Investigation of ovulation induction in alpacas with acupuncture

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Acupuncture has been used to induce ovulation in several animal species, including induced ovulators such as the rabbit. There is no published information on induction of ovulation in alpacas using acupuncture. A pilot study was conducted to test the hypothesis that acupuncture induces ovulation in alpacas.

Four alpacas 8-14 years old were used in a cross-over design to compare two treatments, GnRH and acupuncture, for ovulation induction during 2 follicular wave cycles. Treatment with GnRH (Cystorelin® 50µg/ml IM, Merial, Duluth, GA, USA) or acupuncture was performed when the alpacas had uterine edema and an ovarian follicle 8-10mm in diameter as detected by ultrasonography (US). Ovulation was confirmed using US to detect the presence of a corpus luteum on the ovary. All alpacas received cloprostenol (Estrumate®, 250 µg, Intervet/Schering-Plough Animal Health, Kenilworth, NJ, USA) intramuscularly 7 days after induction of ovulation and were subjected to the second treatment during the next follicular wave (1 to 2 weeks later).

Acupuncture consisted stimulating the acupoints by aquapuncture; injecting 3 ml vitamin B_{12} (cyanocoblamin, 1000 µg/ml, VEDCO, Inc, St. Joseph, MO, USA) at the bladder (BL) and stomach (ST) acupoints (BL 22, BL 51, BL 23, BL 52, ST 25), and Yan-chi. The acupuncture points used in this study are utilized to treat various causes of infertility.

Blood samples were collected by jugular venipuncture from each animal before treatment and 7 days after treatment. Sera were stored at -20°C until assayed for progesterone concentration (P4). P4 >2ng/ml was considered as evidence of ovulation and development of a corpus luteum.

Ovulation was induced by GnRH in all alpacas, as evidenced by detection of a corpus luteum with US and a concomitant increase in P4. None of the alpacas ovulated following acupuncture treatment. Various reasons are possible for the failure of ovulation induction using acupuncture in this study. Contrary to other reflex ovulators such as the rabbit where acupuncture was found to be useful for induction of ovulation, camelids do not have a neuroreflex mechanism for induction of the LH surge. An ovulation-induction factor present in seminal plasma stimulates an LH surge similar to that induced by GnRH. As expected, GnRH induced ovulation in all cases selected based on follicular size and uterine edema. The lack of response to acupuncture in the present study could be due to other factors. Acupuncture was shown to cause a significant increase in ß-endorphin levels that lasts for up to 24 hours. The role of neuropeptides, including ß-endorphin, in the regulation of GnRH secretion has been reported. Other acupuncture approaches need to be investigated in order to determine the usefulness of this technique in camelids.

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