EFFECT OF INTRA-UTERINE PLATELET-RICH PLASMA INFUSION IN PATIENTS WITH THIN ENDOMETRIUM PREPARED FOR FROZEN EMBRYO TRANSFER

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INTRODUCTION

Endometrium is one of the main factors in implantation and pregnancy. Pregnancy rate is increased with growing endometrial thickness. Most patients with the standard medical therapies reach the desired endometrial thickness (EMT) and small numbers of patients fail to reach the minimum EMT. The empirical preference for EMT for implantation is >7 mm.

Intrauterine infusion of platelet-rich plasma (PRP) is a new approach that has been suggested for the treatment of thin endometrium as it is widely used in various fields. PRP is blood plasma prepared from fresh whole blood that has been enriched with platelets. It contains several growth factors that stimulate proliferation and growth.

AIM OF THE WORK

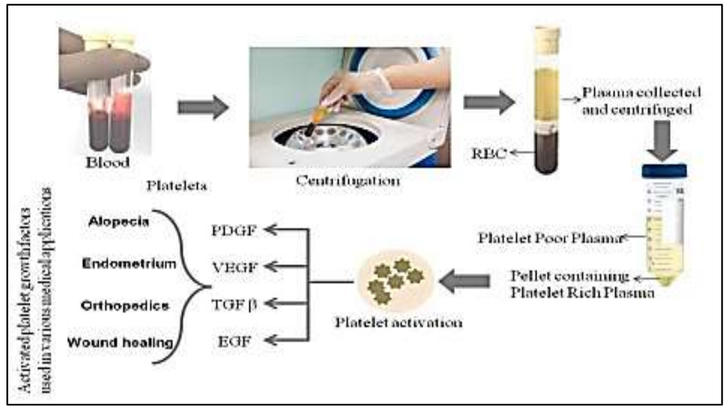
Aim of this work was to evaluate the effect of intra-uterine infusion of platelet-rich plasma (PRP) in frozen embryo transfer cycles: effect on the endometrial thickness and clinical pregnancy rates in women with refractory thin endometrium.

SUBJECT AND METHODS

Women who had a history of failed IVF cycles and refractory thin endometrium were enrolled in this study. The main inclusion criteria were EMT of ≤ 7 mm after more than 2 cycles of previous medical therapy for increasing the EMT. 26 women were enrolled in this study. The subjects were treated with intrauterine infusion of autologous PRP once or twice according to ultrasonographic measurements from menstrual cycle day 9 of their frozen-thawed embryo transfer (FET) cycle, and ET was performed 3 days after the final autologous PRP infusion. PRP was injected into the uterine cavity using IUI catheter within 1 h from completion of PRP preparation.

24 patients underwent FET, and 2 patients had still thin endometrium, so their cycles were cancelled. Ultrasonography was performed to measure the EMT on MCD 2, MCD 9 and every autologous PRP administration day.

The serum β-hCG level was measured from peripheral blood 2 weeks after ET.



RESULTS

This study showed that pre-PRP EMT ranged from 5.40 to 6.80 mm. While post-PRP EMT ranged from 5.50 to 8.30 mm.

There was a statistically significant increase in EMT after PRP infusion.

Clinical pregnancy rate was 45.8%, ongoing pregnancy rate was 37.5 %, and no one (0%) had ectopic pregnancy.

Table 1: Comparison between pre-PRP and post-PRP according to EMT

EMT (mm)	Pre-PRP	Post-PRP
Min. – Max.	5.40 - 6.80	5.50 - 8.30
Mean ± SD.	6.15 ± 0.38	7.49 ± 0.61
Median (IQR)	6.20 (5.90-6.50)	7.50 (7.30-7.90)

Table 2: Other studies that showed effect of intrauterine infusion of PRP in thin endometrium

Author, year	Population	Reproductive outcomes
Eftekhar et al. (2018)	Women with poor endometrial response to standard hormonal preparation (ET < 7 mm) in the 13th day of FET cycle.	PRP higher ET (0.001), implantation (P = 0.002) and pregnancy rate (P = 0.044).
Wang et al. (2018)	Patients with recurrent implantation failure due to suboptimal endometrial pattern, women with ≥ 2 canceled cycles due to thin endometrial lining.	Successful endometrial expansion after PRP (5.55 ± 0.71 mm vs 7.82 ± 1.04 mm, P < 0.001, for pre- and post - PRP respectively). Pregnancy was positive in 12 cases after PRP infusion (60%).
Kim et al. (2019)	Patients with history of ≥2 failed IVF cycles and refractory thin endometrium (< 7 mm).	PRP improved implantation, pregnancy and live birth rates in comparison to their previous cycles.
Chang et al. (2019)	Patients with thin endometrium < 7 mm and prior canceled FET.	PRP had higher ET and lower ancellation rate. Higher implantation and clinical pregnancy rate in favor of PRP (27.94% vs 11.67%, P<.05; 44.12% vs 20%, P< .05, respectively).

CONCLUSION

- PRP therapy is an effective therapy in patients with refractory thin endometrium. The endometrial thickness and the clinical pregnancy rates were statistically significant increase with intra-uterine infusion of PRP.