

Editorial Comments

I read with interest the papers written by Peyghambari *et al* (2008) and Niknafs *et al* (2008) on the complex issue of luteal phase support on endometrial function in mice. I would like to comment on the data generated from their studies.

Luteal supplementation with either hCG or progesterone significantly improves fertility outcomes compared with no treatment (Pritts and Atwood, 2002) (1). Also, Walter *et al* (2005) reported that estrogen promotes endometrial proliferation, while progesterone is necessary for stimulating endometrial proliferation (2). Peyghambari and associates (2008) found that uterine epithelial proliferation was optimized on 2nd day after estrogen injection. This may suggest that endometrial proliferation in response to estrogen is a common phenomenon in the uterus of ovariectomized mice. They also found that treatment of progesterone priming with estrogen maintained the stromal proliferation, but was unsuccessful in stimulation of epithelial cells proliferation. The formation of uterine glands was found to be more prominent in progesterone treated mice than with estrogen+progesterone treated group.

Niknafs *et al* (2008), on the other hand, reported that injection of progesterone alone at luteal phase did not supply an appropriate endometrial morphology for implantation. It was shown that application of estrogen + progesterone provided an ideal endometrial state for embryo implantation. They believed that hyperstimulation of ovary may induce the morphological alterations which may decrease the endometrial receptivity during implantation. It is important to note that in their study, Niknafs *et al* (2008) used superovulated mice using gonadotropins, while Payghambari *et al* (2008) used ovariectomized mice for their study.

In their previous work, Salehnia *et al* (2006) reported that ovarian hyperstimulation with luteal support using progesterone injection altered the endometrial receptivity. This could be related to

the alteration in the ratio of progesterone to estrogen after administration of exogenous gonadotropins (3). Similar results were reported by Kramer *et al* (1990) who observed that elevated progesterone level caused decline in endometrial receptivity following ovarian hyperstimulation in an animal model (4).

In clinical setting, however, Alsian *et al* (2005) noticed that administration of estrogen + progesterone during luteal phase was involved with higher pregnancy rates in IVF cases (5). In contrast, Lewin *et al* (1994) did not observe any advantage in the pregnancy rates when adding estrogen+progesterone at luteal phase in patients undergoing IVF (6).

In conclusion, the mechanism of luteal phase support in assisted reproduction is complex and a controversial issue, which demands further experimented and clinical studies.

References

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