

Apreliminary Trials for Treatment of Anestrous Friesian Cows Using Acupuncture and / or Acuthery Under Egyptian Condition

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Abstract

The present study was conducted on 74 anestrous postpartum Friesian cows {Group I, 40 cows with smooth inactive ovaries (SIO) and Group II, 34 cows with corpus luteum (CL)}. Animals of each group were classified into 4 subgroups according to the line of treatment. Subgroup 1, cows left without treatment (Control), Subgroup 2, cows treated by Acupuncture (AP) protocol, Subgroup 3, cows treated by Acuthery protocol (AT), Subgroup 4, cows treated by both AP & AT protocol. The acupuncture points for anestrous cows was BL_{22, 23} and ₂₅ located at the depression in the space between the transverse processes of lumbar vertebrae 1st and 2nd, 2nd and 3rd and 4th and 5th respectively. BL₂₇(Baihui) is located at the depression in the center of lumbosacral space between the spinous process of lumber vertebrae (L₆) and Sacral vertebrae (S₁) and used as additional point in both groups in both groups. The acupuncture points for anestrous cows with SIO was BL_{22& 23} whenever The acupuncture points for anestrous cows with PCL was BL_{22& 25} . Additional Point for both groups was BL₂₇(Baihui). The drug of choice was (GnRH for anestrous cows with SIO and PGF₂α for anestrous cows with CL). Ultrasonography was used for monitoring the luteolysis of CL, ovarian activity and pregnancy diagnosis. The obtained results revealed that using of AP plus AT showed higher percentages of responded animals came in standing heat (80.00% and 87.00%) within 11.50 ±0.29 and 14.50 ±0.65 days with higher conception rates (87.50% and 85.71%) for cows with SIO and PCL respectively. From the present study, it can be concluded that AP and / or AT could used as a new trend for treatment of anestrous cows under our environmental conditions.

Key words: Holstein - Friesian cows, anestrous, postpartum, Acupuncture (AP), Acuthery (AT), Ultrasonography,

Introduction

Reproductive disorders of domestic animals cause significant economic loss in the meat industry. Acupuncture treatments for such conditions have shown profound results in the last decade and can be used as a good alternative therapy.

Acupuncture is a form of Traditional Chinese Medicine (TCM), an ancient form of healing that has been used continually for the past four and a half thousand years, making acupuncture the oldest system of medicine still in use today. The principle of treatment is based upon the belief that the body is a self-regulating, and homeostatic system, and that disease occurs when the body is out of balance. Physiological balance is influenced by the individual's environment, the season, diet, lifestyle, and genetic constitution. There are 365 acupuncture points on the surface of the body. The precise combination of points selected is unique for each case, and usually comprises between two and ten points. Acupuncture is based on the theory that there is a circulation of energy or "Qi" which travels through well-defined channels or "meridians" just below the surface of the skin. These meridians are connected to the internal organs, as well as all other structures of the body. Acupuncture points are specific areas along these meridians. When a needle is inserted into a point, this regulates the flow of energy within that meridian. In healthy animals this energy flows smoothly, while in diseased animals the energy does not flow smoothly, causing pain and dysfunction (10). Acupuncture treatment re-establishes the normal flow of energy and thereby restores health (9).

Acupuncture can be used as a primary treatment in many cases, where medications are not working or are contraindicated because of side effects, or if surgery is not possible. The use of acupuncture is also appropriate in conjunction with western drug therapy, and following surgery. Acupuncture can be used for treatment of reproductive failure in all animal species. Cattle acupuncture is most commonly used for reproductive problems: including: infertility, dystocia and prolapses. Treatments vary depending on the method used to stimulate the acupuncture points. Generally fine acupuncture

needles are left in place for 10 to 20 minutes (14). They concluded that, clinical improvement with acupuncture is not always immediate, as it takes time to stimulate the body's own healing mechanism. As a general rule, if the condition is acute it responds rapidly, if the condition is chronic it may take several treatments before clinical improvement is apparent. Acupuncture is one of the safest therapies side effects are rare. Because acupuncture stimulates the body's own system of healing and no chemicals are used, complications are rare.

The present study aimed to provide a further useful approach, for treatment of anoestrous cows using scientific and clinical utilization of acupuncture and /or acutheraPy.

Material and Methods

The present study was carried out on 74 anoestrous Holstein - Friesian cows diagnosed as infertile due to smooth inactive ovaries (SIO) and Persistent corpus luteum (PCL). Animals aged from 3 to 4 years and belonged to Shobra Shehab farm, Kaliobia Province.

As described in Fig (1) Acupuncture points for anoestrous cows. BL 22, 23 and 25 located at the depression in the space between the transverse processes of lumbar vertebrae 1 and 2, 2 and 3 and 4 and 5 respectively. BL 27 (Baihui) is located at the depression in the center of lumbosacral space between the spinous process of vertebrae L₆ and S₁ and used as additional point in both groups (6, 13, 14, 16 and 30).

Animals under research were classified into 2 main groups (Group I, 40 cows with SIO and Group II, 34 cows with PCL and). Each group was classified into 4 subgroups.

- The First group (GI 40 cows with SIO) was classified as follows:
 - Subgroup I (1): 10 cows with SIO left without treatment (Control Group).
 - Subgroup I (2): 10 cows (AP Group) treated with the classical acupuncture

using Left-right twisting or Flicking of the needle in the BL₂₂ and BL₂₃ (Fig. 2)

- Subgroup I (3): 10 cows (AT Group) treated with injection of GnRH (GONAbreed injection, Gonadorelin as acetate 100 µg/ml - PARNELL Laboratories, NEWZELAND Limited, unit 2,13-19 Highbrook Drive, East Tamaki, New Zeland R678-03) 2.5 ml in the previous sites of AP Group (Fig. 3).

- Subgroup I (4): 10 cows (AP&AT) treated with the classical acupuncture in addition to injection of GnRH in the previous sites as in (Fig. 4)

• The Second group (GII 34 cows with PCL) was classified as follows:

- Subgroup II (1): 10 cows with PCL left without treatment (Control Group)

- Subgroup II (2): 8 cows (AT Group) treated with the classical acupuncture using Left-right twisting or Flicking of the needle in the BL₂₃ and BL₂₅ (Fig. 5).

- Subgroup II (3): 8 cows (AT Group) treated with single injection of PGF₂α (estroPLAN injection, Cloprostenol as sodium salt 250µg/ml- PARNELL Laboratories, NEWZELAND Limited, unit 2,13-19 Highbrook Drive, East Tamaki, New Zeland R678-03) 2 ml in the previous sites of AP Group .

- Subgroup II (4): 8 cows treated with classical acupuncture in addition to injection of PGF₂α in the previous sites (AP&AT) (Fig. 6).

Estrous detection was conducted in all groups using a teaser bull (1 bull/30 cows) at frequency 3 times daily till showing standing heat, then animals were naturally bred with a good fertile bull (Fig. 7). Ultrasonographic examination of ovaries and uterus were done before and after treatment for monitoring reproductive findings and pregnancy diagnosis.

Blood samples were collected from jugular vein in heparinized tube for plasma separation before treatment and at the appearance of estrous signs. Confirmatory Radioimmunoassay for estimation of plasma progesterone was done (5).

Data of some fertility parameters such as the incidence of responded animals to the treatment, time elapsed from the treatment to appearance of standing heat, conception rate and the number of services/ conception was

recorded. Additionally the mean level of progesterone (ng/ml) was evaluated. The obtained data were statistically analyzed using statistical analysis system (24).

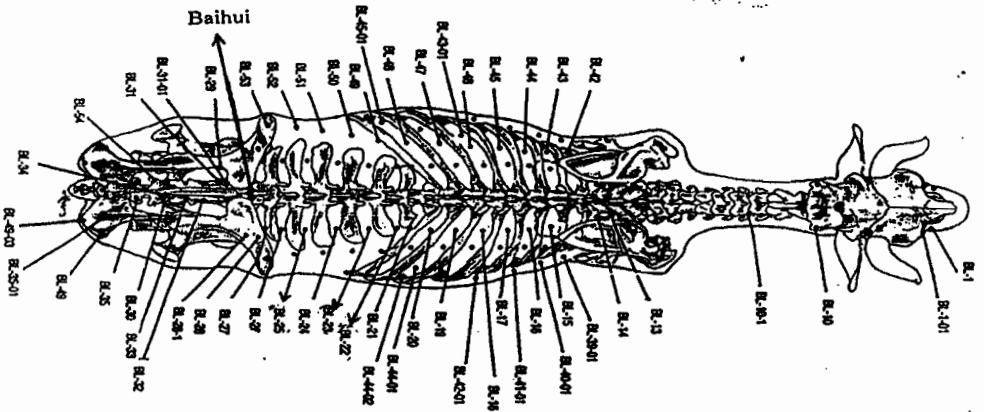


Fig (1) Acupuncture points for anestrous cows. BL22, 23 and 25 located at the depression in the space between the lumbar vertebral transverse processes 1 and 2, 2 and 3 and 4 and 5. BL 27 is located at the depression in the center of lumbosacral space between the spinous process of vertebrae L6 and S1 (After Kothbauer and Van Engelenburg 1994 and Lin et al 2001)

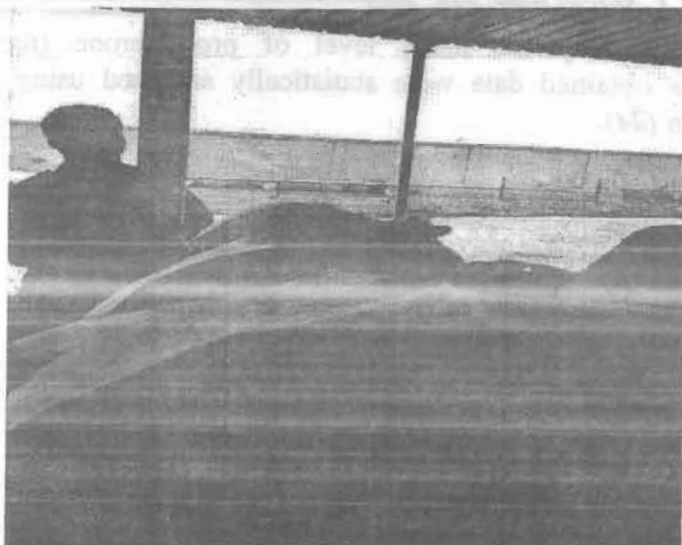


Fig (2) Acupuncture (AP) in BL₂₂&BL₂₃ for treatment of Cows with SIO

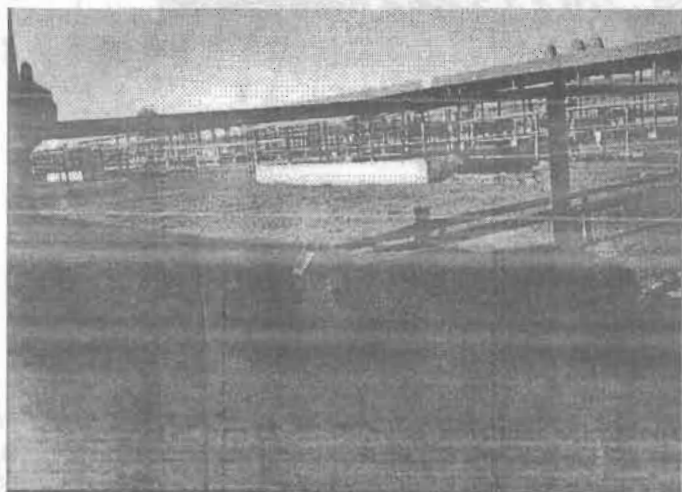


Fig (3) Acuptherapy (AT) by injection of GnRH in BL₂₂&BL₂₃ for treatment of cows with SIO



Fig (4) Acupuncture and Acutherapy (AP&AT) in BL₂₂&BL₂₃ for treatment of SIO in cows

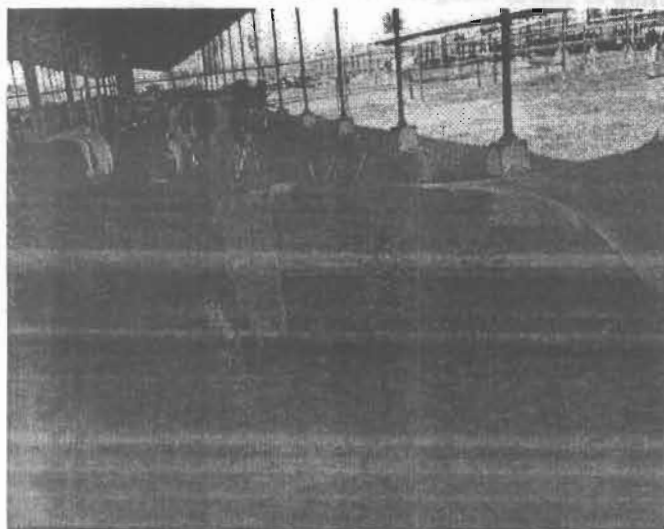


Fig (5) Acupuncture (AP) in BL₂₃&BL₂₅ for treatment of Cows with PCL

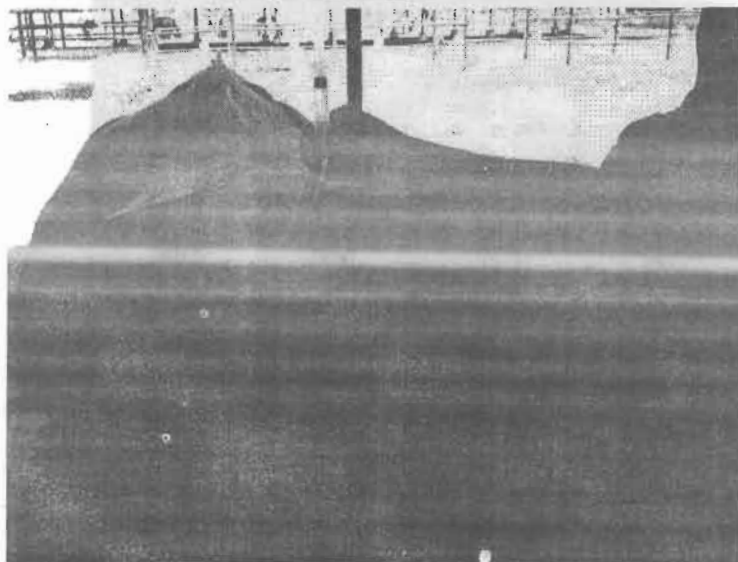


Fig (7) Detection of Estrus using teaser bull

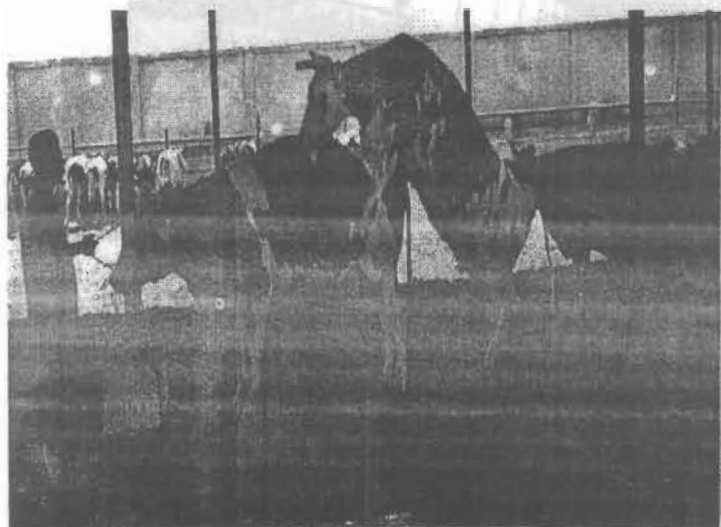


Fig (6) Acupuncture and Acutherapy in BL₂₃&BL₂₅ for treatment of Cows with PCL

As show in table (1), the responded cows with SIO which come in standing heat after treatment with AP plus AT was significantly ($P < 0.05$) higher (80.00 %) than those treated with AT or AP alone ($60.00 \pm 0.16\%$). Non significant differences were recorded in the time elapsed from treatment till the appearance of standing heat and in the mean number of services per conception among different trails of treatments. On the other hand, there were a significant decrease ($P < 0.05$) in the time elapsed from treatment till the appearance of standing heat and in the mean number of services per conception in treated groups in comparison to that in control one .The total conception rate appeared significantly higher ($P < 0.05$) in cows treated with Ap plus AT (75.00 %) than those treated with AT or AP alone (66.67 %).

The obtained results from (table 2) revealed a significant increase ($P < 0.05$) in the mean percentage of responded animals with PCL which come in standing heat after AP plus AT' (87.50 %) in comparison to those treated with AT (75.00 %) or AP alone (62.50 %). Non significant differences were recorded in the time elapsed from treatment till the appearance of standing heat and in the mean number of services per conception among different trails of treatments. On the other hand, there were a significant decrease ($P < 0.05$) in the time elapsed from treatment till the appearance of standing heat and in the mean number of services per conception in treated groups in comparison to that in control one. The total conception rate appeared significantly increased ($P < 0.05$) in animals treated with AP plus AT (85.71 %) compared to those in treated with AT (83.33 %) and AP a lone (60.00 %).

As shown in table (3), the mean level of progesterone was significantly increased ($P < 0.05$) in anestrus cows with SIO after treatment with AP (1.30 ± 0.02 Vs 0.63 ± 0.02 ng/mg), AT (1.38 ± 0.03 Vs 0.52 ± 0.02 ng/ml) and AP plus AT (1.26 ± 0.06 Vs 0.36 ± 0.04 ng/ml).

Table (4) showed significant decrease ($P < 0.05$) in the mean level of plasma progesterone in anestrus cows with PCL after AP (0.55 ± 0.08 Vs 2.80 ± 0.17 ng/ml), after AT (0.51 ± 0.06 Vs 2.57 ± 0.23 ng/ml) and after AP plus AT (0.32 ± 0.02 Vs 1.90 ± 0.10 ng/ml).

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Table (2) Reproductive performance of anestrous cows (n=34) with persistent corpus luteum CL

Method of treatment	Total No	Responded cases	Time from treatment to standing heat (days)	First estrus conception	Second estrus conception	Total Conception rate	No of services/ conception
Control Group	10	3/10 30.00% (d)	34.63 ± 0.58 (b)	1/3 33.33% (d)	1/3 33.33% (d)	2/10 20.00% (c)	3.98 ± 0.51
Acupuncture (AP)	8	5/8 62.50% (c)	16.33 ± 0.88 (a)	1/5 20.00% (c)	2/5 40.00% (b)	3/7 60.00% (b)	1.67 ± 0.33 (a)
Acupuncture (AT)	8	6/8 75.00% (b)	15.25 ± 0.48 (a)	2/6 33.33% (b)	3/6 75.00% (a)	5/6 83.33% (b)	1.60 ± 0.24 (a)
Acupuncture and Acupuncture (AP & AT)	8	7/8 87.50% (a)	14.50 ± 0.65 (a)	3/7 42.86% (a)	3/4 75.00% (a)	6/7 85.71% (a)	1.50 ± 0.22 (a)

- Values with different alphabetic in the same column were significantly differs ($P \leq 0.05$)

Table (1): Reproductive performance of anestrous cows (n=40) with smooth inactive ovaries (SIO).

Method of treatment	Total No	Responded cases	Time from treatment to first standing heat (day)	First estrus conception	Second estrus conception	Total conception rate	No of services/ conception
Control Group	10	3/10 30.00% (c)	29.19 ± 0.53 (a)	1/3 33.33% (b)	0/3 00.00% (c)	1/3 33.33% (c)	3.28 ± 0.21
Acupuncture (AP)	10	6/10 60.00% (b)	12.33 ± 0.33 (b)	2/6 33.33% (b)	2/6 50.00% (b)	4/6 66.67% (b)	1.50 ± 0.29 (a)
Acupuncture (AT)	10	6/10 60.00% (b)	11.67 ± 0.33 (b)	2/6 33.33% (b)	2/4 50.00% (b)	4/6 66.67% (b)	1.50 ± 0.29 (a)
Acupuncture And Acupuncture (AP & AT)	10	8/10 80.00% (a)	11.50 ± 0.29 (b)	3/8 37.50% (a)	3/5 60.00% (b)	6/8 75.00% (a)	1.50 ± 0.22 (a)

- Values with different alphabetic in the same column were significantly differs ($P \leq 0.05$)

Table (3): The mean level of progesterone (ng/me) in anestrus cows with SIO after different trials of treatments

Criteria	AP	AT	AP + AT
Before Treatment	0.63±0.02(b)	0.52 ± 0.02 (b)	0.36 ± 0.04 (b)
After treatment	1.30 ±0.02(a)	1.38 ±0.03 (a)	1.26 ± 0.06 (a)

- Values with different alphabetic in the same column were significantly differs (P≤0.05)

Table (4): The mean level of progesterone (ng/me) in anestrus cows with PCL after different trials of treatment.

Criteria	AP	AT	AP + AT
Before treatment	2.80 ±0.17(a)	2.57 ±0.23 (a)	1.90± 0.10 (a)
After treatment	0.55 ±0.08 (b)	0.51± 0.66 (b)	0.32± 0.02 (b)

- Values with different alphabetic in the same column were significantly differs (P≤0.05)

Discussion

The obtained results revealed that, AP plus AT are the most effective trail for treatment of anestrus Friesian cows that failed to respond to western medical drugs under our local Egyptian condition. In agreement with (27), the use of acupuncture in the area of reproductive view, and its mechanisms has not been thoroughly investigated. Moreover, (3, 15, 17 and 19) reported that, AP stimulation of certain points historically associated with reproduction significantly affect other plasma levels of sex hormones, such as LH, FSH, estrodial and progesterone. In this study we found that AP plus AT could improve the fertility of anestrus cows either due to SIO and PCL to reach higher conception rate (75.00 % and 83.33 % respectively). The level of plasma progesterone significantly differed after treatment with AP plus AT of anestrus cows. These findings came in accordance with (13, 16, 27, 29 and 31) they suggested that, AP may improve the hypotholomo-pituitary-gonadal function of animal and women. The sharp decrease in the progesterone level in anestrus animals with PCL was supported by (7 and 8) who found sharp fall in the plasma progesterone level with 24 hours after treatment of subestrus buffaloes with $\text{PGF}_2\alpha$. They attributed the low level of progesterone to the luteolytic effect of $\text{PGF}_2\alpha$ on CL.

The increase in progesterone level in anestrus animals with SIO after treatment with AP plus AT could be attributed to lutotrophic effect of the GnRH (1 and 20). They also added that, administration of GnRH increased the concentration of progesterone for up to 40 days after treatment (during pregnancy), which seemed to be associated with higher embryonic survival until 42-56 days after A.I. and this increase in progesterone after GnRH was due to the increased proportion of large luteal cells in the CL (22).

In spite, the effect of acupuncture on hypotholomo-pituitary gonadal function, (16) showed two hypothetical mechanisms, one possible explanation for these phenomena involves an endorphin-mediated mechanism. Endorphins can inhibit LH secretion, whereas naloxone can induce LH surge (28). Many studies have shown that acupuncture can

increase endorphin levels in the brain, spinal cord and blood (19 and 26). Therefore, it is possible that the acupuncture-induced decrease in LH was mediated by endorphins, and after the period of depression, the pituitary became more responsive to GnRH. If an imbalance exists in the hypothalamic-pituitary-gonadal axis (HPGA), depression of LH release may allow it to regain balance by breaking a vicious cycle or providing a needed rest period for the next normal cycle (16).

The role of neuropeptides, including β -endorphin, in the regulation of GnRH secretion in humans has recently been reviewed by (11 and 21). The role of opioid peptides in the initiation of the mid-cycle LH surge in normal cycling women, the highest level of β -endorphin was noted in the preovulatory follicle. They added that, because acupuncture treatment impacts on β -endorphin levels, which in turn affect GnRH secretion and the menstrual cycle, it is logical to hypothesize that acupuncture, may influence ovulation and animal fertility (23).

A second hypothesis involves the possibility by stimulation has direct effects on gonadal paracrine and autocrine control of steroidogenesis by stimulating release of epinephrine, catechoestrogens, oxytocin and prostaglandins (2 and 18) or improvement of uterine artery blood flow resulting in restoration of reproductive function (12, 25 and 26). Acupuncture at Baihi can increase epinephrine levels in boars' semen (4). The implications of this finding are not yet clear, epinephrine and catechoestrogens stimulate the ovarian steroidogenesis (2). Acupuncture treatments decreased concentrations of the sympathetic nervous system (26). Perhaps, acupuncture may affect reproductive function by the central control pathway from the HPGA endocrine system and by the peripheral control pathway through peripheral and segmental reflexes. However the mechanism remains obscure (16). It may be postulated that central, peripheral and segmental effects are involved when acupoints are stimulated by acupuncture in somatic segments related to the innervations of the ovaries and the uterus.

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