# #52 - One month vs. three months of androgen priming : does duration matter for IVF outcomes in poor responders?

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## INTRODUCTION

While most studies exploring transdermal testosterone (TT) in IVF protocols favor a short 21–30-day pre-treatment, the physiological rationale for extending androgen priming is compelling. Indeed, androgens facilitate the transition of follicles from dormant to growing at early phases of follicular developpment[1] and the whole process of folliculogenesis takes around 70 days[2], suggesting a potential benefit to longer exposure. However, real-world data comparing different TT durations remains limited and focused on shorter treatments.

## AIM

To evaluate whether a longer duration (≥3 months) of TT pre-treatment improves IVF outcomes compared to the conventional 1-month approach in poor responders.

## METHOD

In this retrospective cohort study, participants underwent an IVF cycle between March 2022 and December 2024.
Eligible patients were <43 years old, had an AMH ≤1.1 ng/mL, underwent antagonist or progestin-primed stimulation protocols with maximal gonadotropin dosing, and received either 1 month (n=142) or ≥3 months (n=121) of transdermal testosterone prior to ovarian stimulation.

All included patients received one pump (one metered dose) per day of transdermal Androgel® 2%, equivalent to 10 mg of testosterone applied daily (with an estimated 1.5 mg absorbed). Patients with protocol deviations or oocyte cryopreservation only were excluded.

Primary outcomes included number of retrieved oocytes and cancellation rates; secondary outcomes were MII oocytes, 2PN, embryos, euploid embryos, and pregnancy rates after the first embryo transfer.

Data distribution was assessed to guide the use of parametric or non-parametric tests. Proportions were compared using Chi-square or Fisher's exact tests, as appropriate. A p-value of < 0.05 was considered statistically significant.

## RESULTS

Table 1. Baseline characteristics

| | 1 Month n=142 | ≥ 3 Months n=121 | P-value |
|---|---|---|---|
| Age, years | 37.1 ± 3.7 38.1 (35.1, 40.1) | 37.0 ± 3.5 38.0 (34.6, 40.0) | 0.54 |
| Weight, kg | 69.2 ± 17.7 65.7 (59.0, 79.2) | 71.9 ± 19.1 70.0 (59.0, 82.0) | 0.28 |
| AMH, ng/ml | 0.62 ± 0.28 0.66 (0.40, 0.88) | 0.58 ± 0.32 0.61 (0.28, 0.87) | 0.31 |
| Infertility factor | | | 0.83 |
| Female | 96 (67.6%) | 80 (66.1%) | |
| Male | 5 (3.5%) | 7 (5.8%) | |
| Mixed | 36 (25.3%) | 29 (24.0%) | |
| Idiopathic | 5 (3.5%) | 5 (4.1%) | |
| Rank cycle | 1.5 ± 0.87 1.0 (1.0, 2.0) | 1.6 ± 0.90 1.0 (1.0, 2.0) | 0.22 |

- Baseline characteristics (age, AMH, weight, cycle rank) were similar between groups.

- Quantity-wise all outcome measures, including number of oocytes, MII, 2PN and usable blastocysts, showed a slight trend favoring the longer TT group. However, differences did not reach statistical significance, likely due to the smaller sample sizes beyond the oocyte retrieval stage.

Note: Data are expressed as mean ± SD and median (25th-75th percentile) or n (%)

Table 2. Stimulation outcomes

| | 1 Month n=116* | ≥ 3 Months n=95* | P-value |
|---|---|---|---|
| Retrieved oocytes | 6.3 ± 3.6 6.0 (4.0, 9.0) | 7.6 ± 4.8 6.0 (4.0, 10.0) | 0.18 |
| MII oocytes | 4.8 ± 2.9 4.5 (3.0, 6.0) | 5.6 ± 3.8 5.0 (3.0, 7.0) | 0.45 |
| 2PN | 3.4 ± 2.4 3.0 (2.0, 5.0) | 4.0 ± 3.1 4.0 (2.0, 5.0) | 0.35 |
| Usable blastocysts | 1.7 ± 1.5 1.0 (1.0, 2.7) | 2.0 ± 1.9 2.0 (1.0, 3.0) | 0.25 |
| Blastocysts / retrieved oocytes ratio | 193/729 (26.5%) | 192/721 (26.6%) | 0.95 |
| Patients with no usable blastocysts | 27 (23.3%) | 19 (20.0%) | 0.57 |

*Patients with cycle cancellation (n=26 in each group) were excluded

- The mean number of euploid embryos and the euploid-to-biopsied ratio tended to be higher in the ≥3 months groups, although statistical significance was not reached.

- Similarly, rates of positive βhCG and ongoing pregnancy were more favorable in the ≥3 months groups, but without reaching statistical significance.

Table 3. PGT-A outcomes

| | 1 month n=89 | ≥ 3 months n=76 | P-value |
|---|---|---|---|
| PGT-A* | 15 (17.0%) | 18 (24.7%) | 0.23 |
| Mean of biopsied embryos | 2.1 ± 1.2 2.0 (1.0, 3.0) | 2.2 ± 1.4 2.0 (1.0, 4.0) | 0.90 |
| Mean of euploids | 0.66 ± 0.5 1.0 (0.0, 1.0) | 0.78 ± 1.0 0.5 (0.0, 1.0) | 0.79 |
| Euploid embryos/biopsied embryos ratio | 10/31 (32.3%) | 14/40 (35.0%) | 0.81 |

*Only patients aged 35 years and older

Figure 1. Embryo transfer outcomes
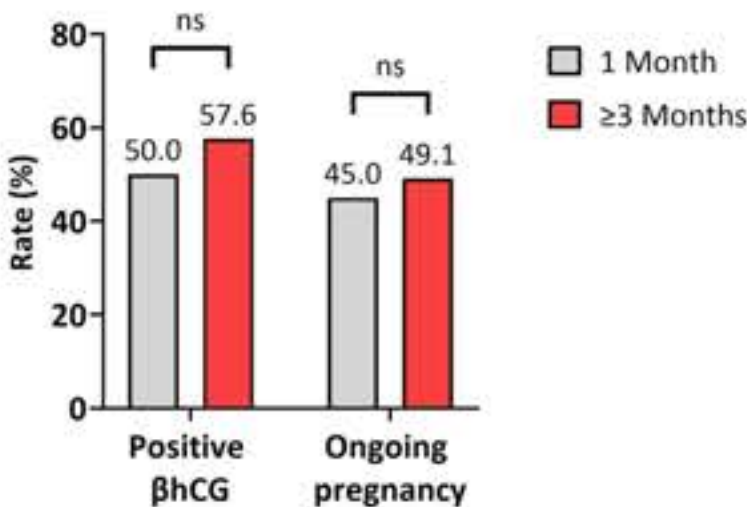


## CONCLUSIONS

Our findings suggest that extending transdermal testosterone pre-treatment to at least 3 months may enhance follicular recruitment in poor responders.

While trends toward slightly improved downstream IVF outcomes, including higher euploid-to-biopsied embryo ratio and more favorable pregnancy rates, are encouraging, statistical significance was not reached.

One limitation of our study is the relatively small sample size, underscoring the need for larger studies to confirm whether prolonged androgen priming can consistently translate into clinically meaningful improvements in stimulation outcomes, euploidy, and pregnancy rates.

## REFERENCES

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