The 'egg factor': Using Chinese herbal medicine to improve fertility in a 45-year old woman

By: Inga Heese

Keywords: Female age, fertility, Chinese herbal medicine

Abstract

Advanced female age is an important factor in low pregnancy outcome. In the following case study, a course of Chinese herbal medicine improved ovarian and uterine function in a 45-year old woman who had a very low response rate during her two IVF cycles and who was advised to opt for donor eggs for her next IVF attempt. She conceived naturally after five months of taking Chinese herbs and is now successfully into her second trimester.

Introduction

Advanced female age is an important factor in low pregnancy outcomes[1,2]. As a woman progresses through her reproductive years, her ovarian reserve diminishes, with an approximately 50% decrease in fertility rates in women attempting pregnancy at the age of 40 onwards, and a two-to-three-fold increased risk of miscarriage[3,4]. Most ART attempts in a woman aged 45+ using her own eggs results in no life births[5,6] with spontaneous pregnancies mostly seen in grandmultiparas or great-grandmultiparas (6-11 previous deliveries)[7].

Common causes for a much reduced conception rate in women aged 40+ with her own eggs are: diminished egg quality and quantity with poor endocrine readings such as high FSH (follicle-stimulating hormone) or low oestrogen levels and less frequent monthly ovulations or reduced cervical mucus secretions; and reduced blood perfusion to the ovaries and uterus[3]. A common reason for an increased miscarriage rate is high chromosomal abnormalities in the embryos due to poor egg quality[8,9].

Female age, IVF procedures and pregnancy outcome

Whilst FSH readings can predict ovarian reserve to a certain extent (with FSH levels often raised in older women), the negative influence of age is relevant even in women with normal FSH readings[10]. In assisted reproduction such as in IVF, women with low FSH levels can still have a poor ovarian response to stimulation. The response of the ovaries when the woman takes injectable FSH for stimulation is often predictive of the egg quantity and egg quality - and therefore also predictive of the relative chances for success with assisted reproductive treatment[11]. Women aged 40-42 have a very poor outcome if less than five eggs are produced, thus most IVF cycles are cancelled if the stimulation does not result in a minimum of three mature or close to mature (16-20mm) follicles[12], as in the case discussed below.

As some research shows that the age of the egg rather than the age of the uterine environment determines the pregnancy outcome[13,14], older women undergoing assisted reproduction are often advised to consider an IVF cycle using donor eggs. Uterine receptivity is however also important in pregnancy outcomes[33], and a poor uterine receptivity may lower the success rates of donor egg cycles in women aged 45+.[34]

Chinese medicine and reproduction

Chinese medicine can effectively improve ovarian and uterine function and other fertility markers, and thus optimise the chances of conception and pregnancy[15,16,17,18,19,20]. Whilst it cannot turn back time and improve egg quality in an older woman, it may - by improving the growth of the dominant follicle within an ovary that functions more effectively through treatment - improve the environment an egg matures in, and thus indirectly influence its maturity and quality. Chinese medicine also improves the thickness of the endometrial lining (and thus the endometrial receptivity to an embryo), increasing the chances of a successful conception and pregnancy[15]. Research as well as clinical experience has shown that both Chinese herbal medicine and acupuncture can improve ovarian and uterine blood flow, regulate the endocrine hormones FSH & LH (luteinising hormone), increase oestrogen and progesterone and normalise both the follicular and luteal phases of the menstrual cycle.[21,22,23,24,25,26,27]

The case study

The following case is exciting insofar as the patient (P., aged 45) had undergone two (unsuccessful) IVF cycles in order to conceive, with - as expected for her age - a very poor ovarian response, so that she was advised to

have another attempt using donor eggs, or stop treatment altogether. From her BBT basal body temperature charts I could tell that her ovarian function was compromised (see Chart 1 below), so I agreed to work with her for six months to see if we could improve the ovarian function whilst she looked into the donor egg option.

P. responded to the herbs with an immediate ovarian and menstrual improvement and after five months of taking herbs daily she conceived. She has further taken herbs through the first 16 weeks of pregnancy to support her progesterone production to maintain the pregnancy, and is now successfully into her second trimester, pregnant with what seems to be a chromosomally healthy baby (determined at 12 weeks by chorionic villus sampling which can detect the most common chromosomal abnormalities such as Trisomy 13,18,21).

Background information to the patient

P. initially came to see me for acupuncture as an adjunct to her imminent second IVF procedure. She had had a previous IVF attempt three months prior to this that had resulted in four follicles maturing with three eggs dividing into day-three embryos that were transferred but did not result in a pregnancy. As she provided me with previous BBT readings I could see the unstable pattern of both the follicular and the luteal phases that indicated her ovarian function was compromised. I recommended the use of Chinese herbal medicine (CHM) in combination with the acupuncture to support her ovarian function through the second IVF attempt. P. however did not feel comfortable with the use of CHM and chose to have acupuncture only.

Her second IVF attempt however resulted in a very poor ovarian response, despite having an FSH of eight. Only two follicles matured sufficiently and it was uncertain if they contained any eggs. The clinic offered to cancel the cycle or change the procedure to IUI (intra-uterine insemination). P. and her husband decided on the latter but again no conception occurred. At a follow-up appointment they were advised that P.'s ovarian status was too poor to attempt another cycle with her own eggs, and they were strongly advised to consider the option of donor eggs.

P. then returned to me and we agreed to see if we could improve her ovarian function - this time with CHM - over the next six months whilst they looked into the donor egg option.

TCM examination and diagnosis

I now examined her menstrual cycle more closely and had her monitor her BBT so that I could evaluate her ovarian function properly. P. had a regular menstrual cycle of 28-30 days with menstrual bleeding lasting for seven days. Her periods were very heavy with bright red blood containing large clots. She had dysmenorrhoea with pain levels of 6/10. She experienced 5-7 days of premenstrual symptoms with breast soreness, abdominal bloating, back pain, mood swings, and constipation, and she felt hotter from ovulation onwards until the onset of her bleeding. At the time of ovulation she felt slight ovulatory twinges bilaterally, and she observed less ovulatory mucus compared to when she was younger.

Important fertility data prior to treatment

- Last measured FSH of eight.
- Reduced ovarian response in two IVF cycles.
- BBT chart prior to administration of CHM: unstable follicular and luteal phase (see Chart 1) with a slow rise of temperature at ovulation.
- Reduced ovulatory mucus.

Other relevant clinical information

- *Body temperature:* can get very cold feet but feels very hot from ovulation until menstruation with increased thirst.
- *Skin complaints:* mild rosacea and seborrhaeic dermatitis.
- *Stool:* alternating constipation/diarrhoea with abdominal pain, particularly when stressed.
- *Tongue:* slightly yellow tongue coating.
- *Pulse:* thready, slightly wiry.

TCM pattern differentiation

Analysing her signs and symptoms as well as her BBT readings, my pattern differentiation was:

• Kidney yin deficiency with blood heat.
• Kidney yang deficiency with qi and blood stasis in the Liver and Penetrating vessel (Chong Mai).

Understanding the TCM pathology

In P.'s case, the natural decline of both her Kidney yin and Kidney yang function due to age was visible in her BBT chart, and resulted in poor ovarian response during the IVF cycles. The unstable pattern of her follicular/yin phase indicated the instability of her Kidney yin together with some heat. This yin deficiency heat is also seen in the high follicular phase readings (see Chart 1). Other symptoms arising from yin deficiency with blood heat were also evident throughout her cycle, seen in the reduced cervical mucus and the feelings of heat, skin complaints, constipation, heavy periods and tongue coating. As Kidney yin is the foundation for egg maturation, Kidney yin deficiency was very likely the cause for her poor ovarian response to stimulation.

Her Kidney yang however was in decline too, evident in the slow rise of temperature at ovulation and the inability to maintain an elevated body temperature for the two weeks following ovulation (see Chart 1). The drop of temperature seen at day 24 (see Chart 1) reflects a drop

in progesterone levels that would cause an implantation failure even if conception had occurred.

The raised temperature and high progesterone level is vital for maintaining a well nourished and perfused uterine lining in which an embryo can implant and grow should conception occur. This damaging effect of a 'cold uterus' has been well recognised in Chinese medicine and is discussed in Chinese medical literature[28, 29].

Interestingly, once P. conceived she experienced a lot of Kidney yang deficient symptoms such as feeling very cold in the evenings for several hours, with some lower back ache and frequent urination. This together with her unstable temperature in the luteal phase made me place a strong emphasis on supporting Kidney yang in the first 16 weeks of her pregnancy, which would maintain progesterone levels and minimise early miscarriage risk.

Kidney yang is also a motive force for the free circulation of qi and blood, and it is commonly seen in clinical practice that a deficiency of Kidney yang aggravates any qi and blood stagnation, with an improvement in Kidney yang deficiency alleviating such symptoms of stagnation. P. showed clear signs and symptoms of qi and blood stagnation, seen in her pulse reading, premenstrual symptoms and menstrual pain and clotting.

The qi stagnation in the lower abdomen may have affected the fallopian tubes, making the passage of an egg more difficult, as well as interfering with the blood flow to the ovaries and uterus, making both function less efficiently. A reduced blood flow to the uterus then leads to an irregular (and thin) endometrial lining.

Treatment principles

In order to treat P. most effectively, I applied two different treatment strategies according to the stage of the menstrual cycle:

- From day four to day 14 of the menstrual cycle my treatment principle was to nourish the Liver and Kidney yin and to nourish and cool blood.
- From day 15 to day three of the menstrual cycle my treatment principle was to regulate blood and the Penetrating vessel and to warm Kidney yang.

I also asked P. to come to the clinic for monthly checkups and an acupuncture treatment just before her ovulation (Acupuncture points used at pre-ovulation: Local abdominal/ovarian points: Guanyuan REN-4, Zigong (M-CA-18) + heat lamp. Distal points to regulate the Liver and increase Kidney yang: Taichong LIV-3 + Hegu L.I.-4, Taixi KID-3).

Prescriptions (given in daily dosage)

Post-menstruation: to nourish the Liver and Kidney yin and to nourish and cool blood: *Gui shao di huang tang* (Angelicae Paeonieae Rehmanniae Decoction) modified

Sheng Di Huang (Rehmanniae Radix) 12
Shan Zhu Yu (Corni Fructus) 9
Shan Yao (Dioscoreae Rhizoma) 9
Nu Zhen Zi (Ligustri lucidi Fructus) 9
Han Lian Cao (Ecliptae Prostratae Herba) 12
Bai Shao (Paeoniae Radix alba) 9
Dang Gui (Angelicae sinensis Radix) 9
Mu Dan Pi (Moutan Cortex) 9
Fu Ling (Poria) 9
Ze Xie (Alismatis Rhizoma) 9
Zhi Gan Cao (Glycyrrhizae Radix preparata) 4

Post-ovulation: to regulate blood and the PenetratingVessel and to warm Kidney yang

Dang Gui (Angelicae sinensis Radix) 9
Bai Shao (Paeoniae Radix alba) 9
Chi Shao (Paeoniae Radix rubra) 9
Dan Shen (Salviae miltiorrhizae Radix) 9
Yi Mu Cao (Leonuri Herba) 9
Tu Si Zi (Cuscutae Semen) 18
Ba Ji Tian (Morindae officinalis Radix) 12
Rou Gui (Cinnamomi Cortex) 9
Yin Yang Huo (Epimedii Herba) 12
Zhi Gan Cao (Glycyrrhizae Radix preparata) 4

Modifications

Post-menstrual prescription: in order to further smooth the unstable follicular phase (which indicates heat) I added more qi and blood cooling herbs after the second month of treatment, and varied between:

Zhi Zi (Gardeniae Fructus) 9
Zhi Mu (Anemarrhenae Radix) 12
Mai Men Dong (Ophiopogonis Radix) 9
Chi Shao (Paeoniae Radix rubra) 9

Post-ovulation prescription: I decided to increase the yang tonics to further raise and stabilise the luteal phase as well as to improve blood flow, so three months into the treatment I added the following herbs:

Xu Duan (Dipsaci Radix) 12
Chuan Xiong (Chuanxiong Rhizoma) 6

Post-conception: to tonify and warm Kidney yang and raise qi: *Shou tai wan* (Fetus Longevity Pill) modified

Tu Si Zi (Cuscutae Semen) 24
Xu Duan (Dipsaci Radix) 9
Sang Ji Sheng (Taxilli Herba) 9
Du Zhong (Eucommiae Cortex) 9
Shu Di Huang (Rehmanniae Radix preparata) 12
Gou Qi Zi (Lycii Fructus) 9
Dang Shen (Codonopsitis Radix) 9
Bai Zhu (Atractylodis macrocephalae Rhizoma) 12
Huang Qi (Astragali Radix) 18
Da Zao (Jujubae Fructus) 6
Sha Ren (Amomi Fructus) 4
Gan Cao (Glycyrrhizae Radix) 4

Clinical observations throughout treatment

Common clinical measures used by Chinese medical practitioners to observe the improvement of ovarian and uterine function are a. the length of the menstrual cycle; b. the BBT chart; c. the characteristics of the menstruation.

Whilst P.'s cycle length was good even prior to taking herbs, I observed an improvement in the other two parameters (BBT chart and characteristic of menstruation) from the onset of treatment, sufficiently for P. to conceive after five months of treatment. According to her presenting pattern, she showed an improvement in Kidney function (both yin and yang) with a reduction in both blood heat and qi and blood stagnation.

Changes in BBT readings

P.'s charts before treatment showed unstable follicular and luteal phases (see Chart 1). Unstable follicular and luteal phases are recognised by the characteristic daily temperature variations (peaks and troughs) of more than 0.2-0.3°C[30], indicating poor ovarian function. To my surprise, P.'s chart improved right from the first month of taking the herbs. Within two months of treatment, her charts had stabilised well, particularly the follicular/yin phase which I was concerned about as it reflects the quality of follicular ripening. She still however showed a slowed rise of temperature during and just after ovulation, indicating a weaker luteal/yang phase, although once her temperature had risen around day 19 it remained elevated until the onset of the next period (see Chart 2), an essential foundation for implantation should conception occur (see above). The same pattern was observed on the following chart (see Chart 3); this time however her temperature remained elevated beyond day 30, indicating that P. had conceived.

Changes in menstrual characteristics

Again P. responded well to the herbs, having much less premenstrual tension and pain with the second menstruation after onset of treatment, and from there onwards. Her menstruation also lasted only four days instead of seven, with a much reduced blood flow.

Fertility markers after five months of treatment

- BBT chart: stable follicular/yin phase; stable luteal phase from day 19; more prominent biphasic BBT graph.
- Reduced premenstrual symptoms.
- Much reduced dysmenorrhoea and menorrhagia.

Discussion

As women age, their ovarian function as well as their egg quality reduces. Whilst nothing can be done to improve the genetic make-up of the egg, the environment an egg matures in may be improved so that reproductive function is optimised. Wing & Sedlmeier (2006) found in their research that fertility markers improved as much in older women as in younger ones when Chinese herbal medicine was administered, indicating the role Chinese medicine could play in supporting fertility in older women.

Wing & Sedlmeier (2006) also showed how CHM could improve the maturity of the dominant follicle. A mature follicle increases the chances of containing a mature egg and producing a better quality embryo[31]. Follicular maturation may be achieved with CHM through direct stimulation of the ovaries as well as through improved blood flow in the uterine arteries that supply ovarian blood flow.

Immediately after conception and for the next 12-16 weeks, CHM can be used to improve corpus luteum function to maintain a pregnancy. Research from China[32] and from Wing & Sedlmeier (2006) shows how treatment with CHM improves luteal function. Wing & Sedlmeier show increased corpus luteum size and blood flow (vascularity). As luteal phase defects are one of the causes of miscarriage and repeated miscarriage, this aspect of treatment is particularly important in women who show a luteal phase weakness in their BBT chart (or blood tests), so that the risk of miscarriage is minimised. This support is particularly important in the first 10-12 weeks of pregnancy, when all the progesterone comes from the ovaries/corpus luteum before the placenta takes over fully at about three months. ■

Inga Heese qualified from acupuncture college, then continued her studies with a 5 year BSc (Hons) TCM degree in London which included an extensive internship in hospitals in Beijing, China. She now practises at various clinics in the south of England, where she treats patients with both acupuncture and Chinese herbal medicine (ingatcm@yahoo.co.uk).

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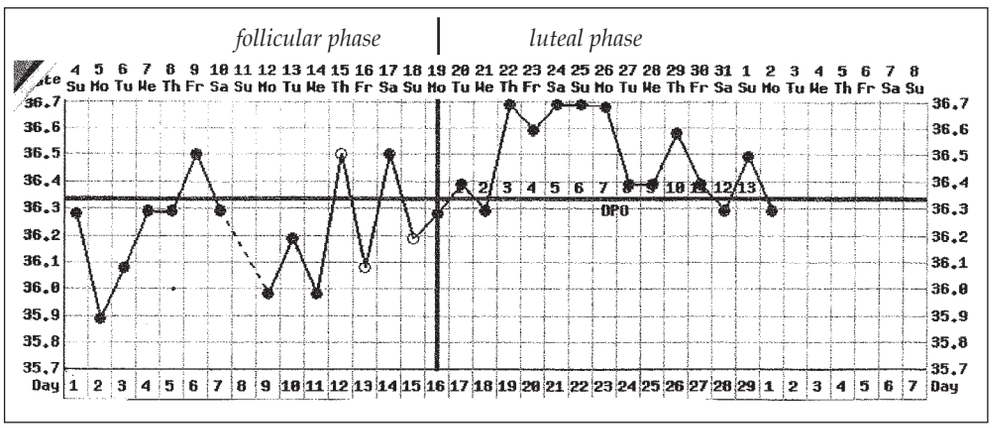

Chart 1. Prior to treatment
Unstable follicular and luteal phase

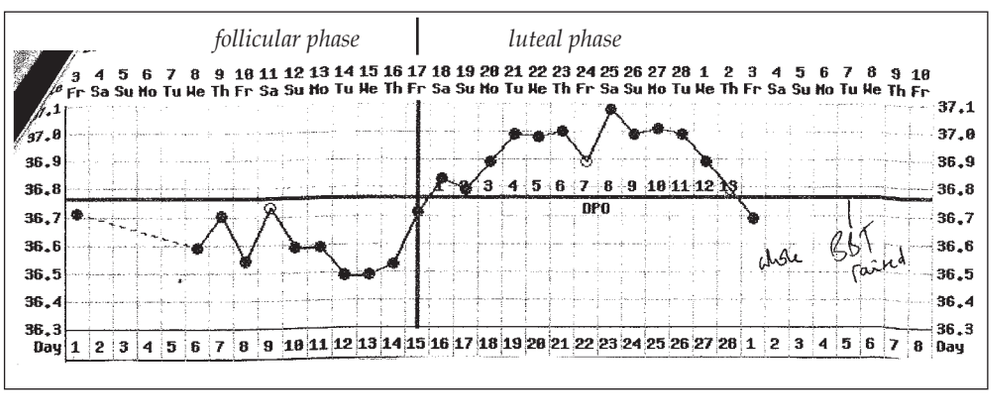

Chart 2. Three to four months into treatment
Follicular and luteal phase more stable; still slow rise in luteal phase after ovulation.

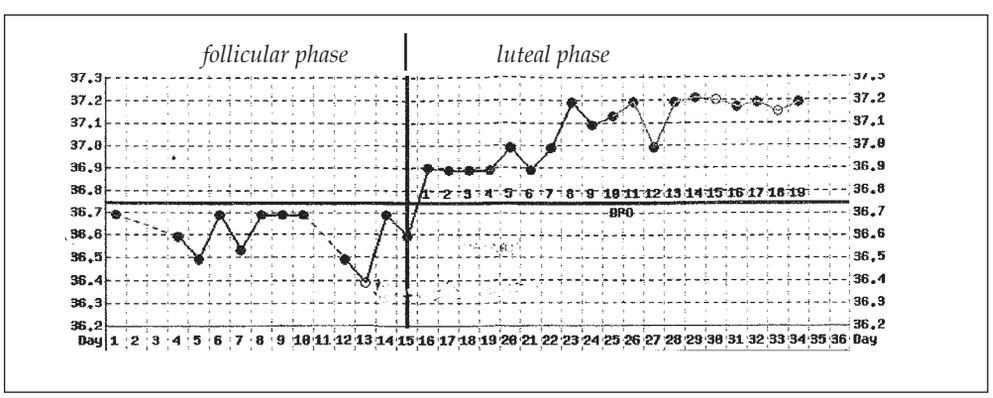

Chart 3. Five months into treatment
Conception took place.

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