

#62 - Comparison of Follitropin Delta and Follitropin Alfa in Combination with Menotropin (The BONANZA Study)

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INTRODUCTION

Ovarian stimulation is a key component of IVF treatment, aiming to optimize oocyte yield¹. However, the optimal gonadotropin regimen remains debated. Mixed protocols combining menotropin with different types of recombinant follitropin are commonly used², yet few studies offer direct comparative evidence among follitropin types.

AIM

This study aimed to compare the outcomes of two ovarian stimulation protocols, Follitropin Delta + Menotropin and Follitropin Alfa + Menotropin, to determine which approach yields better results in terms of:

- ovarian response
- pregnancy rates
- cost-effectiveness indicators

This will help to identify the protocol that offers optimal ovarian response while minimizing medication and economic burden and provides evidence-based guidance for clinical decision-making.

METHOD

- Design: Retrospective study
- Population: Propensity score matching was performed to ensure balanced group using age and AMH. 423 patients per group after matching who underwent ovarian stimulation between January 2018 and December 2024
- Protocols: Follitropin delta (Rekovele, RKV) or Follitropin alfa (Gonal-F, GNF) combined with Menotropin (Menopur, MNP). RKV initial dose was determined by AMH and weight-based algorithm with no dose adjustments. GNF initial dose was determined conventionally and can be adjusted based on the ovarian response.
- Inclusion: Only first stimulation cycles
- Pregnancy analysis: Based on outcome of the first embryo transfer only
- Statistical analysis: Normality was tested to choose parametric or non-parametric tests. Proportions were compared with Chi² or Fisher's exact test. Statistical significance was defined as p ≤ 0.05.

RESULTS

Table 1. Baseline characteristics after matching

	RKV + MNP n=423	GNF + MNP n=423	P-value
Age (years)	36.1 ± 4.5	36.3 ± 4.3	0.77
AMH (ng/mL)	36.4 (32.7, 40.1)	36.5 (33.2, 39.7)	0.81
	2.6 ± 2.2	2.7 ± 2.4	
	2.0 (1.3, 3.2)	2.1 (1.3, 3.3)	
Weight (kg)	75.2 ± 17.2	69.1 ± 15.5	<0.001
	73.0 (62.0, 85.0)	66.0 (59.0, 76.0)	

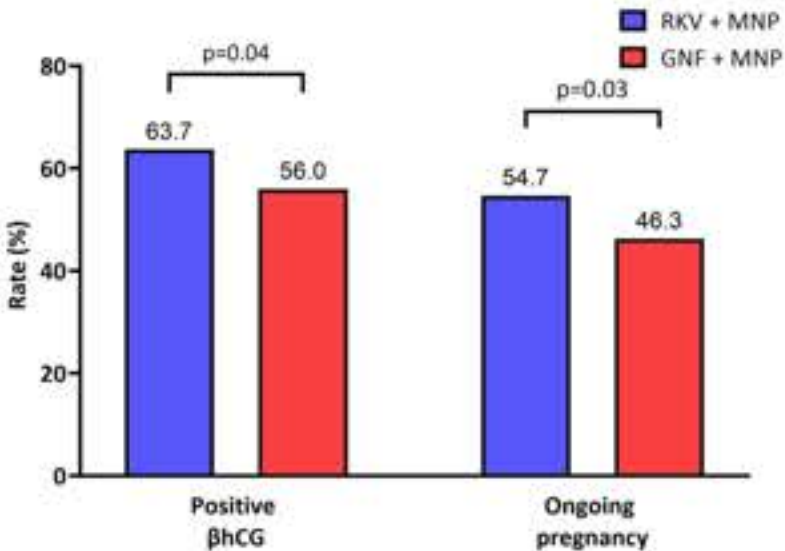


Figure 1. Pregnancy outcomes following the first embryo transfer

Table 2. Treatments characteristics, stimulation outcomes and cost-effectiveness indicators

	RKV + MNP n=423	GNF + MNP n=423	P-value
Treatment characteristics			
Duration of stimulation (days)	11.8 ± 1.3	12.0 ± 1.5	0.07
	12 (11.0, 13.0)	12.0 (11.0, 13.0)	
Total FSH dose: follitropin + MNP (IU)*	5127 ± 1321	4716 ± 1291	<0.001
	5280 (4349, 6240)	4950 (3750, 5500)	
Total cost: follitropin + MNP (\$CAD)	5041 ± 1280	4549 ± 1259	<0.001
	5181 (4310, 6123)	4725 (3600, 5318)	
Stimulation outcomes			
Follicles ≥14 mm (n)	12.0 ± 6.4	10.4 ± 5.4	<0.001
	11.0 (7.0, 16.0)	10.0 (6.0, 13.7)	
Retrieved oocytes (n)	16.4 ± 10.0	13.7 ± 8.4	<0.001
	15.0 (9.0, 22.0)	12.0 (7.0, 19.0)	
Mature oocytes (MII, n)	12.0 ± 7.9	9.8 ± 6.4	<0.001
	10.0 (6.0, 17.0)	9.0 (5.0, 14.0)	
Zygotes (2PN, n)	8.9 ± 6.1	7.3 ± 4.8	<0.001
	8.0 (4.0, 12.0)	6.0 (4.0, 10.0)	
Usable blastocysts** (n)	4.2 ± 3.7	3.3 ± 2.6	0.003
	3.0 (2.0, 6.0)	3.0 (1.0, 5.0)	
Blastocysts / retrieved oocytes ratio	1777/6955 (25.5%)	1391/5770 (24.1%)	0.06
Cost-effectiveness indicators			
FSH dose / usable blastocyst (IU)*	2013 ± 1801	2154 ± 1747	0.06
	1344 (720, 2640)	1465 (846, 2925)	
Cost / usable blastocyst (\$CAD)	1977 ± 1766	2078 ± 1688	0.14
	1319 (706, 2591)	1430 (828, 2779)	

- The two groups were comparable in terms of age and AMH
- MNP was used in both groups (constant) while different rFSH was prescribed (variable)
- Number of follicles ≥ 14 mm, 2PN, MII and usable blastocysts were significantly higher in RKV + MNP group
- Significantly higher pregnancy and ongoing pregnancy rates were observed in RKV + MNP group
- FSH dose and cost per usable blastocyst were lower with RKV + MNP mixed protocol despite the higher total dose and cost

Notes: Data are expressed as mean ± SD and median (25th-75th percentile) or n (%)
*RKV dose converted to IU using equivalence 10 µg = 150 IU
**Usable blastocysts: blastocysts considered suitable for transfer and/or cryopreservation

CONCLUSIONS

- The mixed protocol of RKV + MNP resulted in **superior embryological and clinical outcomes**.
- Patients in this group achieved **significantly higher number of usable blastocysts and pregnancy rates** compared to GNF + MNP.
- Cost per usable blastocyst was **\$111 less** with RKV + MNP.
- These findings demonstrate that RKV + MNP protocol offers **superior efficacy and cost-effectiveness**, supporting its value in ovarian stimulation.

STRENGTHS AND LIMITATIONS

Although limited by its retrospective design, the study is strengthened by the large sample size and propensity matching between the two groups. A prospective randomized controlled trial would be recommended to confirm these findings.

REFERENCES

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