

CLINICAL PAPER

The use of acupuncture with *in vitro* fertilization: is there a point?

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Abstract

This paper presents a Western biomedical model of acupuncture and a traditional Chinese medical (TCM) approach to the use of this technique within *in vitro* fertilization (IVF) in one private practice. The author demonstrates the underlying mechanisms of introducing an acupuncture protocol as a means of preparing women for IVF, both physically and emotionally, by enhancing optimum endometrium conditions, increasing uterine blood flow, and supporting the embryo pre- and post-IVF intervention. Acupuncture can also support men in terms of enhancing the quality, motility and viability of sperm, and providing emotional support throughout the process.

Keywords: acupuncture, fertility, infertility, *in vitro* fertilization.

Introduction

Infertility can be defined as the inability to conceive following one year of unprotected intercourse. This condition affects nearly 15% of all couples who are trying to have a baby: Evers (2002) reported that approximately one in every six couples have trouble with conception.

Although the following list is by no means exhaustive, the causes of infertility may be broadly categorized into eight major groups (Strauss & Barbieri 2004):

- (1) abnormalities in oocyte production;
- (2) anatomical abnormalities leading to the obstruction of sperm transportation, or the passage of the oocyte and/or embryo through the reproductive tract (i.e. tubal, uterine, cervical and peritoneal factors);
- (3) abnormalities in the implantation process, including early defects in embryo development, embryo abnormalities and borderline hormonal imbalances;
- (4) unexplained infertility;
- (5) egg age;
- (6) body weight, smoking, alcohol and caffeine intake;
- (7) emotional factors; and
- (8) immunological factors.

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Infertility is not confined to the female, but regardless of whether it manifests in either or both partners, it is associated with significant mental trauma, and imposes serious financial constraints on those undergoing assessment and treatment. This process is stressful, can be costly and imposes a physical strain upon the reproductive system, especially in the female. Reported statistics vary, but it would seem that around 30% of men are sub-fertile and at least 2% are totally infertile; furthermore, there is much scientific debate concerning the evidence that male fertility is decreasing markedly as a result of modern lifestyles. It has been estimated that about 9% of the UK's 28.5 million men might have difficulty impregnating their partners (Cigno & Rosati 1996).

In vitro fertilization (IVF) is the most successful of the various forms of infertility treatment, and for many, it may be the last hope of becoming pregnant. Practitioners are advised to offer no expectations of success because the failure rates of IVF are high and patients bring enormous expectations to the treatment. Some 35 261 IVF cycles were performed in the UK in 2006, but on average, the success rate of IVF per single initiated cycle (using a fresh, non-donor oocyte) is only 33% (CDCP 2003) and the majority of IVF cycles do not result in pregnancy (Rosenthal & Anderson 2007). Because of the high financial

and emotional cost of this procedure, many couples have turned to complementary and alternative medicine, and there is now a proliferation of patient self-referrals for acupuncture as well a world-wide increase in the number of acupuncture clinics offering this therapy as an adjunct to IVF procedures (Rosenthal & Anderson 2007). Within the present author's own practice, self-referrals have doubled in the past 12 months.

Acupuncture has been used extensively in China to regulate the female reproductive system via the stimulation of qi and blood, and by regulating homeostasis (Maciocia 1997). Within the Western model of acupuncture, the potential mechanisms of needling may mediate the release of neurotransmitters that can in turn stimulate secretion of gonadotropin-releasing hormone (GnRH), and therefore, assist ovulation, blood flow and fertility (Mayer *et al.* 1977; Anderson *et al.* 2007). Several studies have examined the mechanisms of action. Richer & Ford (2001) demonstrated that endometrial thickness may be one factor in pregnancy outcomes. Yu *et al.* (2007) studied the effect of acupuncture on uterine lining when combined with sildenafil (Viagra). Although this was only a pilot study, all four subjects achieved an increase in endometrial lining from <8 mm to >10 mm following acupuncture and sildenafil, including one patient who had not responded to sildenafil alone. The above authors hypothesized that effects on the endometrium could be stimulated by a resulting increase in the supply of nitric oxide synthase, which contributes to transmission from one neuron to another, to the immune system and to dilating blood vessels.

Liu *et al.* (2007a) investigated the effect of acupuncture on implantation by studying at three groups of rats: a control group; rats treated only with mifepristone, which is used as an abortifacient in the first 2 months of pregnancy; and a group treated with both mifepristone and acupuncture. The rats that received mifepristone plus acupuncture had the same implantation rates as normal rats. The mifepristone-only group had significantly less pregnancies ($P<0.01$), providing further evidence of the ability of acupuncture to reverse certain chemotoxic agents that may be contributing to infertility (Horn 2007).

Liu *et al.* (2007b) followed the above study with another in which they measured a number of serum parameters; namely, pregnancy rates and the average number of blastocysts, which

were significantly higher in the acupuncture group ($P<0.01$). The acupuncture group maintained serum levels of progesterone and prolactin, as well as the protein and messenger ribonucleic acid expression levels of progesterone receptors and prolactin receptors ($P<0.05$), suggesting that acupuncture may help to sustain progesterone levels regardless of hormonally adverse environmental factors, such as high doses of oestrogen in water supplies (Warhurst 1995).

Margarelli & Cridenda (2004a) investigated prolactin and cortisol levels in patients receiving acupuncture during an IVF cycle. Both prolactin and cortisol levels increased; elevated hydrocortisone levels in follicular fluid have been shown to improve pregnancy rates. In a previous study, the above authors found a statistically significant (42%) increase in ongoing pregnancies, as well as a statistically significant reduction in the number of miscarriages and ectopic pregnancies (Margarelli *et al.* 2004b).

All the above studies reinforce the idea that correct point selection according to the infertility pattern diagnosis, correct timing and administration of acupuncture, and obtaining a substantial de qi response consistently improve pregnancy outcomes. Because of the potential for negative effects as a result of improper acupuncture administration, it is prudent to utilize acupuncturists who have demonstrated competency and knowledge in reproductive medicine; indeed, the normal standards in the USA dictate that all acupuncture practitioners undertake the American Society of Oriental Reproductive Medicine Board examinations.

The IVF and acupuncture procedure involves several phases, all of which require careful coordination, experience, and above all, working at all times with the IVF team. Those without knowledge of fertility, infertility and the physiological processes of acupuncture, or those without adequate liaison with fertility carers and the team members should not consider it.

The present paper is intended to introduce physiotherapists to the use of acupuncture within the management of IVF. It is not meant to offer a prescription for intervention, or encouragement for physiotherapists to use this technique without adequate training, knowledge and insurance. This paper is presented in order to demonstrate the present author's experience of clinical practice, in which she uses a combined approach to acupuncture within IVF. The views and protocols used in this example are not

definitive, and no attempt has been made to critically appraise all research cited, present the methodology for each infertility protocol or give preference to one protocol over another.

The phases of *in vitro* fertilization

The IVF process involves several phases that must be carefully coordinated and precisely timed. The phases involve several protocols, which may include the use of oral contraceptives, GnRH agonists and uterine blood flow impedance measurements. These protocols vary and are constantly being refined by collaborations between women, clinics and physicians (Rosenthal & Anderson 2007). The debate concerning acupuncture point selection varies according to experience, training and TCM pattern diagnosis.

The main phases are outlined for guidance only; constant liaison with the consultant and the IVF team is essential for an integrated approach.

Phase I: Hormonal down-regulation

Most commonly, an oral contraceptive is used, followed by GnRH (Lupron) to inhibit ovulation. In theory, the ovaries are rested in preparation for maximum stimulation.

Acupuncture intervention

Within the present author's practice, acupuncture is not only offered pre- and post-embryo transfer (ET), but also for the preparation of the female and, if necessary, the male. The latter is regarded as essential before IVF dates are agreed with the multidisciplinary team. The diagnoses of infertility are extensive; the following list details common presentations at the present author's practice:

- anovulation;
- a small uterus;
- poor follicle development;
- poor egg quality;
- poor blood flow within the uterus and endometrium; and
- the ageing female.

Advancing female age is an important factor in low pregnancy outcomes (Gindoff 2008). Problems affecting women attempting pregnancy at the age of 40 years and above include: a decrease in fertility rates of approximately 50%; a two- to threefold increased risk of miscarriage;

a reduction in egg quality and quantity; poor endocrine readings, caused by high levels of follicle-stimulating hormone; reduced blood flow and cervical mucous secretions; and low oestrogen levels and less-frequent monthly ovulations (Jansen 2003).

Western evidence for clinical reasoning

Neurophysiological research has provided evidence that acupuncture treatment regulates neurotransmitters and increases the secretion of GnRH, as well as increasing blood flow by inhibiting uterine central sympathetic nerve activity (Stener-Victorin *et al.* 1996), and stimulating the production of endogenous opioids by inhibiting the central nervous system outflow and biological stress responses (Cho *et al.* 1998). What is intriguing is that, unlike most other disease processes within gynaecology, where either inflammation or degeneration are the major presentations, we are now faced with changes within the patient's normal bodily hormonal balances, which calls for a greater degree of clinical reasoning within our acupuncture approach. Within Western evidence-based medicine, we rely on the function of the hypothalamus, anterior pituitary and ovaries in the production of oestrogen and progesterone to effect endometrial changes. Within TCM philosophy, the yin and yang phases of the normal menstrual cycle have a profound effect on point selection and pattern identification, and should not be ignored.

Traditional Chinese medicine clinical reasoning

Within TCM, the diagnosis relies on the balance between blood and qi in the uterine cavity, the supply of Kidney (KI) qi to the uterus itself, and the smooth action of blood in Spleen (SP) and Liver (LV) meridians supplying the fallopian tubes, ovaries and endometrium. Balance, harmony and homeostasis are required to offer the best possible opportunity for IVF and successful implantation. Therefore, treatment will be directed towards improving qi and blood flow to the relevant meridians [i.e. Stomach (ST), LV, KI and SP] via He-sea points. These points have a particular action on meridians by means of increasing the flow of qi and blood to their named meridian, rather like the opening of a lock gate. The present author is presently engaged in research using Doppler ultrasound to investigate the action of He-sea

Table 1. He-sea acupuncture points to supply the pelvis: (L) lumbar segment; and (S) sacral segment

Meridian	Point and nerve supply	Action
Stomach (ST)	ST36 L4, L5	Nourishes pelvic blood and qi
Spleen (SP)	SP9 S1, S2, S3	Lower abdominal stagnation of qi; leucorrhoea
Liver (LV)	LV8 L5, S1, S2	Increases pelvic and genital blood and qi; nourishes the smooth action of blood
Kidney (KI)	KI10 S1, S2	Benefits kidney organ qi

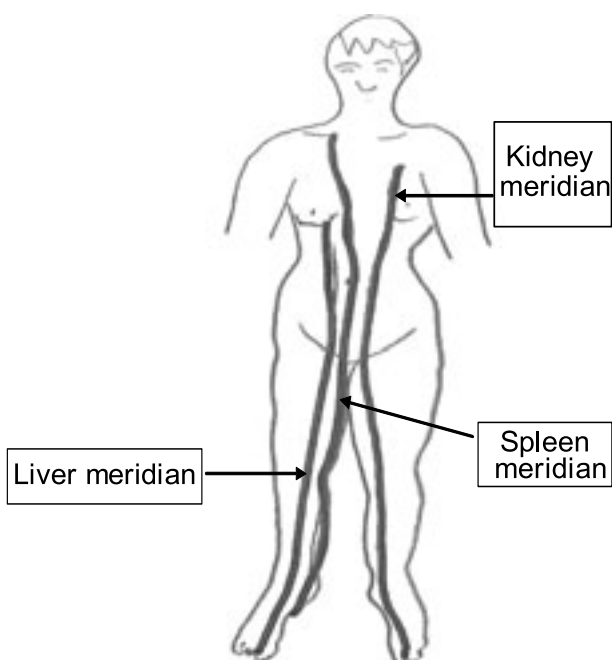


Figure 1. Pelvic meridians.

points on blood flow to the pelvic viscera (Table 1). The ST, SP, LV and KI meridians all flow through the pelvic basin, and are essential to the stimulation of qi and blood flow to the pelvis (Fig. 1).

Associated points are used to calm the patient, help sleep and nourish the meridians that supply the pelvis in an effort to restore homeostasis, reduce stress and facilitate ease of implantation during this phase (Table 2). Patients are treated twice a week until their stress levels are more manageable and relaxation techniques are being practised regularly with good effect. The use of hypnotherapy and cognitive behavioural therapy referrals is recommended if acupuncture intervention is not offering sufficient stress reduction.

Patients are encouraged to acupressure the He-sea points and stimulate blood flow via the femoral artery with gentle arterial massage.

Table 2. Suggested ‘calming’ acupuncture points to aid relaxation and sleep: (L) lumbar segment; and (S) sacral segment

Meridian	Point and nerve supply	Action
Large Intestine (LI)	LI4	Nourishes liver
Liver (LV)	LV3 ‘Four gates’ for neurohumeral effects	Blood; regulates the pelvis; nourishes the uterus; calms the patient
Extra points	Yintang Stimulation of melatonin for sleep and circadian rhythm	Calms the mind; induces sleep; reduces agitation and restlessness
Spleen (SP)	SP6 S1, S2 SP12 L1, L2, L3	Activates the Kidney, Spleen and Liver channels; calms the spirit
Conception Vessel (CV)	CV4 L1 CV6 L1	Used with heat to invigorate circulation, qi and blood to the uterus

Table 3. Normal values for semen analysis (Clavey 2003)

Factor	Value	
	Good	Poor
Sperm count (/cc)	20–100 000 000	<20 000 000
Motility	Grade III and IV	More than 40% abnormal
Morphology	Morphology	More than 40% abnormal
Liquefaction	Easily poured	Poor viscosity (remains gelled)
Volume (cc)	2–5	<2

Table 4. Suggested acupuncture points for blood and qi stimulation of sperm production: (L) lumbar segment

Meridian	Point	Action
Bladder (BL)	BL23	Stimulation of kidney qi; stimulation of sperm production
Conception Vessel (CV)	CV4	Segmental innovation at L1
Liver (LV)	LV8	He-sea points stimulating liver, qi and blood
Spleen (SP)	SP6	He-sea points stimulating spleen, qi and blood
Stomach (ST)	ST36	He-sea points stimulating stomach qi and blood

The male factor

Acupuncture and TCM offer a large proportion of infertile men not only hope, but a clear improvement in sperm count, motility, morphology and liquefaction (Clavey 2003) (Table 3).

Male infertility has been identified as a problem for over 50% of childless couples in the UK. Although the causes are too numerous to discuss within the scope of the present paper, the more common presentations within the author's practice are:

- sperm production deficiency;
- blocking of the epididymis, vas deferens or ejaculatory duct;
- sperm antibodies;
- injury;
- hormonal imbalance;
- poor testicular descent; and
- varicocele.

The appropriate treatment and selection of points will depend upon accurate diagnosis of the presenting condition. For a general tonification of blood and qi, the points listed in Table 4 are recommended before sperm storage. Treatment is offered daily as soon as the female embarks upon the IVF regime. Once again, sperm specimen results are necessary to determine appropriate point selection.

Recent research has shown that Viagra triggers and accelerates the acrosome reaction in sperm, stimulating the premature release of 'egg-penetrating' enzymes – which are produced in order to break down the outer layer of the egg – and therefore, preventing adequate egg penetration on arrival. This poses a problem when Viagra is used in fertility clinics (over half of UK fertility clinics use Viagra to promote semen production; New Scientist 2008).

Hormonal down-regulation

Once hormonal down-regulation is about to begin, the treatment strategy must be tailored to the goals of the IVF team and the medications that are prescribed. During this period, the ovaries are allowed to rest and Lupron is used to prevent ovulation; this may cause a deficiency of qi and some pain in the pelvis. Table 5 lists the points that Liang (2003) suggested should be used to treat patients experiencing side effects from down-regulation.

Phase II: Ovulation induction

Gonadotropin-releasing hormone drugs are used to stimulate multiple follicles depending on age and ovarian function. Oestrogen and luteinizing hormone levels are measured, follicular development is tracked by ultrasound and dosages

Table 5. Suggested acupuncture points for down-regulation side effects (Liang 2003)

Meridian	Point
Stomach (ST)	ST36
Spleen (SP)	SP6, SP10
Liver (LV) and Large Intestine (LI)	LV3, LI4
Extra points	Yingtang, Zigongxue

adjusted accordingly, and just before ovulation occurs, human chorionic gonadotrophin (hCG) is injected 33–35 h before oocyte retrieval to ensure follicle maturation.

Acupuncture intervention

While hCG stimulates multiple follicle production, acupuncture can support blood flow in the pelvis and improve response to medication (Rosenthal & Anderson 2007). The points mentioned in Table 4 may be used again, but often with the addition of Lung 7 and KI6 to open the Extra Vessel or Chong Mai, and SP4 and Pericardium 6 to open the Extra meridian or Penetrating Vessel (Liang 2003). This treatment often requires three to four sessions, twice a week, before oocyte retrieval.

Ovarian hyperstimulation syndrome (OHSS) is a potentially serious side effect at this stage. Mild OHSS may result in ovarian enlargement, and abdominal pain, nausea and vomiting; the latter symptoms may be alleviated by acupuncture. Severe OHSS requires immediate attention and/or surgical intervention. The first clinical signs of OHSS are dry mouth with copious thirst, and therefore, it is essential that the

patient provides the following results at each attendance in order to determine whether further acupuncture treatment is desired or the protocol changed:

- (1) *Endometrial thickness scans.* These scans determine whether further acupuncture is required to move qi and blood. The endometrium should be at least 7–8 mm thick for implantation of the egg and is an indicator of progesterone levels. Acupuncture point Tituo is identified as a strong qi movement point should the endometrial development be slow.
- (2) *Follicle growth and number.* If follicle growth is poor, then using the Zigong and Ear Ovary points may be beneficial should endometrial thickness be slow to develop.
- (3) *Oestrodial levels.* If readings are above 5000 pg/ml early in the cycle, daily acupuncture is required to lower this level of oestrodial. Points such as ST40, LV2 and LV3, and KI2 and KI3 are used (Carman 2007) for 3 days with constant monitoring.

Phase III: Pre-embryo transfer

The suggested treatment interval for acupuncture prior to ET is 30–40 min (Stener-Victorin & Humaidan 2006), and thus, practitioners and patients are required to offer flexibility in appointments and treatment availability (Table 6).

Phase IV: Oocyte retrieval

Retrieval is performed under local anaesthetic and the oocytes are transferred for laboratory

Table 6. Pre-embryo transfer points (Paulus *et al.* 2003)

Meridian	Point	Action
Conception Vessel (CV)	CV6	Tonification of kidney; regulates blood
Spleen (SP)	SP8	Regulates blood flow
Liver (LV)	LV3	Regulates pelvis; nourishes uterus; calms the patient
Governor Vessel (GV)	GV20	Improves uterine qi and lifts the spirit
Stomach (ST)	ST29	Stimulates flow of blood to uterus
Auricular points*	Shen Men (55) Zhigong (58) Neifenmi (22) Naodian (34)	— — — —

*Right ear.

Table 7. Acupuncture protocol 2 days after embryo transfer (Paulus *et al.* 2003)

Meridian	Point	Action
Governor Vessel (GV)	GV20	Tonification of kidney; regulates blood
Conception Vessel (CV)	CV3	Regulates blood flow
Stomach (ST)	ST29 ST36	Regulates pelvis; nourishes uterus
Spleen (SP)	SP9 SP10	—

storage. Women often experience discomfort similar to deep menstrual pain during oocyte retrieval; this is caused by the needle passing through the vagina and the aspiration of oocytes. Electro-acupuncture (EA) has been used to induce fast-acting opiate stimulation for analgesia, and studies have reported that EA can bring about reductions in both pain and side effects at this stage (Stener-Victorin *et al.* 1996).

Laboratory culture

Oocytes are graded for maturity and cultured for 3–6 h before exposure to sperm. Sperm are graded and incubated overnight, and checked for signs of fertilization. The embryos are allowed to grow to the six- to eight-cell stage of development (i.e. 3 days) before implantation.

Phase V: Embryo transfer

Embryos are once again graded and implanted into the uterus (Table 7).

Luteal phase monitoring

Progesterone is given to support the endometrium and a pregnancy test is conducted 14 days after implantation. If the pregnancy test is positive, it is advisable to reduce the intensity of de qi stimulation and avoid such points as SP6 and Large Intestine (LI) 4. These are considered cautionary points (AACP 2007), although there is no clinical or scientific evidence to support this view (Roemer 2005). Indeed, a number of these points have been used in IVF trials without obvious adverse effects or changes in live birth weight, but please note the discussion of these results below (Westergaard *et al.* 2006).

Immediately after conception and for the next 12–14 weeks, acupuncture may be used to support and improve corpus luteum function, although Chinese herbal medicine (CHM) may be more effective. Wing & Sedlmeier (2006) noted that fertility markers improved as much in

older women as younger ones when CHM was used, especially in the maturity of dominant follicles, which increases the chances of containing a mature egg and producing a viable embryo. Chinese herbal medicine can be used to maintain corpus luteum function by increasing the size and vascularity of oocytes. This is important in preventing miscarriage in the first 10–12 weeks of pregnancy, when all progesterone comes from the ovaries and corpus luteum; the placenta only fully takes over this function at 3 months (Heese 2006).

Phase VI: Post-embryo transfer

Patients are required to rest in the lying position whilst acupuncture is applied post-ET in the present author's own practice. This protocol was cited by Paulus *et al.* (2003), who studied 160 patients who received either acupuncture 25 min before and after ET ($n=80$), or a standard regime of only bed rest 25 min after ET ($n=80$). Traditional and auricular acupuncture points were used in the treatment group (Table 8). The clinical pregnancy rate of 42.5% in the acupuncture group versus 26.3% in the control group was significantly in favour of the former ($P=0.03$). Paulus *et al.* (2003) further recommended a third arm to future trials involving placebo needles to rule out the possibility of psychological or psychosomatic effects in the acupuncture group.

The above study has since provided the impetus for further studies (Smith *et al.* 2006; Westergaard *et al.* 2006; Dieterle *et al.* 2008) and a systematic review (Manheimer *et al.* 2008). The latter authors concluded that acupuncture given with ET improves rates of pregnancy among women undergoing IVF, and included outcome data on live births that was not available at the time of the study by Paulus *et al.* (2003). Although the current estimates of the effects of adjuvant acupuncture on IVF are both

Table 8. Post-embryo transfer points (Paulus *et al.* 2003)

Meridian	Point	Action
Stomach (ST)	ST36	Tonification of kidney; regulates blood
Spleen (SP)	SP6 SP10	Regulates blood flow
Large Intestine (LI)	LI4	Regulates pelvis; nourishes uterus; calms the patient
Auricular points*	Shen Men (55) Zhigong (58) Neifenmi (22) Naodian (34)	Calming point Uterus point Endocrine point Brain point

*Left ear.

significant and clinically relevant, these remain somewhat preliminary (Manheimer *et al.* 2008).

Discussion

A number of studies have investigated the potential of acupuncture to improve the outcome of IVF (Vayena *et al.* 2002; Paulus *et al.* 2003; Dieterle *et al.* 2006; Johnson 2006; Smith *et al.* 2006; Stener-Victorin & Humaidan 2006; Westergaard *et al.* 2006), but these have only emphasized the use of acupuncture pre- and post-ET. The relevant protocols are not analysed in the present paper because these are outside its scope, and the reasons for variations in point choice and clinical reasoning are complex. Each of the researchers mentioned above examined a particular field of interest to determine the effects of acupuncture intervention; for example, Stener-Victorin & Humaidan (2006) investigated whether repeated acupuncture treatments given over a period of 4 weeks exerted a general inhibiting effect on uterine sympathetic tone, thereby reducing high blood flow impedance in uterine arteries, and increasing uterine blood flow and hypothetical endometrial receptability.

Despite this, acupuncture is still considered to be suspect in many circles (Domar 2006; Myers 2006) and there have been claims that higher pregnancy rates in acupuncture groups may be a result of placebo effects. Stener-Victorin & Humaidan (2006) suggested that, when debating this and discussing how alternative treatments have been scientifically tested, 'one should realize that many treatments in conventional medicine also lack rigorous testing, a failing that the scientific community generally acknowledges must be remedied'. Both conventional and alter-

native medicine rely on anecdotes, from which peer reviewed case reports can be derived for publication. These are essential and should be encouraged as a first step to robust research (Longbottom 2007).

In all the trials cited above, the acupuncture protocol and selection of points were designed for the sole purpose of improving pregnancy rates, and the point selection appears to have been based upon the first published trial (Paulus *et al.* 2003). Few studies have investigated the prolonged effect of acupuncture on both male and female blood flow and stress management procedures pre-IVF, or the influence of He-sea points on pelvic blood flow, which could be applied as acupressure or transcutaneous electrical nerve stimulation (TENS) by patients who had been instructed in these techniques.

If acupuncture does work by modulating the balance of endogenous opioids, then burst-frequency TENS (2–4 Hz) applied by the patient to the given points could safely, cheaply and easily be offered, and is worth investigating further.

The majority of acupuncture protocols employed in studies to date do not reflect clinical practice. The dosages employed in many trials were low (i.e. between one and nine sessions). In clinical practice, acupuncture treatments occur over periods of weeks and even months (Anderson *et al.* 2007). Traditional Chinese medicine diagnosis was only discussed in one trial (Smith *et al.* 2006), and no protocols were tailored to deal with deficiencies or imbalances (Maciocia 1997). It appears that a similar protocol was used in most trials cited in the present paper, and this is somewhat contrary to the clinical reasoning model taught in TCM and

acupuncture within physiotherapy. A fixed protocol produces a fixed protocol bias, reducing the likelihood that the treatment will be appropriate and effective for all subjects.

The IVF process is highly stressful, not only because of drug interaction and the financial implications of the treatment, but also because it may involve serious adverse effects in the form of OHSS (Verhaak *et al.* 2007). The selection of points in order to provide the best available acupuncture effectiveness must depend upon the clinical presentation of the infertility pattern at the time. This will vary according to Western diagnosis, age, male and female components, and a number of biopsychosocial factors. Each patient presents a unique clinical picture from which the practitioner must determine the working hypothesis necessary to provide diagnostic accuracy and effective acupuncture intervention. Requesting point prescription is both unprofessional and does not provide 'best available practice' for our patients. Patients who are subjected to the distress and emotional trauma of 'infertility' deserve and should be offered more than this, and practitioners who want to learn more and train in this fascinating subject are encouraged to undertake accredited courses in order to maintain their scope of practice and competency to practise.

The trials quoted and the systematic review discussed above are exciting for both patients and practitioners with an interest in this field. Acupuncture is affordable and has a good safety record (MacPherson *et al.* 2001), but further research needs to address unresolved questions in relation to baseline rates of pregnancy and the effectiveness of point prescription acupuncture. Only two trials (Paulus *et al.* 2003; Smith *et al.* 2006) made any attempt to blind participants to the intervention. There is huge variation in IVF procedures between specialists and clinics, but a standard point protocol is offered in many trials.

We must not stray totally from the TCM philosophy; after all, we are discussing 'acupuncture' and not 'dry needling'! Gynaecological conditions, on the whole, respond well to acupuncture intervention (Betts 2006; Rosenthal & Anderson 2007; Lyttleton 2008). We must be aware of the contraindications and 'forbidden points' listed in every acupuncture manual as having an effect on uterine muscle contraction, information that has been passed down through the teachings TCM. Spleen 6 is thought induce excitation of the neuroplex through sympathetic

nerves (Lee *et al.* 2004) and LI4 is considered to cause cervical dilation (Ying 1985); therefore, care, knowledge and clinical judgement must be employed whenever acupuncture is used to assist fertility and pregnancy.

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