



OVO

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RELATIONSHIP BETWEEN PROGESTERONE LEVEL AND THE RISK OF ECTOPIC PREGNANCY FOLLOWING FRESH EMBRYO TRANSFER

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BACKGROUND

Progesterone has multiple known physiologic effects on the fallopian tube, such as causing relaxation of the isthmic and interstitial portion, degeneration of the ciliated cells, and increased ciliary beat frequency. These combined could lead to reverse embryo migration into the tube after intrauterine transfer.

OBJECTIVE

To assess whether increased progesterone level during controlled ovarian stimulation increases the risk of ectopic pregnancy (EP) following fresh embryo transfer.

MATERIALS & METHODS

This is a retrospective case-control study comparing all cases (n=29) of EP (study group) to 79 cases of documented viable intra-uterine pregnancies (control group) between August 2009 and December 2016 at a private fertility clinic (clinique ovo, Montreal, Canada). The control group cases were selected based on a random number generator model on a year-to-year basis. Bivariate analysis was conducted to assess the effect of all collected variables on EP.

RESULTS

The two groups did not differ significantly in factors traditionally associated with EP (previous EP, endometriosis, tubal disease, history of pelvic infection, and abdominal surgery). Patients with EP were more likely to have had day 3 rather than a day 5 transfer (p = 0.001), had double rather than a single embryo transfer (p = 0.001), and finally were more likely to have had a difficult transfer (p = 0.004), independently of the use of a rigid catheter.

Progesterone level measured on the day before or on the day of ovulation trigger was not statistically different between the two groups (2.55 ng/ml for the study group vs. 2.52 ng/ml for the control group, p = 0.169).

	EP (n=29)	IUP* (n=79)	
	n (%)	n (%)	p value
History of PID	0 (0)	2 (2.5)	1.000
Endometriosis	0 (0)	5 (6.3)	0.321
Previous EP	2 (6.9)	1 (1.3)	0.175
Tubal disease	2 (6.9)	8 (10.1)	1.000
Major abdominal surgery	1 (3.4)	0 (0)	0.269
Difficult transfer	4 (13.8)	0 (0)	0.004
Use of rigid catheter	2 (6.9)	0 (0)	0.070
	Median (25th-75th centile)	Median (25th-75th centile)	p value
Age (years)	36 (31-38)	34 (31-37)	0.257
Day of transfer	3 (3-3)	3 (3-5)	0.001
Number of embryos transferred	1 (1-2)	1 (1-1)	0.001
Progesterone (ng/ml)	2.55 (2.15-4.14)	2.52 (2.00-2.98)	0.169

*IUP: intra-uterine pregnancies

CONCLUSIONS

No relationship between progesterone level and EP could be demonstrated in our study; which if reproduced in larger series could defy a classic theory about the hormonal etiology of EP, or simply change the focus into the role of estradiol- rather than progesterone- in tubal physiology and subsequent place of embryonic implantation.