ART:**

The best time to receive Acupuncture and TCM for promoting ART should be 3 months to 2 years before doing ART, especially IVF, but it is also necessary to receive some special treatment around IVF, even after IVF.

Special Treatment of acupuncture:

1 during the IVF: acupuncture:

Acupuncture and moxibustion should be done once before the oocyte aspiration (OA---eggs are picked up) of IVF: it should enhance endometrial receptivity, and help patients achieve good circulation of ovaries and whole abdominal cavity, and good general and psychological state. In general, it should be done around 1-24 hours before oocyte aspiration during IVF;

Another acupuncture and moxibustion should be done after embryo transferred (ET) of IVF. In order to create a balanced local and general state, acupuncture and moxibustion should be done between 1-24 hours after IVF-ET.

During IVF, we should stop all herbs since the reaction between Chinese herbal medicine and drugs used during IVF and all of ART procedure remains unknown.

Acupuncture treatment around IVF:

Ren 3 (Zhongji), / Ren4 (Guanyuan), Ren6 (Qihai), Zigong (Ext.)

Ren12 (Zhongwan), Du20 (Baihui), P6 (Neiguan), St36 (Zusanli), Ki3 (Taixi), Ki6 (Zhaohai)

Moxibustion treatment around of IVF:

Shenque (Belly button)

2 after the IVF: Acupuncture and TCM:

Acupuncture:

Based on many clinical and laboratory researches, acupuncture should keep going on 1, or 2, or 3 times per week if doing acupuncture only. Moxibustion should be given with acupuncture as well. Both acupuncture and moxibustion should be given until end of the 12^{th} weeks of a successful pregnancy for preventing and treating miscarriage; If the conception was not successful, acupuncture and moxibustion can continue to be given in

order to speeding up a complete recovery and preparing for another natural or IVF supported pregnancy. Otherwise, acupuncture can stop after knowing the result of a failed IVF.

Acupuncture treatment will be same as during IVF.

Moxibustion:

When acupuncture is given for preventing and treating miscarriage, moxibustion should be given together with acupuncture. In general, Moxibustion is given at Ren8 (Shenque) which should be safe and effective. But occasionally, some patients may feel abdominal sore and spasm pain from an over sensation to moxibustion when in a weaker state and having a tendency to have abortion. If this condition occurs, moxibustion should be stopped.

Moxibustion treatment will be same as during IVF.

Herbal Medicine:

For ladies who have a history of miscarriage, or whose egg/ eggs quality may not be in an optimal state when she was performed IVF-ET, it is possible for her to have a miscarriage although she has a positive result of IVF, herbal medicine should start to be taken immediately after IVF-ET. If she is given vaginal progesterone at the same time, the use of oral herbal medicine should be combined for preventing and treating miscarriage's occurrence.

For ladies who have stronger and good enough egg/eggs, and who are staying in a good condition, she needn't worry about miscarriage at the early stage, so she needn't taking herbal medicine immediately. She can start taking herbs only since she manifests some early signs of miscarriage: such as a bit of vaginal bleeding, abdominal pain/ or straining feeling of low abdomen. If there are those signs, she should start taking herbal medicine as soon as possible. If the essence of placenta has not been released out, although she may have had a heavy vaginal bleeding, it is still possible for her to save her baby back after she takes appropriate herbal medicine. In general, herbal medicine should quickly stop the bleeding, in 1-2 weeks according to the embryo's strength. She needs to take herbs until the 12^{th} weeks of pregnancy to make sure her pregnancy is in a healthy way; occasionally, there are

some patients who need to take herbs for the whole duration of her pregnancy, since there may still be some deficiency left, and she needs to be supported for whole procedure.

For the ladies who have any unwanted symptoms, or in dangerous state, Chinese herbal medicine can help to release pathogenic factors, feed the embryo well and prepare for a smooth procedure.

Chinese herbal medicine for preventing and treating miscarriage: (Dong 1990)

For the early stage of miscarriage, if there is some vaginal bleeding after she has already conceived:

- Protecting embryo decoction （保胎汤）:

Huangqi (Radix Astragali Membranacei) 20-30,
Dangshen (Radix Codonopsis Pilosulae) 10-15,
Baizhu (Rhizoma Atractylodis Macrocephalae) 10-15,
Shanyao (Radix Dioscoreae oppositae) 10-15,
Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 10-15,
Duzhong (Cortex Eucommiae Ulmoidis) 10-15,
Sangjisheng (Ramulus Loranthi) 10-15,
Sharen (Fructus Amomi) 10-15,
Dazao (Fructus Zizyphi Jujubae) 4-6
If there is more yin deficiency:
Ejiao (Gelatinum Corii Asini) 10, Huangjin (Aurum Metalicum) 10 are added in;
If kidney and spleen deficiencies are severe:
Tusizi (Semen Cuscutae Chinensis) 10,
Fupenzi (Fructus Rubi Chingii) 10,
Roudoukou (Semen Myristicae Fragrantis) 10,
Yizhiren (Fructus Alpiniae Oxyphyllae) 10, are added in;
If it is colder in the uterus:
Yinyanghuo (Herba Epimedii) 10,
Buguzhi (Fructus Psoraleae Corylifoliae) 10,
Rougui(Cortex Cinnamomi Cassiae)5-10 are added in

If there is too much bleeding:
Diyu Tan (Radix Sanguisorbae Officinalis) 10,
Huangqin tan (Radix Scutellariae Baicalensis (carbonis¨|) 10,
Xianhecao (Herba Agrimoniae Pilosae) 10,
Aiye (Folium Artemisiae Argyi) 10 are added in.
Above prescription is reported to have provided successful protection to the babies by 50 out of 60 ladies.

In general, its effect should appear in 5 days in average.

For ladies who have had a history of miscarriage, or habitual miscarriage:

- Preventing miscarriage decoction （防胎汤）:

Huangqi (Radix Astragali Membranacei) 15,

Dangshen (Radix Codonopsis Pilosulae) 15,

Baizhu (Rhizoma Atractylodis Macrocephalae) 15,

Danggui (Radix Angelicae Sinensis) 10,

Baishao (Radix Paeoniae Lactiflorae) 10,

Tusizi (Semen Cuscutae Chinensis) 10,

Chuanbeimu (Bulbus Fritillariae Cirrhosae) 10,

Chuanxiong (Radix Ligustici Wallichii) 5,

Gan/Shengjiang (Radix Glycyrrhizae Uralensis) 3,

Aiye (Folium Artemisiae Argyi) 3,

Qianghuo (Rhizoma et Radix Notopterygii) 3,

Jingjie (Herba seu Flos Schizonepetae Tenuifoliae) 3,

Zhike (Fructus Citri Aurantii) 3,

Houpo3.

Above prescription is reported to prevent habitual miscarriage in 46 out of 48 cases. In the 46 cases the ladies had healthy babies; in the 2 cases there was a miscarriage in the 16th weeks of pregnancy.

For ladies whose embryo eases growing up in the uterus during her pregnancy:

- Longevity embryo decoction: (寿胎丸)

  Tusizi (Semen Cuscutae Chinensis) 5，

  Ejiao (Gelatinum Corii Asini) 5, (Dissolved),

Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 5,

Dangshen (Radix Codonopsis Pilosulae) 12,

Huangqi (Radix Astragali Membranacei) 12,

Sangjisheng (Ramulus Loranthi) 12,

Baizhu (Rhizoma Atractylodis Macrocephalae) 10,

Danggui (Radix Angelicae Sinensis) 10,

Xuduan (Radix Dipsaci Asperi) 10,

Sharen (Fructus Amomi) 3 (put in later)

Above prescription was used to treat 6 cases when embryo easing growth, all of which are cured.

8.1.8 Using TCM to Support IVF with the "Five Phase and Three Principle" Approach (Dr GP Zheng's experience)

After reading the literature on TCM treatment to promote ART, we should know how to practice TCM in the best way to facilitate ART. One of the renowned TCM practitioners of Gynaecology and Infertility in the USA, Dr Guoping Zheng (2017) developed the Five Phase and Three Principle approach, which might be the best way to guide the practice of TCM for promoting ART, especially for IVF. We invited Dr. Zheng to give a summary of her treatment approach, which follows:

The theory and method of the TCM "Five Phase and Three Principle" approach was derived from a combination of "TCM regulate cycle therapy," an understanding of the different characteristic phases of the ART cycle, and my specific clinical experience.

The five phases comprise:

1) Preparation phase
2) Stimulation phase
3) Egg retrieval to embryo transfer phase
4) Post-embryo transfer phase
5) Post-conception phase

The three principles are:

1) Tonify Kidney Essence as the main principle in conjunction with regulate Liver and Spleen and promote Qi and Blood flow. This principle works to promote ovarian function and improve egg quality. It applies to both the “preparation” and “stimulation” phases.
2) Tonifying Kidney Essence as a basic principle in conjunction with slightly stronger action to promote Qi and Blood flow, plus soothe Liver Qi and calm the spirit. This principle works to nourish the uterine lining, promote Qi and blood flow in the lining as well as the whole pelvic area, soothe the whole body's Qi and Blood flow and balance the Yin and Yang. These actions help to create an optimal environment to prepare for embryo transfer. This principle applies to the “egg retrieval to embryo transfer” phase.
3) Tonifying Kidney Essence and strengthen Spleen Qi as the main principle, with mild action to promote Qi and Blood flow. This principle works to promote implantation and support a healthy pregnancy. It applies to both the “post-embryo transfer” phase and “post-conception” phase.

   It is important to emphasize that the principle of strengthen Kidney and nourish Essence is the foundation for all phases of the cycle and all three principles.

Phase 1: **Preparation Phase: Using TCM to regulate ovarian function and improve egg quality：** This phase encompasses the period before the IVF cycle begins, the duration of which varies in each case depending on the status of ovarian function, egg quality and the state of the internal environment of the uterus and the whole body. The optimum is usually three months, but can be one month, or sometimes six months or even longer depending on the number and severity of issues to be addressed.

Preparation with acupuncture, Chinese herbs and other holistic approaches before the IVF cycle starts can be a very important step in some cases, especially for someone with recurrent IVF failure, primary ovarian dysfunction (POD) and /or premature ovarian aging (POA), diminished ovarian reserve (DOR), poor ovarian response to IVF stimulation medication, or age-related infertility. The appropriate preparation period can help to give the greatest improvement to IVF cycle outcome in this population.

The period of preparation can be likened to the process of planting a garden. To plant a successful garden, the seed, the soil and the climate all need to be of the right quality and working together harmoniously to for the garden to grow successfully. The "seed" includes the quality and quantity of eggs. The "soil" represents the quality and thickness of the uterine lining, or in another word uterine receptivity. The "climate" addresses the whole body's internal environment, such as the endocrine system, immune system, and circulatory system, to be harmonized and balanced._In my experience, if we can help to create a better quality of seed, soil and climate through preparation with acupuncture and Chinese herbs, conception is most likely to happen.

The principle of preparation using acupuncture and Chinese herbal formulas for IVF patients is to strengthen Kidney Essence, promote Qi and Blood flow and balance Yin and Yang. In other words, it is to nourish the seed and soil and help create the optimal climate to become more fertile. After all of the preparation, we can expect that the outcome of IVF will be improved. Having techniques to achieve these goals can be considered one of the important advantages of TCM treatment with infertility.

Phase 2: **Stimulation phase**: **TCM continues to work on nourishing the follicle, improving egg quality and preparing for optimal egg retrieval:** This phase is considered to be from the start of the use of stimulation medication (STIM) through the day of the egg retrieval process. After the preparation phase, we should continue to use the first principle, reinforce Kidney Essence, as the main principle in conjunction with regulate Liver and Spleen and promote Qi and Blood flow. The goal of this principle is to continue to work on nourishing the follicle, improving egg quality and preparing for optimal egg retrieval in order to get higher quality eggs and embryos. To get a good amount of high quality eggs and embryos is considered one of the most important steps of a successful IVF cycle.

Phase 3: Egg retrieval to embryo transfer phase: **TCM is used to promote blood flow to the pelvis to improve blood circulation to the uterine lining and improve uterine receptivity**: This phase is considered to be the day from right after egg retrieval to the day of embryo transfer. After the STIM phase and the day of egg retrieval, we should change our treatment principle to principle 2, which is reinforce Kidney Essence as a basic principle, in conjunction

with slightly stronger action to promote Qi and Blood flow, plus soothe Liver Qi and calm the Shen (spirit). The goal of principle 2 in this phase is to promote blood flow to the pelvic region to increase blood circulation to the uterine lining and improve uterine receptivity in order to prepare for embryo transfer and a successful implantation process.

Phase 4: Post-embryo transfer phase: After ET, TCM is continued to support the process of implantation and promote embryonic development: This phase is considered to be from the day of after embryo transfer through to the blood test for pregnancy. Principle 3 is applied in this phase: reinforce Kidney Essence and strengthen Spleen Qi as the main principle, with mild action to promote Qi and Blood flow. The goal of this principle is to continue to nourish the embryo, strengthen the vital energy Qi for the energy needed for embryonic development. Eventually will support the process of implantation and promote the embryonic development, this is another important step to a successfully and healthy pregnancy

Phase 5: Post- conception phase: TCM treatment is continued to support healthy embryo development and prevent miscarriage: This phase **is** considered to be from the day of a positive pregnancy test through 12 weeks of pregnancy. Principle 3 also applies to this phase: reinforce Kidney Essence and strengthen Spleen Qi as the main principle, with mild action to promote Qi and Blood flow. The purpose of this treatment is to continue to promote healthy embryo development, support a healthy maternal environment after conception, and prevent miscarriage. For patients with a recurrent miscarriage history, repeated IVF implantation failure or age-related infertility it is very important to receive this treatment to prevent miscarriage.

We have discussed three treatment principles and the goal and application of each principle in different phases of the IVF cycle above. Below, we will give a case report to demonstrate the details of how to apply this approach in clinical practice.

Case Study: Patient with four failed IVF cycles. After receiving TCM according to the five phases and three principles, she conceived successfully and delivered a healthy baby girl with IVF.

Female, 41 years old, with primary infertility for five years and four failed IVF cycles presented in October 2013 to my office. She began assisted reproductive treatments when she was 36 years old after trying for a natural conception without result for over a year. At the end of 2009, her first IVF egg retrieval (ER) yielded four eggs and two fertilized. The result was a chemical pregnancy. The second IVF attempt a few months later yielded 8 eggs and 5 fertilized. 3 embryos were transferred on Day 3 after ET, but no pregnancy resulted. She was told that her embryos were of medium quality. Three years after the second IVF, she went to the most renowned fertility centre in New York for her third IVF. Since only three follicles were growing, her IVF was converted to IUI. Again, no pregnancy resulted. Three months later in her fourth IVF cycle, two eggs were retrieved, only one fertilized and the embryo stopped growing on day 2 after ER. The ET had to be cancelled. Due to four failed IVF cycles, especially the two recent cancelled cycles, the poor ovarian response to the STIM and the poor quality of the embryos, the reproductive endocrinologist (RE) suggested she come to my office to try TCM to prepare and to support in order to increase her future outcome with IVF.

Relevant examination: The patient's blood FSH, LH, E2 and AMH were normal. Her husband's semen analysis was also in the normal range.

Menstrual cycle: 4-5 / 22-30, last menstrual period was September 20, 2013, and the day of her visit was her cycle day 22.

Diagnosis of conventional Western medicine:

1. Primary Infertility
2. Multiple failure of IVF
3. Low response of ovaries and poor egg quality probably due to age

Diagnosis of TCM:

Current picture: Generally fit, average energy, regular sleep and bowel/ urine. Due to many IVF failures, she felt depressed, nervous, weepy and sad. She presented with red tongue with thin white coating and the pulse was slightly wiry and weaker at the rear (Chi) positions.

Differentiation of syndrome: Kidney Essence deficiency with Liver Qi stagnation

Treatment plan:

1. Psychological and emotional support: Help the patient to understand how TCM works and how it might help her situation to promote confidence and positive thinking.
2. Suggest she do yoga and/ or meditation daily to stay in a calm and relaxed mind state;
3. Acupuncture once every other day;
4. Chinese herbal prescription as a decoction drunk twice daily.

Communicate with RE who agrees to patient taking herbs during the preparation phase and through the whole IVF cycle.

5. Supplements such as DHEA, Co-Q10, etc.
6. "5 phases and 3 principles" approach was applied the whole time.

TCM treatment with 5 phases and 3 principles approach:

1. **Preparation Phase**: **Promote optimal egg quality and whole body environment**: She was given the first treatment principle, such as reinforce Kidney and nourish Essence, as the main principle; soothe Liver Qi and transport Spleen Qi, increase Blood circulation as the auxiliary treatment.

Acupuncture Treatment:

Point formula:

1) Body acupuncture:

- Gyn 6 points: Ren3 (Zhongji), Ren4 (Guanyuan), St29 (Guilai), Ex (Zigong);
- Ki3 (Taixi), Sp6 (Sanyinjiao), Sp9 (Yinlingquan), St36 (Zusanli);
- Du24 (Shenting), Li4 (Hegu)

2) Auricular points: Ovary, Uterus, Kidney, Shenmen (Each time, two of the above both points were inserted by small auricular needles)

Explanation of acupuncture point formula:

Use Du24 to settle the mind and relax; Li 4 to regulate the Qi and promote the blood flow; Gyn 6 points to adjust and fill the Qi and Blood in the Chong and Ren channels to nourish the ovaries and strengthen the uterus;

The points of Ki3, Sp6, Sp9, and St36 are used to reinforce the Liver and Kidney Blood and Essence, in order to nourish the ovaries and uterus;
St36 to strengthen the vital energy Qi in order to strengthen the fertility energy Qi.
All points work together to improve the reproductive system function, and also to relax the body and mind, adjust the Qi and Blood and balance Yin and Yang in order to create better ovarian function, egg quality and internal environment for the benefit of conceiving.

Cupping therapy:

Cupping on the lower back area around BL31-35 (Baliao) and Du (Yaoyangguan) were alternated each time.

Cupping therapy was also used to strengthen the vital energy Yang Qi, to improve the Qi and Blood flow, incorporated with acupuncture to improve the effectiveness of acupuncture.

Chinese herbal Treatment:

Herbal formula:_A special Chinese herbal formula made according to my thirty five years of clinical experience: Restoring the Original Essence - Qi and Promoting Fertility Decoction, （归元助孕汤 in Chinese)

Gouqizi (*Radix Lycii*) 10
Tusizi (*Semen CuscutaeChinensis*) 10
Shudihuang (*Radix RhemanniaeGlutinosaePraeparata*) 30
Shanyao (*Radix Dioscoreaeoppositae*) 10
Shanzhuyu (*FructusCorni Officinalis*) 10
Huainiuxi (*Radix AchyranthisBidentatae*) 15
Fuling (*Sclerotium Poriae Cocos*) 10
Chenpi (*PericarpiumCitriReticulatae*) 10
Xiangfu (*RhizomaCyperiRotundi*) 10
Danshen (*Radix SalviaeMiltiorrhizae*) 10
Honghua (*FlosCarthamiTinctorii*) 10
Gancao (*Radix GlycyrrhizaeUralensis*) 5

Explanation of 归元助孕汤：The formula uses Gouqizi, Tusizi, Shudihuang, Shanyao, Shanzhuyu to warmly and moistly nourish Kidney Essence; Huainiuxi is moving and directs the Kidney tonic herbs to the Chong-Ren channel; Fuling, Shanyao, Chenpi, Gancao together strengthen the Spleen Qi to help digest and absorb the tonic herbs; Xiangfu, Danshen and

Honghua together promote the Qi and Blood flow over all the body including the reproductive area. All the herbs together nourish and strengthen the fertility Essence and fertility Qi and balance the Yin and Yang, so it is easier to conceive.

After close to two weeks of preparation with above acupuncture and Chinese herbal treatment, the patient had a menstrual period and then started her fifth IVF cycle.

2. STIM phase: Continue to work on nourishing the follicle, improving egg quality and preparing for optimal egg retrieval:

Current picture: On day two, all of her blood work was in the normal range. US showed 4-6 follicles in the right ovary and none in the left ovary.

The patient received a regular IVF protocol. She started Lupron 20IU on cycle day (CD) 2, and Menopur and Gonal-F on CD3.

TCM treatment:

Acupuncture was given on days 2, 3, 7, 9 and 11 with Chinese herbal decoction twice a day. Same acupuncture point and herbal formula as phase one.

Result from US:

CD 7: 4 follicles 10-12mm; 2 small 7 mm follicles in the right ovary. No follicles in the left ovary.

CD 9: 4 follicles in the right ovary: 16, 15, 13 and 11mm;

CD 10: 5 follicles in the right ovary: 17.5, 16, 15x2 and12mm;

CD 11: 6 follicles in the right ovary: 19, 18, 17, 16x2, 15mm.

3. Egg retrieval to embryo transfer phase: Work on to preparing the uterine lining, improve uterine receptivity and the whole body's environment

Current picture:

On CD 13, 4 eggs were retrieved, 2 fertilized. 2 day 3 embryos were transferred on CD 16 (7 cell grade B, and 8 cell grade C).

TCM treatment:

Acupuncture: Two treatments on the day of ET, once before and once after ET.

Principle 2 was applied before ET: Promote the Qi and Blood flow, and calm the mind.

Points before ET: Gyn 6 points, Ren24 (Shenting), P6 (Neiguan), Sp10 (Xuehai), Sp6 (Sanyinjiao), Liv3 (Taichong)

Auricular points: Uterus, Ovary, Liver and Shenmen

Principle 3 was applied after ET: Strengthen Kidney and Spleen Qi mainly with mild action to promote Qi and Blood flow to support implantation.

Points after ET: Du20 (Baihui), He7 (Shenmen), Li4 (Hegu), St36 (Zusanli), Sp6 (Sanyinjiao).

Auricular points: Uterus, Kidney

Herbal formula was based on principle 3: Guishen Wan（归肾丸） modified with Xiao Yao Wan（逍遥丸）and Four items decoction（四物汤）:

Chaihu (*Radix Bupleuri*) 10

Chenpi (*PericarpiumCitriReticulatae*) 10

Fuling (*Sclerotium Poriae Cocos*) 10

Danggui (*Radix AngelicaeSinensis*) 10

Shudihuang (*Radix RhemanniaeGlutinosaePraeparata*) 30

Chishao (*Radix PaeoniaeRubrae*) 10

Chuanxiong (*Radix LigusticiWallichii*) 10

Tusizi (*Semen CuscutaeChinensis*) 10

Gouqizi (*FructusLycii*) 10

Shanzhuyu (*FructusCorni Officinalis*) 10

Shanyao (*Radix Dioscoreaeoppositae*) 10

Xiangfu (*RhizomaCyperiRotundi*) 10

Above herbs were decocted and taken twice daily.

4. Post-embryo transfer phase: Support embryo implantation and promote embryo development:

Patient returned to clinic 2 days after ET.

TCM treatment:

Acupuncture*: Gyn 6 points * (Ren3 and 4, St29 and Zigong)

Du20 (Baihui), St36 (Zusanli)

Auricular points: Zigong, Kidney

*Gyn6 points should be inserted gently and shallowly beneath the skin.

*Acupuncture was done on Days 2, 5, 7, 9 after ET.

Herbal formula was based on principle 3:

Reinforce Kidney and Strengthen Spleen is the main principle to enhance Qi and to nourish Blood to support implantation, embryo development and to prevent miscarriage.

Modification of Shoutai Wan (寿胎丸) and Taishangpanshi San（泰山磐石散）

Sangjisheng (*RamulusLoranthi*) 10
Chuanduan (*Radix DipsaciAsperi*) 10
Gouqizi (*FructusLycii*) 10
Tusizi (*Semen CuscutaeChinensis*) 10
Chenpi (*PericarpiumCitriReticulatae*) 10
Xiangfu (*RhizomaCyperiRotundi*) 10
Dangshen (*RhizomaCyperiRotundi*) 10
Huangqi (*Radix Astragali Membranacei*) 10
Baizhu (*RhizomaAtractylodisMacrocephalae*) 10
Fuling (*Sclerotium Poriae Cocos*) 10
Danggui (*Radix AngelicaeSinensis*) 10
Gancao (*Radix GlycyrrhizaeUralensis*) 5
Above herbal medicine was decocted and taken twice daily.

Result:

She had positive pregnancy test on day 12 after ET with HCG 294, rising to 680 in the next 2 days, which confirmed her pregnancy success.

5. Post-conception phase: Continue to support pregnancy and prevent miscarriage

Current picture: With blood hCG increasing nicely, her pregnancy was confirmed to be strong.

TCM treatment continued with principle 3:

Reinforce Kidney and strengthen Spleen Qi is the main principle to continue to work on nourishing and supporting embryo development and prevent miscarriage.

Acupuncture: Same points as in phase 4, twice weekly;

Herbal decoction was taken twice daily same formula as in phase 4.

Above treatment continued until the 6th week of her pregnancy. US showed heartbeat of 167/min, 150/min after 1 week, and all of relevant blood tests were in the normal range. The patient was transferred to an OB/GYN. She stopped the herbs, but kept regular acupuncture 1-2 times per week until 12 weeks. Then, she continued acupuncture every two weeks until 20 weeks of pregnancy. She had normal screenings and stopped acupuncture

until 37 weeks. She came back for acupuncture treatment for promoting a normal healthy labour with the goal of shorter labour and easing labour pain.

She had a natural and uncomplicated birth at full term and delivered a healthy baby girl, both mother and child in a good state.

The chart below summarizes and compares of the quantity and quality of embryos before and after acupuncture and Chinese herbal preparations to better demonstrate the benefits of TCM preparation and support all the way through the IVF cycle.

Ovarian Response and Pregnancy Outcome of Five IVF Cycles

	IVF Date	Treatment Method	No. of Follicles	No. of Eggs Retrieved	No. of Eggs Fertilized	No. of Embryos Transferred	Result
First Cycle	End of 2009	Regular IVF		4	2	2	Chemical pregnancy
Second Cycle	End of 2010	Regular IVF		8	5	3	Negative
Third Cycle	May 2013	Regular IVF	3, but ET cancelled, converted to IUI	/	/	/	Negative
Fourth Cycle	August 2013	Regular IVF	6	2	1 poor quality	No ET	N/A
Fifth Cycle	October 2013	**Regular IVF with TCM (acupuncture and Chinese herbs)**	6	4	2 (8 cell grade B & 7 cell grade C)	2	Positive pregnancy and delivery of healthy baby girl

Discussion:

1. This patient experienced four failed IVF cycles before visiting my office. Especially during the last two cycles, her ovaries were responding more poorly to the IVF stimulation drugs. One time the ET was cancelled due only one embryo which stopped growing on day 2 after

ER and one time was converted to IUI due to insufficient follicles. She would probably have continued to have less opportunity for success if she didn't rehabilitate her ovaries and was not given the necessary support.

In her fifth IVF cycle, she didn't only do 11 days of preparation with TCM treatment including acupuncture and herbal treatment, but she also applied the acupuncture and herbal treatment through all phases of the IVF cycle. When she did sufficient preparation coupled with continuing throughout the cycle, her response was much improved. She doubled the amount of follicles in the ovaries before ER, and also and perhaps more importantly retrieved a higher amount of higher quality of eggs resulting in more and higher quality embryos as well. We also worked for better uterine receptivity for implantation and continued working on improving embryonic development after ET and after conception. She finally had a successful IVF at the end and laboured a healthy baby girl.

2. Two important factors that affect the outcome of IVF are the grade (?) of egg or embryo quality and uterine receptivity. According to our clinical experience and observation, TCM, including acupuncture and herbal treatment, plays an important role in supporting the IVF cycle and improving the outcome of IVF attempts. The "Five Phases and Three Principles" protocol is designed to work on improving the quality of the egg and as well as uterine receptivity according to TCM theory and clinical experience. We can always continue to work on making it a better protocol in the future to benefit more fertility patient2.

8.2 The effective mechanisms of TCM to intervene and support Assisted Reproductive Technology (ART):

8.2.1 To promote the endometrial receptivity of uterus:

Yu N et al (2011) explored whether the extracts from a traditional Chinese herbal remedy (Zhuyun recipe 助孕汤) could improve endometrial receptivity in mice with embryonic implantation dysfunction and ovulation stimulation. 163 female pregnant kunming mice

were randomly divided into 6 groups, including A, control group; B, ovulation stimulation (OS) group; C, OS+TCM group; D, embryo implantation dysfunction (EID) group; E, EID+TCM group; F, TCM only group. Uterus samples were collected at gestation Day 4 and were detected with immunohistochemistry and Real Time-PCR analyses. Uterine horns were excised to determine the number of pregnant mice and implantation sites on the Day 8 post coitus. It was found that OS group and EID group showed a significant decrease in pregnant rate, as well as the expression of both the endometrial leukaemia inhibitory factor (LIF) and integrin β3 subunit during the implantation window. OS+TCM group and EID+TCM group showed a higher pregnant rate and endometrial LIF and integrin β3 subunit expression compared to OS group and EID group. The number of implanted embryo in EID group was lower than control group, but higher in EID+TCM group than in EID group. No significant difference was found in the measured indices between the TCM only group and control group. They confirmed that OS model and EID model may have a negative influence on endometrial receptivity and embryonic implantation in mice. Conversely, TCM appears to reverse the expression of endometrial LIF and integrin β3 subunit, improves the uterine receptivity in mice and increases pregnant rate and embryonic implantation. It provides a new insight into the clinic infertility's treatment.

Going X et al (2015) explored that Chinese herbal formula (Bu Shen Huo Xue decoction 补肾活血汤) restored the endometrial leukemia-inhibitory factor but not Angiopoietin-2 expression, and improved uterine receptivity in the controlled ovarian stimulation rat model. Leukemia-inhibitory factor (LIF) and Angiopoietin-2 (Ang-2) are important factors in fertility. In the present study, it was investigated whether Bu Shen Huo Xue Decoction (BSHXD 补肾活血方) could prevent controlled ovarian hyper stimulation (COH) treatment-induced changes in endometrial LIF and Ang-2 expression and whether it had an effect on the number of implantation sites and live births in rats. Uteri were collected on day (D) 3, 4 and 5 of pregnancy, and LIF and Ang-2 protein and mRNA expression were detected using western blot analysis and quantitative polymerase chain reaction. On pregnancy D10, the average number of implantation sites was observed. The number of live births from each group was recorded. The results indicated that BSHXD treatment markedly increased the number of live births by restoring endometrial LIF expression and the implantation capacity in the COH rat model. In addition, no association was identified between LIF and Ang-2 expression. Therefore, this suggests that BSHXD may be useful for female reproduction.

Chen XY et al (2015) investigated the effects of a Chinese herbal formula (modified Shoutaiwan recipe 加减寿胎丸) on integrin β3 and leukemia-inhibitory factor (LIF) in the endometrium of controlled ovarian hyper stimulation (COH) mice during the implantation

window. 70 non-pregnant mice were randomly divided into 3 groups: a traditional Chinese medicine (TCM) treatment group (N = 30), an aspirin treatment (N = 30) group, and a control group (N = 10). After the model was successfully established, mice in the drug treatment groups and the control group were respectively treated with the modified Shoutaiwan recipe, aspirin, or 0.9% physiological saline. During the implantation window of mice, the middle segment of the mouse uterus was recovered, and integrin β3 and LIF expressions in the endometrium were respectively detected using an immune histological two-step method and reverse transcription-PCR. Expressions of integrin β3 and LIF in the endometrium of mice in the TCM treatment group were significantly increased compared to aspirin-treated and control mice, and those of aspirin-treated mice were increased compared to the control group. Our modified Shoutaiwan recipe may improve the endometrial receptivity of COH mice by increasing the expression of integrin β3 and LIF in the endometrium during the implantation window.

Li HX et al (2013) observed that Chinese herbal formula (Yiqixue buganshen recipe YBR 益气血补肝肾方) regulated the expression of integrin αvβ3 in the endometrium of controlled ovarian hyper stimulation mice. A total of 180 mice were divided into three groups: model group, treatment group and control group. The treatment and model groups were intraperitoneally injected with gonadotropin-releasing hormone analogue for 7 days; pregnant mare serum gonadotropin was also injected on the 7th day. After 48 h, human chorionic gonadotropin was injected. The control group was injected with an equal volume of saline at the same time. From the start of the experiment, the treatment group was intragastrically administered Chinese herbal formula (Jinghouzhongzhi Recipe 经后种子方) and (Cuhuangti Recipe 促黄体方). The model group and the control group were intragastrically administered an equal volume of saline. Real-time reverse transcription polymerase chain reaction and Western blotting were used to detect the mRNA and protein expression of integrin αvβ3 in mouse endometrium. They found that Integrin αvβ3 was expressed in mouse endometrium in all groups. Integrin αββ3 expression increased gradually along with pregnancy, progressing from pregnant day (Pd) 1. Integrin αvβ3 expression significantly increased on Pd 4, then began to decrease on Pd 6. Integrin αvβ3 expression in the treatment group was higher than in the model group, and the difference was statistically significant ($P < 0.05$). The difference between the treatment group and the control group was not statistically significant ($P > 0.05$). So they confirmed that YBR improves endometrial receptivity, and may play an important role in embryonic implantation.

8.2.2 To enhance the oocyte quality and to increase ovaries reserve function:

Lian F et al (2010) explored the mechanism of action of a long-used Chinese herbal formula (Er'zhi Tiangui Granule ETG 二至天癸颗粒) in improving quality of oocytes by observing metabolomics and level of calcium ion in follicle fluid, and to investigate the impacts of calcium ion, cholinesterase (ChE) and creatinine (CCr) levels in human follicle fluid on the

quality of oocytes and outcome of pregnancy in patients after in vitro fertilization and embryo transfer (IVF-ET). 57 patients after IVF-ET were randomly assigned to two groups: the trial group (27 patients) and the control group (30 patients), both were treated with conventional Western medicine, but ETG and a classical Chinese herbal formula (Liuwei Dihuang Granule LDG 六味地黄丸) was given respectively to the two groups additionally. Changes of Shen-asthenia syndrome, amount of oocyte obtained, fertilization rate, cleavage rate, high-quality embryo rate and pregnancy rate, levels of calcium ion, ChE and Cr in follicle fluid, and metabolomics in the two groups were observed and compared.

After treatment, scores of Shen-asthenia syndrome 8.30 +/- 1.46, fertilization rate 0.82 +/- 0.09, cleavage rate 0.97 +/- 0.07 and high-quality embryos rate 0.51 +/- 0.18 in the trial group were all better than those in the control group (9.16 +/- 1.15, 0.74 +/- 0.18, 0.91 +/- 0.10, 0.41 +/- 0.09, respectively, P<0.05); metabolomics principal component analysis showed that in the trial group, the principal component in follicle fluid distributed mainly in the section I, and that in the control group distributed mainly in the section II, showing significant difference between the two groups; while in most pregnant patients, it distributed in the section I. The Ca2+ concentration in the trial group was significantly higher than that in the control group (P<0.05). Levels of ChE and Cr in the trial group were higher than those in the control group, but the difference between them was insignificant. ETG is better than LDG in regulating metabolomics, Ca2+ concentration, improving the quality of oocyte and embryo, and increasing pregnant rate in patients after IVF-ET.

Lian F et al (2012) studied the effects of Chinese herbal formula (Shen invigorating and Chong-channel Regulating Method SCRM 活肾调冲法) on anti-Müllerian hormone (AMH) and its correlation with oocyte quality in the serum and the follicular fluid of infertile patients with polycystic ovarian syndrome (PCOS) who received in vitro fertilization (IVF), thus studying the mechanism of SCRM on the oocyte quality of PCOS patients. Their research confirmed (1) that the single oocyte E2 level, the high quality oocyte rate, the fertilization rate, the cleavage rate, and the high quality embryo rate were significantly higher in the treatment group than in the control group (P < 0.05). (2) The RI and the PI of the follicular membrane both decreased significantly more in the treatment group than in the control group (P < 0.05). (3) The levels of AMH in the serum and the follicular fluid were obviously lower in the treatment group than in the control group (P < 0.01). The AMH levels in the serum and the follicle fluid were positively correlated. The level of AMH in the follicular fluid was obviously negatively correlated with the high quality oocyte rate and the high quality embryo rate.

SCRM could improve the oocyte quality of PCOS patients. Its mechanisms were correlated with regulating the AMH levels in the serum and the follicular fluid, adjusting the androgen level, improving the pathophysiological changes of PCOS patients, and activating the ovarian microenvironment. It is necessary to carry out further studies.

8.2.3 To regulate proteome expression in the follicular fluid:

Lian F et al (2014) observed the effects of Liuwei Dihuang Granule (六味地黄丸), an established Chinese herbal formula for tonifying Kidney (Shen), on the outcomes of in vitro fertilization pre-embryo transfer (IVF-ET) of infertility women with Kidney-yin deficiency syndrome and to explore its mechanism by detecting the proteome expression in the follicular fluid. The syndrome score in the treatment group decreased significantly from 16.09±2.58 to 8.67±2.13, while it changed insignificantly in the control group, with a significant difference in the lowering score between the two groups (P<0.05); the high quality rates of oocytes and embryos and clinical pregnancy rate were all superior in the treatment group to the control group (82.29% vs 78.08%, 76.76% vs 68.79%, 63.64% vs 36.36%, all P<0.05). The protein expression map from the follicular fluid showed that compared with the control group, 33 differential protein expressions were found in the syndrome-control group, among which 18 were down-regulated, and 15 up-regulated; in the treatment group 28 differential protein expressions were found, among which 15 were down-regulated, and 13 up-regulated. Through MALDI-TOF-MS, 14 proteins were identified (P<0.05). For the infertility patients undergoing IVF, LDG could alleviate clinical symptoms, improve rates of high quality oocytes and embryos, so as to raise clinical pregnancy rate. The mechanism may be through regulating proteome expression in the follicular fluid to improve the developmental microenvironment for oocytes which would lead to a successful embryo implantation.

8.2.4 To raise the fertilization rate and promote the early embryonic development:

Yang GY et al (2001) explored the effect of Chinese herbal formula (Bushen Huoxue decoction BSHX 补肾活血方) on female reproduction and elucidate its therapeutic mechanism to infertility. The BSHX medicated serum of rabbit, as a supplement, was co-cultured with the sperm and ovum of non-copulated mice, and the 2-cell embryos of copulated female mice separately. They observed the changes of in vitro fertilization rate (IVF) and early embryogenesis rate and found that by being co-cultured with BSHX medicated serum, IVF rate was increased obviously ($P < 0.01$), and the follow-up early embryogenesis rate at various period was promoted, particularly that of the 4-cell and 8-cell embryos ($P < 0.05$). No influence on developmental rate of in vitro 4-cell embryos was obtained from the in vivo 2-cell embryos. But the development of the 8-cell embryos, morula, blastula and hatching were promoted significantly. They confirmed that BSHX could raise the fertilization rate and promote the early embryonic development.

8.2.5 To control ovary hyperstimulation:

Gao Q et al (2015) Controlled ovarian hyperstimulation (COH) is widely used in assisted reproductive technology (ART), but it often leads to precocious maturation of the endometrium such that it impairs embryonic implantation and limits pregnancy rates. Previous studies have shown the traditional Chinese medicine, the Zishen Yutai pill (ZYP 滋

肾育胎片), to be effective in their treatment of threatened as well as recurrent miscarriages, and it can improve embryonic implantation rates in patients undergoing IVF treatment. In the present study, the ZYP has been found to ameliorate precocious endometrial maturation in a mouse model of different COH. Molecular evaluations, real-time PCR, relative RT-PCR, Western blotting, and immunohistochemistry have indicated that the ZYP increased the expression of HOXA10, an important marker of uterine receptivity. Elevation of HOXA10 led to further upregulation of its target gene, integrin [beta] 3, and downregulation of EMX2, two additional markers of uterine receptivity. In this way, the ZYP may mitigate COH-induced precocious maturation of the endometrium and improve uterine receptivity by upregulating HOXA10.

Cheng L et al (2016) investigated the effects of Chinese herbal formula (Ziyinyikangtiaochong decoction 滋阴益康调冲汤) on Vascular Endothelial Growth Factor (VEGF), tumour necrosis factor-alpha (TNF-α), the content of serum estradiol and capillary permeability of peritoneal in Ovarian hyperstimulation Syndrome（OHSS）model rats so as to explore efficacy and mechanism of this formula. 60 female Wistar mice of 22 days were randomly divided into 4 groups (normal control group, model group, ziyinyikangtiaochong decoction group, indomethacin group), with 15 mice in each group. Except for normal control group, the other three groups used pregnant mare serum gonadotropin and human chorionic gonadotropin to establish the ovarian hyperstimulation syndrome （OHSS）model by improved Ujioka methods. Each group was given appropriate doses of various drug by gavage. After one week, the rats in each group were anaesthetized, both ovaries removed and blooded, ovarian tissue morphology was observed with eye and light microscopy, the methylene blue content of peritoneal fluid were measured, radioimmunoassay were used to detect content of serum E2 and ELISA method was used to detect content of serum VEGF and TNF-α, immunohistochemistry were used to detect the protein expression of VEGF and TNF-α in ovarian tissue for the rats. They found that Ziyinyikangtiaochong decoction could reduce the content of serum E2, VEGF, TNF-α， and the methylene blue content of peritoneal fluid (P<0.05，P<0.01）, down-regulate the protein expression of VEGF and TNF-α in ovarian tissue(P<0.05，P<0.01） and improve the morphological changes of ovary in OHSS rats. They believed that Ziyinyikangtiaochong decoction could treat OHSS by correlating with reducing peritoneal capillary permeability, content of serum E2, VEGF , TNF-α， the protein expression of VEGF in ovarian tissue and the protein expression of TNF-α in ovarian tissue.

8.3 The effects of TCM in supporting various methods of ART:

There are clinical reports from China and throughout the world on TCM's promotion to every kind of ART:

8.3.1 TCM's preparation for doing IUI:

Hunka G et al (2012) In a retrospective study, Dr Lev-Ari and Sela followed the progress of 29 women between the ages of 30 and 45 who were receiving IUI treatment combined with TCM therapy, and compared their results to a control group of 94 women between the ages of 28 and 46 who were undergoing IUI treatment alone. In addition to their IUI treatments, the 29 women in the first group received weekly sessions of acupuncture and additional Chinese herbal medicine, which consisted of powdered or raw Chinese herbs such as Chishao (Radix Paeoniae Rubrae), Baishao (Radix Paeoniae Lactiflorae) and Chuanxiong (Radix Ligustici Wallichii) et al, designed to meet each woman's specific needs. All herbal preparations were approved by the Israeli Health Ministry.

In terms of both conception and take-home baby rates, the test group fared far better than the control group. Out of the 29 women in the test group, 65.5 percent conceived, and 41.4 percent delivered healthy babies. In the control group, only 39.4 percent conceived and 26.9 percent delivered. The vast difference in success rates is even more surprising when the age of the average participant was taken into account.

8.3.2 TCM preparation for doing ICSI:

Zhang HQ et al (2007) observed the pregnancy promoted effect of Chinese herbal formula (Bushen Shengjing Decoction BSSJD 补肾生精汤) combined with intracytoplasmic sperm injection (ICSI) in treating male infertility with severe oligospermatism and azoospermia (SOA). ICSI were applied on 164 patients, among them, the 82 assigned to the TCM group were treated additionally with BSSJD before injection for 2-3 months, and the other 82 assigned to the control group received ICSI alone. The density, motility, viability and deformity of sperm; semen level of reactive oxygen species (ROS); number of eggs retrieved, M II eggs and mean transplanted foetus; rates of fertilization, cleavage, available embryo and clinical pregnancy in the two groups were observed and compared. Compared with those in the control group, the density, motility and viability of sperm were higher, the deformity rate and ROS level were lower in the TCM group respectively ($P<0.05$). Moreover, higher rates of fertilization and clinical pregnancy were also shown in the TCM group ($P<0.05$). Researchers confirmed that BSSJD has the effects of decreasing semen level of ROS and improving the quality of sperm. It is also helpful for the natural fertilization ability of patients with SOA and raise the viability of their sperm to increase the ovarian fertilization rate and clinical pregnancy rate in ICSI cycles.

8.3.3 TCM preparation for doing Vitrification (frozen embryo transfer):

Wu JZ et al (2008) studied the effect of Chinese herbal medicine on the clinical pregnancy rate and implantation rate of frozen embryo transfer (FET) in a natural cycle. Women with frozen embryos planned to receive FET and had spontaneous ovulation in a natural cycle were chosen for observation. They were assigned to the treated group and the control group, both were treated with conventional medicine in the very month of FET, but to the treated group, Chinese herbal medicine was given additionally. The clinical pregnant rate, implantation rate, endometrial thickness during transferring, as well as the levels of oestrogen and progesterone 2 weeks after transfer in the two groups were observed and

compared. They found that the clinical pregnancy rate and implantation rate in the treated group were significantly higher than those in the control group, 47.37% (36/76 cases) vs 32.14% (54/168 cases) and 22.38% (47/210 embryos) vs 16.09% (74/460 embryos), respectively (all P <0.05). Difference between the two groups in endometrial thickness, levels of oestrogen and progesterone showed no statistical significance (P > 0.05). So they concluded that Chinese herbal medicine could enhance the clinical pregnancy rate and implantation rate in the natural cycle of FET to certain extent.

8.3.4 TCM preparation for doing IVF:

- **For ladies with infertility caused by PCOS in IVF:**

Lian F et al (2008) evaluated the validity of Chinese herbal formula (for reinforcing Shen and regulating Chong channel RSRCC 补肾调冲汤) on patients with polycystic ovarian syndrome (PCOS) undergoing in vitro fertilization and embryo transplantation (IVF-ET). 64 patients with PCOS undergoing IVF-ET were randomly assigned to two groups, the treated group (36 cases) and the control group (28 cases), to the former, Chinese herbal formula for RSRCC was given additionally. On the human chorionic gonadotrophin (HCG) injecting day, the percentage of three-line sign of endometrium (type A) in the treated group was 75.0% (27/36), which was higher than that in the control group (42.9%, 12/28), showing significant difference between the two groups (P < 0.01). The rates of mature oocytes, fertilization, high-qualified embryo rate, clinical pregnancy rate and incidence rate of ovary hyper-stimulating syndrome (OHSS) in the treated group were (76.8 +/- 8.2)%, (73.5 +/- 8.9)%, (89.4 +/- 14.4)%, 36.11% (13/36) and 5.56% (2/36), respectively; whereas those in the control group (64.4 +/- 8.7)%, (68.2 +/- 10.0)%, (79.5 +/- 15.2)%, 21.43% (6/28) and 10.71% (3/28); the dosage of gonadotrophin administered in the treated group was 33.8 +/- 12.5 ampoules, and in the control group 47.6 +/- 18.2 ampoules, statistical significance was shown between groups in comparing all the above-mentioned parameters (P <0.05, P <0.01). However, the number of oocytes obtained in the two groups was insignificantly different (P > 0.05). They found the combined use of Chinese drugs for RSRCC in IVF-ET can reduce the dosage of gonadotrophin administered and raise the clinical pregnancy rate.

- **For ladies with infertility caused by endometriosis in IVF:**

Lian F and Li X (2013) studied the mechanism of Chinese herbal formula (Dan'e Fukang Soft Extract DFSE 丹莪妇康软胶囊) on improving oocyte and embryo qualities in endometriosis patients undergoing in vitro fertilization-embryo transfer (IVF-ET). Totally 70 patients with endometriosis confirmed by laparoscope were randomly assigned to two groups, the treated group and the control group, 35 cases in each group. Patients in the treated group were treated with DFSE + controlled ovarian hyperstimulation (COH), while those in the control group were treated with DFSE placebo + COH. Besides, another 35 subjects undergoing intracytoplasmic sperm injection-embryo transfer (ICSI-ET) were recruited as a normal control group. The content of growth differentiation factor 9 (GDF-9) in the granulocytes of the mature follicular fluid on the oocyte retrieval day was determined by Western blot. The mRNA expression of GDF-9 was detected by RT-PCR. The oocyte retrieval number, the cleavage rate, the fertilization rate, the high-quality embryo rate, and

the pregnancy rate were compared. The mRNA expression of GDF-9 in the granulocytes was significantly higher in the treated group than in the control group, showing statistical difference ($P < 0.05$), but no statistical difference is shown when compared with that of the normal control group. There was no statistical difference in the cleavage rate between the two groups ($P > 0.05$). The fertilization rate and the high-quality embryo rate were higher in the treated group than in the control group, showing statistical difference ($P < 0.05$), but there is no statistical difference when compared with that of the normal control group. They thought that DFSE could improve the oocyte and embryo qualities of endometriosis patients undergoing IVF-ET. Its mechanism might be associated with regulating the GDF-9 mRNA level of granulocytes.

8.4 Case studies on practice TCM in UK:

Case1: a success result from IUI after TCM's preparation:

Ms L, a 29 years old receptionist, has attempted to get pregnant for two years without positive result. She had continuously taken contraceptive pills since she was 15 year old for 12 years and stopped two years ago after she was married. She had amenorrhea for 6 months, then she started having a regular menstrual circles 4-5 /28—32 since 4th Jun 2010. Due to stressful work and the worry about her pregnancy, she visited infertility clinic for her hormonal and her husband's sperm examination. All of them were found to be in the normal state, then she registered for an ART treatment which was due 3 months after that.

She came to visit me for releasing her stress, insomnia and wanted to have a good result with her ART treatment. Due to the fact that her friend was given a successful preparation by TCM for getting an easy IVF, she also looked for TCM's promotion.

Clinical figures: stress, nervousness, restlessness, poor sleep, tiredness and a minor menstrual pain; Light red tongue with less coating, wiry and fine pulse.

Differentiation of TCM: Liver Qi stagnation with blood stasis; Kidney and Spleen Qi Deficiency;

Acupuncture and Moxibustion:

Shen que: Moxi

Acupuncture: Du 20 (Baihui), Du24 (Shenting)

Ren 4 (Guanyuan), Ren6 (Qihai), Ext18 (Zigong)

Sj5 (Waiguan), Gb 41 (Zulinqi), H7 (Shenmen), Sp 9 (Yinlingquan),
Sp6 (Sanyinjiao), Ki3 (Taixi), Ki6 (Zhaohai), Ki10 (Rangu)

Patent herbs: Jiaweixiaoyao Wan
Renshenguipi Wan

Explanation: she was given Du20 baihui, Sj5waiguan and Gb41zulinqi (8 vessels cross) to remove the stagnated Qi in mind and whole body; Ren 4Guanyuan, Ren6 Qihai, and Ext18 (Zigong) to regulate the blood stasis and reinforce kidney and spleen; Ki10 rangu, Ki6zhaohai and Ki3taixi to strengthen kidney; H7 shenmen for a relaxed mind and a good sleep.

Outcome: after she got three months of TCM treatment, she kept her menstrual circles 4-5/28 without period pain, she was given an IUI when she saw her gynecological consultant who also believed that she was in a good condition, and her husband had good quality sperm. She had a quick and positive result and got conceived. She had a baby boy after she got in a full term.

Analysis: IUI is a simple type of ART. Due to a long period of taking contraceptive pills, although she recovered her menstrual circles, and possessed normal hormonal examination figures, her ovary was not sensitive enough. TCM diagnosis for her was Kidney deficiency; she was in a pre-clinical state and couldn't conceive easily. Acupuncture was the best and the most suitable treatment for her state, which gave her some necessary stimulation to rehabilitate her ovary function completely. Some patent herbs were given to her for increasing the treating effect. Gynecological consultant also believed her state was improved, and there was a good sperm from her husband, so she was given IUI only —a simple type of ART. She had success after only one attempt.

Case2: a successful result from ICSI after TCM's preparation:

Mrs H, a 34 years Old Iranian English housewife, had been attempting pregnancy for 3 years without positive result with an irregular menstrual circle. Her period comes 4-5/ 1-3months with stress, nervousness, and restlessness; due to infertility, the couple felt a lot of pressure.

Her husband Mr. S, 37 years old IT technician, is found some abnormality in his sperm as well lower sperm account (Density 0.10 million / ml), less than 25 % of sperm motility. When they registered to go for an ART treatment and got in a waiting list, they came to see me. She had received acupuncture for two months before she visited me.

Diagnosis of western medicine:
Mrs. H: Polycystic ovary / Irregular menstruation
Mr. S: Sperm disorder
Treatment: both of them were given a regular TCM treatment:
Mrs. H:
Clinical figures: irregular menstrual circles: 4-5/30-90, nervousness, restlessness, tiredness, Stress, some acnes on chins and chest, loose bowel movement. Light red and plump tongue with teeth marks, wiry-fine pulse.
Differentiation syndrome of TCM: Damp-phlegm accumulation with blood stasis and spleen and Kidney deficiencies
Acupuncture and moxibustion:
Shenque: Moxi
Acupuncture: Ren4Guanyuan, Ren6 Qihai, St29 Guilai, Du20 Baihui, Du24 Shenting, Sp9yinlingquan, Sp6 Sanyinjiao, St36 Zusanli, Sj5 Waiguan, Gb41Zulinqi
Herbal medicine: Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 15,
Xianmao (Rhizoma Curculiginis Orchioidis) 10,
Yinyanghuo (Herba Epimedii) 20,
Danggui (Radix Angelicae Sinensis) 10,
Banxia (Rhizoma Pinelliae Ternatae) 10,
Cangzhu (Rhizoma Atractylodis) 10,
Chuanxiong (Radix Ligustici Wallichii) 10,
Chishao (Radix Paeoniae Rubrae) 10,
Yimucao (Herba Leonuri Heterophylli) 10,
Fuling ((Sclerotium Poriae Cocos)) 10,
Xiangfu (Rhizoma Cyperi Rotundi) 10,
Honghua (Flos Carthami Tinctorii) 10
Before ovulation: Zishiying (Fluoritum) 10,

Taoren (Semen Pruni Persicae) 10 are added

Before period: Tusizi (Semen Cuscutae Chinensis) 10-30,

Zelan (Herba Lycopi Lucidi) 10 are added

Mr. S:

Clinical figures: stress, generally feeling good. He didn't recognize his sperm disorder before.

Light red tongue, wiry pulse

Differentiation of TCM: Liver Qi stagnation and Kidney Qi deficiency

Patent herbal medicine: Wuziyanzongwan

Jiaweixiaoyaowan

Explanation:

For the wife—H: Acupuncture:

Main points: Ren4 Guanyuan and Ren6 Qihai reinforce Orginal Qi and Kidney Qi:

St29 Guilai and St 36 Zusanli remove excessive damp and phlegm;

Sp9 Yinlingquan and Sp6 Sanyinjiao strengthen spleen and release Excessive dampness;

Du20 Baihui and Du24 Shenting calm down in mind;

Sj5 Waiguan and Gb41 Zulinqi eliminate stagnated qi

Sheque is moxied for strengthening the vitality gate and promoting the original Qi

Herbal medicine prescription:

Shudi, Danggui (Radix Angelicae Sinensis), Chishao (Radix Paeoniae Rubrae), Chuanxiong (Radix Ligustici Wallichii) nourish blood and release blood stasis; Banxia (Rhizoma Pinelliae Ternatae), Fuling (Sclerotium Poriae Cocos), Cangzhu (Rhizoma Atractylodis) dry and remove excessive damp and phlegm; Xianmao (Rhizoma Curculiginis Orchioidis), Yinyanghuo (Herba Epimedii) strengthen Kidney Qi and agitate Kidney Yang; Yimucao (Herba Leonuri Heterophylli) , Honghua (Flos Carthami Tinctorii) push blood circulation; Xiangfu (Rhizoma Cyperi Rotundi) pushes the liver Qi to move smoothly.

Before ovulation: Zishiying (Fluoritum) promotes egg growth; Taoren (Semen Pruni Persicae) removes blood stasis and pushes Egg ejaculation;

Before period: Yimucao (Herba Leonuri Heterophylli) regulates endometria circulation and releases blood stasis in the uterus; Zelan (Herba Lycopi Lucidi) dispels all dampness from lower burner.

For the husband---S

Wuziyanzongwan: Tusizi (Semen Cuscutae Chinensis), Gouqizi (Fructus Lycii), Fupenzi (Fructus Rubi Chingii), Sangshenzi (Fructus Mori Albae) and Cheqianzi (Semen Plantaginis) 5 herbal seeds strengthen Kidney and nourish Essence to increase sperm activity;

Jiaweixiaoyaowan: Chaihu (Radix Bupleuri) and Zhishi(Fructus Immaturus Citri Aurantii) remove stagnated liver Qi for promoting general relaxation and blockage release in the testicles; Chishao (Radix Paeoniae Rubrae) and Danggui (Radix Angelicae Sinensis) remove blood stasis for healing chronic damage inside testicles; Fuling (Sclerotium Poriae Cocos) and Baizhu (Rhizoma Atractylodis Macrocephalae) reinforce spleen and dry the excessive dampness; Zhizi (Fructus Gardeniae Jasminoidis) and Mudanpi (Cortex Moutan Radicis) release excessive liver heat for healing chronic inflammation inside of testicles.

Outcome: after regular TCM treatment for 5 months, Ms. H was having her period every months 4-5/28-30; when they got the Gynecological consultant' s appointment, the expert was very pleased about her state and relevant hormonal level. The sperm observation of Mr. S also improved (Density 20 million / ml, 50 % of sperm motility)

The expert of laboratory suggested they can accept ICSI.

They were given an ICSI, a sperm in the best quality is elected in the laboratory which was transferred into the wife's uterus. She got conceived and went through a normal pregnancy procedure and had a healthy baby boy in the full term.

Analysis:

ICSI is a type of ART which elects a sperm in a good quality in the laboratory and injects it into lady's uterus, so it is suitable for men with sperm disorder. Both of this couple had some problems, which is why they tried 3 years to conceive without a positive result. The wife was treated for her irregular menstruation which might be PCOS, and she got a successful result and had a regular menstrual circle; the sperm of the husband was improved with patent herbs, but they may still need a longer time to have a natural pregnancy. The ICSI technique gave them quick success, after their sufficient preparation with TCM.

Case3: a quick success from one going of IVF after TCM's preparation:

Ms. C, 36 years old adult career, has attempted pregnancy for 4 years without success. She was given contraceptive injection for 10 years and stopped it 4 years ago. Initially, she had very irregular menstrual circles, then it gradually got regular, but shorter: (6-7/21-23 with 2 days of period pain). After being checked in fertility clinic, she was found FSH33, and AMH1.7, so she was told that a normal IVF was not possible, but it might be possible for her to be given an IVF with the donor eggs. This news made her very disappointed, so they visited my clinic for help.

Clinical figures: short menstrual circles with long bleeding days: 6-7/ 21-23 with 2 days of period pain; nervousness, restlessness, headache, poor sleep, abdominal pain, very upset mood. Light red tongue with red at tip and sides, many cracks at the tongue; deep-wiry pulse.

Differentiation of TCM: Liver Qi stagnation with heat and blood stasis; and Kidney Yin Deficiency

Acupuncture: Shenque: Moxi

Ren3 Zhongji, Ren6 Qihai, Ext 18 Zigong;

Du20 Baihui, Ext. Taiyang, Sp9 Yinlingquan, Sp6 Sanyinjiao;

Ki3 Taixi, Ki6 Zhaohai and Ki10 Rangu

Sj5 Waiguan, Gb41 Zulinqi,

Herbal medicine prescription:

Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 30,

Danggui (Radix Angelicae Sinensis) 10,

Heshouwu (Radix Polygoni Multiflori)10,

Gouqizi (Fructus Lycii) 10,

Nvzhenzi (Fructus Ligustri Lucidi) 10,

Hanliancao (Herba Ecliptae Prostratae) 10,

Chaihu (Radix Bupleuri) 10,

Yujin (Tuber Curcumae) 10,

Zhike (Fructus Citri Aurantii)10,

Honghua (Flos Carthami Tinctorii) 10,

Shanyao (Radix Dioscoreae oppositae) 10,

Fuling (Sclerotium Poriae Cocos) 10,

Chishao (Radix Paeoniae Rubrae) 10

Before ovulation: Zishiying (Fluoritum) 10, Huangbai (Cortex Phellodendri) 10, Zhimu (Radix Anemarrhenae Asphodeloidis) 10 are added into above prescription

Before period: Aiye (Folium Artemisiae Argyi) 10, Tusizi (Semen Cuscutae Chinensis) 10-30, Xuduan (Radix Dipsaci Asperi) 10 are added into above prescription.

Above herbs are decocted as one dose for a day, 6 dose per week. I made some modification in each of her visit, according to her state.

Explanation：

Due to longer time application of contraceptive injection, she appeared to have an early failure of her ovary reserve function. The sensitive hormonal figure-AMH is too low, and all other relevant reproductive hormonal figures are too high. This belong to Kidney deficiency, so Ren8 shenque, Ren3zhongji and Ren6qihai play the main effect; Ext18zigong is added to strengthen spleen and kidney, also stimulate ovaries; Sp9 yinlinquan and Sp6 sanyinjiao; and Ki10rangu, Ki6zhaohai,Ki3taixi reinforce spleen and kidney for feeding qi to fully support these meridians. Du20 baihui and Ext taiyang release the stagnated qi and relax mind, Sj5waiguan and Gb41 remove stagnated Qi from liver and throughout whole body.

Herbal prescription: Nvzhenzi(Fructus Ligustri Lucidi) and Hanliancao(Herba Ecliptae Prostratae), a famous classical formula for nourishing kidney yin and releasing empty heat from the lower burner; Shudihuang(Radix Rhemanniae Glutinosae Praeparata), Danggui(Radix Angelicae Sinensis) and Chishao(Radix Paeoniae Rubrae) raise qi and blood to feed ovaries; Gouqizi(Fructus Lycii) and Heshouwu (Radix Polygoni Multiflori)emphasize this effect; Chaihu(Radix Bupleuri), Zhike and Yujin(Tuber Curcumae) remove the stagnated Liver qi and excessive liver heat; Fuling(Sclerotium Poriae Cocos) and Shanyao(Radix Dioscoreae oppositae) reinforce spleen qi, but not too stronger in order to avoid qi's stagnation. Honghua (Flos Carthami Tinctorii) push the blood stasis through. Zishiying(Fluoritum) is applied before ovulation for stimulating it; Huangbai (Cortex Phellodendri) and Zhimu (Radix Anemarrhenae Asphodeloidis) clear excessive heat and play a function similar to estrogen; Aiye (Folium Artemisiae Argyi), Tusizi(Semen Cuscutae Chinensis) and Xuduan(Radix Dipsaci Asperi) warm kidney and local yang and play a function similar to progesterone.

Outcome: after she received a regular TCM treatment over a year, she gradually got better in general, and her menstrual circles recovered to normal 4-5/28-30; the FSH and AMH of her went back to normal level. Infertility clinic accepted her for a normal IVF with her own egg. She was retrieved 2 oocytes out for fertilization into embryo, which got transferred into her uterus easily after 4-5 days. She became pregnant soon and got a healthy baby girl in the full term of her pregnancy.

Analysis:

IVF is the typical type of ART which is suitable to most reproductive disorders from ladies. The infertility of this lady may be related with a longer time of contraceptive injection, so she had an early weakness of her ovaries. The sensitive hormonal item AMH is lower, FSH is higher, which explained why she had a shorter menstrual circle and shorter bleeding days during her period. She belongs to Liver heat and kidney Yin deficiency. So she is given acupuncture and moxibustion for stimulating her ovary function; and herbal medicine for strengthening kidney to complement a double Qi (vital energy) and Essences which can give significant promotion to her. Because she is still young, her ovary function did not completely collapse, which may only be manifesting a weaker appearance. So her condition significantly improved with TCM promotion, and ready for IVF.

Case4: a successful result from IVF with own oocyte after TCM's preparation for a lady who had Amenorrhea in a pre-Menopause stage:

Mrs. S, a 49-year-old teacher, became pregnant when she was 23 years old but had an abortion at 6 weeks of pregnancy. She never managed to conceive after that and she started to worry about her reproductive capabilities when she was 40 years old. A gynecological investigation showed both fallopian tubes to be blocked, plus she failed IVF twice. She visited me when she was 49 years old after having missed two months of her menstruation. Due to her amenorrhea, the gynecologists refused another IVF. She also manifested exhaustion, hot flushes, depression, tinnitus, insomnia and other symptoms.

Her tongue was red and she had a wiry-thin pulse.

TCM differentiation: Kidney yin deficiency, Liver qi stagnation and Spleen deficiency.

Treatment principle: To nourish Kidney yin, to move stagnant Liver qi and to reinforce Spleen qi.
Treatment given: Acupuncture: Moxibustion at Ren 8 shen que
Needles: Du 20 bai hui, Du 24 shen ting, Ren 4 guan yuan, Ren 6 qi hai, St 29 gui lai, LI 4 he gu, Liv 3 tai chong, Ki 3 tai xi, Ki 10 yin gu, Ki 2 ran gu, St 36 zu san li, Sp 6 san yin jiao.
Patent herbal medicines: Zhi Bai Di Huang Wan / Jia Wei Xiao Yao Wan.

Explanation: She was given a typical supporting treatment, with the priority being the Kidney yin pattern. Zhi Bai Di Huang Wan reinforces Kidney yin and supports her estrogen levels whilst Jia Wei Xiao Yao Wan moves Liver qi stagnation and excessive heat from Liver and Kidney yin deficiency. Regular acupuncture stimulated her depleted menstrual function.

Outcome: Once her periods returned she was given the 'promoting the menstrual cycle treatment' for half a year, after which she became pregnant following successful IVF. She conceived a healthy boy at the end of her term.

Analysis: This patient had been 49 years old by the time she tried to conceive. Her hormonal levels had been in the final stages which meant she had amenorrhea for two months. After she was given acupuncture, which stimulated her reproductive organs, and herbal medicines, which had a stronger effect on reinforcing qi and yin in her Kidney and Spleen, her menstrual cycle returned. Her hormonal levels were probably still not high enough for a natural pregnancy, but she was accepted back by her gynecologists due to the menstrual cycle being regular again and IVF was given which proved successful in the end.

Case5: **a successful result with IVF after TCM's preparation to a lady who had three times of failed IVFs; got three healthy babies in this time:**

Mrs. T, a 27-year-old trainer, tried and failed to get pregnant for more than five years. She was initially diagnosed with a blockage on her left fallopian tube and cysts on her left ovary. Her husband was found to have some antibodies in his sperm, which meant he was unable to fertilize his wife's eggs. A laparoscopy was performed to take the cysts away, but during the procedure it emerged that both of her fallopian tubes were blocked.

Both of them accepted TCM treatment and the wife had regular acupuncture and concentrated herbal powders to regulate her menstrual cycle.
TCM differentiation: Liver qi stagnation and Blood stasis.

Treatment principle: To move stagnant Liver qi and Blood stasis.

Treatment given: Acupuncture: Moxibustion at Ren 8 shen que.
Needles: Du 20 bai hui, Ren 4 guan yuan, Ren 6 qi hai, M-CA 18 zi gong, TH 5 wai guan, LI 4 he gu, St 36 zu san li, Sp 6 san yin jiao, Ki 3 tai xi, Ki 6 zhao hai, Liv 3 tai chong.
Concentrated herbal powders:
Chaihu (Radix Bupleuri) 10,
Xiangfu (Rhizoma Cyperi Rotundi) 10,
Zhike (Fructus Citri Aurantii) 10,
Chishao (Radix Paeoniae Rubrae) 10,
Chuanxiong (Radix Ligustici Wallichii) 10,
Danggui (Radix Angelicae Sinensis) 10,
Yimucao (Herba Leonuri Heterophylli) 10,
Ezhu (Rhizoma Curcumae Ezhu) 10,
Wangbuliuxing (Semen Vaccariae Segetalis) 10,
Taoren (Semen Pruni Persicae) 10,
Honghua (Flos Carthami Tinctorii) 10.
Variation: Nuzhenzi (Fructus Ligustri Lucidi) 10, Hanliancao (Herba Ecliptae Prostratae) 10 and Heshouwu (Radix Polygoni Multiflori) 10 were added following her period.
YueYueShu sachets were added around ovulation for three days. Baishao (Radix Paeoniae Lactiflorae) 10, Ejiao (Gelatinum Corii Asini) 10 were added after ovulation.

Explanation: Liver qi stagnation and Blood stasis are the commonest patterns in women with infertility, so acupuncture points and patent herbs followed this treatment principle at first. Chaihu(Radix Bupleuri), Xiangfu(Rhizoma Cyperi Rotundi) and Zhike(Fructus Citri Aurantii) move the Liver qi, Danggui(Radix Angelicae Sinensis), Chishao(Radix Paeoniae Rubrae) and Chuanxiong(Radix Ligustici Wallichii) move Blood stasis, which is a successful combination and capable of opening the fallopian blockage. Er Zhi Wan and Heshouwu

(Radix Polygoni Multiflori) nourish Kidney yin in the first week to help the follicle to mature in the ovary, Yue Yue Shu sachets are used around ovulation to propel the egg's ejaculation and Ejiao (Gelatinum Corii Asini) and Baishao (Radix Paeoniae Lactiflorae) are used in the last week of the cycle to nourish the embryo should she have conceived.
The husband took some patent herbs for improving his sperm condition: Chai Hu Shu Gan Wan was given to remove stress and to release adhesions in the testicles, which may have caused chronic inflammation there. Wu Zi Yan Zong Wan (sang shen zi- Fructus Mori Albae, tu si zi- Semen Cuscutae Chinensis, nu zhen zi- Fructus Ligustri Lucidi, gou qi zi (Fructus Lycii) and she chuang zi (Fructus Cnidii Monnieri) – 'five seeds passing on the generations') was used to reinforce Kidney essence and to strengthen his sperm.

Outcome: After two years of treatment this patient became pregnant during her fourth IVF and gave birth by caesarean to have a triplet of two girls and one boy, who all were in a healthy condition.

Analysis: This was a case of both fallopian tubes being blocked. Although the 'promoting menstrual cycle treatment' was given, it still was insufficient to open her blocked tubes in the short term. So IVF still looked like the best option. But after many failed attempts of IVF, including the hormonal treatment going with the IVF, she still showed symptoms, especially of an emotional nature, so I gave her acupuncture to help her to calm down and to manage, with the help of herbal powders, to regulate her unbalanced hormones. And it was also important for the husband to receive a course of patent herbs to strengthen the quality of his sperm. After the fourth IVF treatment she finally conceived due to being in a good general condition, which she gained with the help of TCM treatment.

Case 6: two successful cases with two successful pregnancies respectively from IVF with donor embryos after TCM's preparation and miscarriage protection:

1) 2 times of successful pregnancies produced by IVF with donor eggs following TCM promotion and miscarriage prevention:

Ms. C is a 41 years old university lecturer with PhD degree. Due to continuous and busy study and work, Ms. C attempted pregnancy for 7 years without a positive result. She gradually started to have irregular menstrual circles for over a year and amenorrhea for two months and a small fibroid (1x1cm) is found in her uterus. She was refused by the infertility clinic for ART due to her amenorrhea, so she visited me for help.

Clinical figures: Amenorrhea for two months, stress, nervousness, abdominal discomfort, poor sleep, hot flashes, aching in general. Light red tongue with less white coating, wiry pulse

Diagnosis of Conventional western medicine:

1 Infertility,

2 The early failure of ovaries

3 Fibroid

Differentiation of TCM: Liver Qi stagnation with blood stasis and Liver and Kidney yin deficiency

Acupuncture:

Ren8 sheque: Moxibustion

Ren3 zhongji, Ren6 qihai, St29 guilai,

Sp9 yinlingquan, Sp6 sanyinjiao; Ki10 Rangu, Ki6 zhaohai, Ki3 taixi

Du20 baihui, Sj5 waiguan, Gb41 zulinqi

Herbal medicine prescription:

Xiangfu (Rhizoma Cyperi Rotundi) 10,
Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 15,

Dangguiwei (Radix Angelicae Sinensis (extr¨|mit¨| inf¨|rieure)) 10,
Yimucao (Herba Leonuri Heterophylli) 10,

Chishao (Radix Paeoniae Rubrae) 10,
Honghua (Flos Carthami Tinctorii) 10,
Chuanxiong (Radix Ligustici Wallichii) 10
Taoren (Semen Pruni Persicae) 10,
Huangbai (Cortex Phellodendri) 10,

Zhimu (Radix Anemarrhenae Asphodeloidis) 10,

Nvzhenzi (Fructus Ligustri Lucidi) 10,
Shanzhuyu (Fructus Corni Officinalis) 10,
Hanliancao (Herba Ecliptae Prostratae) 10,
Zishiying (Fluoritum) 10

Above herbs are decocted for drinking twice daily as one dose of herbs, 6 packets per week.

Explanation:

The main points of acupuncture should be Ren3 zhongji, and Ren 6qihai which stimulate the original Qi and Kidney Qi, also near uterus; St 29 Guilai which strengthens spleen and releases excessive dampness, also near both ovaries; Du20 baihui, Sj5 waiguan and Gb41 push stagnated liver and general qi through; Sp9 yinlingquan and Sp6 sanyinjiao promote spleen Qi; Ki10 rangu, Ki6zhaohai and Ki3 taixi reinforce kidney Qi and Yin for nourishing and double feeding the weaker ovaries.

Xiangfu (Rhizoma Cyperi Rotundi) pushes stagnated Liver Qi, Shudihuang (Radix Rhemanniae Glutinosae Praeparata), Danggui (Radix Angelicae Sinensis), Chishao (Radix Paeoniae Rubrae) and Chuanxiong (Radix Ligustici Wallichii) nourish Yin and blood; Yimucao (Herba Leonuri Heterophylli) and Dangguiwei (Danggui tail) (Radix Angelicae Sinensis (extr¨|mit¨| inf¨|rieure)) release the blood stasis; Nvzhenzi (Fructus Ligustri Lucidi) and Hanliancao (Herba Ecliptae Prostratae) nourish Kidney yin; Huangbai (Cortex Phellodendri)and Zhimu (Radix Anemarrhenae Asphodeloidis) nourish kidney- according to laboratory research, their effect is similar to Estrogen; Zishiying (Fluoritum) promotes ovulation and Shanzhuyu (Fructus Corni Officinalis) increases this function too.

Outcome:

Her menstruation arrived the next month. Since then, she has been receiving regular TCM treatments and has got regular period. When she visited infertility consultant, she was suggested to have an IVF with donor egg. Due to the fear that her menopause may come early if otherwise, she and her husband agreed to accept IVF, with the donor egg from another healthy lady, in Barcelona infertility clinic in Spain.

In the next month, two high quality fertilized embryos got transferred into her uterus. After coming back to UK, she kept accepting regular acupuncture with me. At the 8th weeks of her pregnancy, she felt bad nausea, and minor symptoms from over reaction to pregnancy, and some vaginal bleeding. I advised her that should take some herbal medicine to prevent miscarriage. However, she hesitated and did not take any herbs during pregnancy, and as a result, she lost one baby. Then, she started taking herbal decoction and maintained acupuncture until the 12th weeks of her pregnancy. She had a healthy baby boy in the full term.

The herbal prescription for preventing her miscarriage is:

Sangjisheng (Ramulus Loranthi) 15,

Baidoukou (Fructus Amomi Cardamomi) 10,
Xiangfu (Rhizoma Cyperi Rotundi) 10,
Duzhong (Cortex Eucommiae Ulmoidis) 10,
Gouqizi (Fructus Lycii) 10,
Huangqi (Radix Astragali Membranacei) 15

Tusizi (Semen Cuscutae Chinensis) 10,
Chenpi (Pericarpium Citri Reticulatae) 10,

Shanyao (Radix Dioscoreae Oppositae) 10,
Fuling (Sclerotium Poriae Cocos) 10,
Ejiao (Gelatinum Corii Asini) 10,

Shenqu (Massa Medica Fermentata) 10,
Zhigancao (Radix Glycyrrhizae Uralensis) 5

After above herbs are taken for one week, she stopped vaginal bleeding, and the symptoms from over reaction to pregnancy also got improved. From the 8th to the 10th week of pregnancy, she took 4 weeks of herbs until she entered a normal procedure of pregnancy. 2 years later, she got transferred another fertilized embryo again, with acupuncture preparation and miscarriage prevention; this time she displayed no miscarriage signs and labored a healthy baby girl again in the fully term.

Analysis:

IVF with donor egg is suitable for ladies who possess unsatisfactory ovary state, so she may not be able to produce good quality eggs. Hence, a younger lady donated her eggs to Ms. C, to be fertilized with her husband's sperm. The fertilized embryos were then transferred into Ms. C, who then needed to go through the whole procedure of pregnancy. She still needed to have a healthy ovary function to respond to the conception.

Due to too much pressure from study and work at the university, she displayed some signs that are caused by weak ovary. Doctors in charge of IVF can't accept any ladies without regular menstrual circles. Although with TCM she regained regular menstrual circles, the doctor may still believe that her ovary is not optimal for a normal IVF. She and her husband hence had to agree on doing an IVF with donor eggs.

During pregnancy, because of her weak ovary, she manifested signs of potential miscarriage —vaginal bleeding and low back pain; she managed to keep one baby after starting to take decocted herb, but by that time she has already lost one baby.

From this case, it can be seen that it is quite necessary to support pregnancy when the lady has weak ovaries. TCM plays a complementary role in giving the lady a better state for accepting IVF with donor eggs and prevents miscarriage.

2) 2 time of successful pregnancies with 3 heathy babies after IVF with donor eggs following TCM preparation and miscarriage prevention.

Mrs. J, 41 years old officer, Iraqi English, possesses a more complex menstrual and pregnancy history. She has had 3 times of inevitable miscarriages in the past three years and 4 small intramural fibroids (measuring 14mm, 12 mm, 10mm and 22mm respectively) and higher prolactin (528-1063) level were found in her uterus. Endometriosis of ovaries and endometritis along with intrauterine adhesions are detected. Also, she had an irregular menstruation and higher or unstable level of relevant hormone: FSH36 or 9.8, LH 21.4-130.8, Estradiol 539—less than 50.

When she visited me, she had irregular menstruation and suffered from many psychiatric and general symptoms.

Diagnosis of conventional western medicine:

1 Habitual miscarriages

2 Multiple fibroids

3 Hyperprolactinemic

Clinical figures: irregular menstruation 4-5/ 28—90, period pain, abdominal discomfort, worry, irritated, upset easily, weepy, disturbed sleep, hot flashes, cold hands and feet.

Pale tongue with teeth marks and less white coating, wiry and fine pulse

Differentiation of TCM: Liver qi stagnation with blood stasis, Kidney yang deficiency

Acupuncture:

Ren8 Shenque: Moxi

Du20baihui, Du24shenting and St5 touwei, Sj5waiguan, Gb41 zulinqi;

Ren3 zhongji, Ren6qihai, St29 guilai,

Sp9 yinlingquan, Sp6 sanyinjiao, Ki3taixi, Ki6 zhaohai

Herbal medicine prescription:

Xianmao (Rhizoma Curculiginis Orchioidis) 10,

Yinyanghuo (Herba Epimedii) 10-30,
Shudihuang (Radix Rhemanniae Glutinosae Praeparata) 15,

Chishao (Radix Paeoniae Rubrae) 10,
Danggui (Radix Angelicae Sinensis) 10,
Huangqi (Radix Astragali Membranacei) 10
Chaihu(Radix Bupleuri)10,
Yujin (Tuber Curcumae) 10,
Shanyao (Radix Dioscoreae Oppositae) 10,
Gouqizi (Fructus Lycii) 10,
Shanzhuyu (Fructus Corni Officinalis) 10,
Ejiao (Gelatinum Corii Asini) 10
Before ovulation: Jineijin (Endothelium Corneum Gigeriae Galli) 10, Zishiying (Fluoritum) 10 are added in;
After ovulation: Guizhi (Ramulus Cinnamomi Cassiae) 10, Xiangfu (Rhizoma Cyperi Rotundi) 10 are added in.
Above herbal prescription is decocted into herbal juice twice daily, one packet per day; 6 packets per week.

Explanation:

Since this lady suffered from irregular menstruation and possessed many emotional symptoms, removing Liver qi stagnation was set as the main task. Du20 baihui, Du24 shenting and St8 touwei are given at first. Du24 shenting and St8 touwei are part of the emotional center of scalp acupuncture, which should produce a stronger effect in releasing stress and all other physical symptoms; Sj5 waiguan and Gb41 zulinqi support them- this pair of points belong to 8 vessels cross; Ren3 zhongji, Ren6qihai and St29 guilai stimulate original and kidney qi and push the abdominal circulation; Sp9 yinlingquan and Sp6sanyinjiao reinforce spleen; Ki10 rangu, Ki6zhaohai and Ki3taixi strengthen kidney Yin.

In terms of herbal medicine: Xianmao (Rhizoma Curculiginis Orchioidis) and Yinyanghuo (Herba Epimedii) belong to the famous classical formula'' Erxiantang'' which strengthenes Kidney yang; Shudihuang (Radix Rhemanniae Glutinosae Praeparata), Danggui (Radix Angelicae Sinensis)and Chishao (Radix Paeoniae Rubrae)nourish kidney yin and liver blood; Gouqizi (Fructus Lycii) and shanzhuyu (Fructus Corni Officinalis) promote kidney yin and qi; Huangqi (Radix Astragali Membranacei) and shanyao (Radix Dioscoreae Oppositae) tonify spleen qi; xiangfu (Rhizoma Cyperi Rotundi) and Chaihu(Radix Bupleuri) remove stagnated liver qi for releasing many emotional symptoms.

Jineijin (Endothelium Corneum Gigeriae Galli) and Zishiying (Fluoritum)are added for the first half of menstrual circle for moving blood stasis and promoting ovulation; Guizhi (Ramulus Cinnamomi Cassiae)and Xiangfu (Rhizoma Cyperi Rotundi)are added in the second half of

menstrual circle for warming and pushing the circulation which warm the whole prescription up, functioning somewhat like progesterone.

Outcome:

After regularly accepting this TCM treatment, she had a regular menstruation. Her Estradiol gets up to 1369, FSH down to 5.0, and LH gets down to 5.3; all other psychological and general symptoms have been relieved as well. Hence, she went to the Barcelona infertility clinic, and was offered an IVF with donor eggs. Around 2009, she conceived two babies and accepted TCM treatment for a 1-2 months, and got a boy and a girl in the full term by cesarean. After 2 years, another fertilized embryo was transferred again and she got another baby boy. Due to multiple conceptions and IVF pregnancy, she ended her menstruation earlier than other ladies. Currently, she is accepting a menopause balance treatment with herbal medicine.

Analysis:

Due to many times of miscarriage, and many abnormal hormone disorders, this lady was in a complex condition. Because of her irregular period, no doctors can accept her for any kind of ART. She was given a regular TCM treatment of acupuncture and herbal medicine decoction and got a stable and progressive state. Her regular menstruation returned, and all relevant hormone levels recovered to the normal levels, and as a result she was accepted by the doctors for an IVF with donor eggs. Acupuncture and herbs were used to support her until the 12^{th} week of her pregnancy. Due to her confidence in TCM, she took TCM treatment regularly without stopping before and after her IVF, and she has got successful pregnancies with a twins and a boy, three health babies altogether.

CONCLUSION:

To support the menstrual cycle with regular acupuncture and herbal medicine has proven effective in promoting pregnancy with any kind of ART. TCM can improve the ovarian functions of ladies, raise hormonal functional levels, promote the receptivity of the endometrium in the uterus and harmonize the whole reproductive system, so it can raise the successful pregnancy rate of ART, and also live birth rate.

The effect of acupuncture and Chinese herbal medicine has been proved by clinical observation and placebo trails; this treating mechanism has also been proved by many researching teams, although some of them still need to conduct more detailed trials. Acupuncture, herbal medicine, or the whole system of TCM can play a positive preparative role to raise up general physical state of patients, which has been emphasized in many papers. However, if a patient tries TCM only around the time of ART, the treating effect may not appear in time, so she should receive TCM to regulate any abnormal or unsatisfactory condition in advance. If enough time is given, TCM can achieve a significant and valuable effect.

If there is neither a clear diagnosis of conventional western medicine, nor the disorders which can be confirmed in ovaries, or uterus, it is also possible to identify TCM diagnostic patterns according to the different stages of the menstrual cycle. TCM can support ART effectively. By way of analogy: If you want to plant successfully, you have to thoroughly plough the soil before you put the seeds into it. So if you want to conceive easily, you have to improve the endometrium of uterus and create good circulation in the location. Acupuncture and herbal treatment are like ploughing which helps the uterus and the whole abdominal cavity to stay in a healthy condition. If the patient stays in a good general and local condition, she will easily conceive, with the doctors' help through IVF or any kind of ART.

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