

Role of acupuncture in the treatment of female infertility

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Received June 24, 2002; revised and accepted July 19, 2002.

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Peripheral effects of acupuncture

In addition to the central modulation of the hypothalamic-pituitary-ovarian axis, the effects of acupuncture on the autonomic nervous system have been well documented (47). In the early 1980s, Yao et al. (48) reported long-lasting cardiovascular depression induced by acupuncture stimulation of the sciatic nerve in unanesthetized hypertensive rats. In the human, acupuncture was also shown to be sympathoinhibitory. After acupuncture, sympathetic nerve activity as measured by norepinephrine level, skin temperature, blood pressure, and pain tolerance threshold was shown to be decreased (49).

Endometrial thickness, morphology, and uterine artery blood flow have been implicated as important parameters for success of implantation of human embryos (50-57). Despite conflicting results in the utilization of these parameters during various stages of treatment to predict outcome in IVF, it is generally believed that adequate endometrial thickness is required to optimize pregnancy rate. Because endometrial thickness is a function of uterine artery blood flow, Sher and Fisch (58) reported a novel method of using vaginal sildenafil in an attempt to improve uterine artery blood flow and endometrial development in patients undergoing IVF.

With its central sympathoinhibitory effect, acupuncture may contribute to reduce uterine artery impedance and therefore, increase blood flow to the uterus. In fact, Sterner-Victorin et al. (59) demonstrated this when they performed acupuncture in 10 infertile women who were down-regulated by GnRH analog to avoid the effect of endogenous hormone on the uterine artery blood flow.

Pulsatility index in the uterine artery and skin temperature (on the forehead and lumbosacral area) were evaluated in three time periods-before, right after, and 2 weeks after acupuncture treatment (twice a week for 4 weeks). Pulsatility index and skin temperatures were found to be significantly decreased and increased, respectively, both right after and 14 days after acupuncture treatment. This effect was hypothesized to be caused by central inhibition of sympathetic activity.

Acupuncture and stress reduction

It has been well documented that infertility causes stress (60-65), and stress reduction may, in turn, improve fertility (66). However, the relationship between stress and infertility is that of a vicious cycle. Social stigmatization, decreased self-esteem, unmet reproductive potential of sexual relationship, physical and mental burden of treatment, and the lack of control on treatment outcome are just some of the factors that can lead to psychological stress in any couple pursuing infertility treatment. In turn, stress may lead to the release of stress hormones and influence mechanisms responsible for a normal ovulatory menstrual cycle through its impact on the hypothalamic-pituitary-ovarian axis.

The use of acupuncture for reducing anxiety and stress possibly through its sympathoinhibitory property and impact on β -endorphin levels has been reviewed (67, 68), and the efficacy of acupuncture in depression has also been studied (69). Because the pharmacological side effects of anxiolytic and antidepressant drugs on infertility treatment outcome are largely unknown, acupuncture may provide an excellent alternative for stress reduction in women undergoing infertility treatment.