

# CHARACTERIZING HCG LEVELS AT DIFFERENT TIME POINTS DURING OVARIAN STIMULATION FOR ART USING MONO-HP-HMG AND MIXED FSH-HP-HMG.



Fady I. Sharara, MD (1,2), Megan Goodwin (1). (1) Virginia Center for Reproductive Medicine, Reston, VA, 2) OB/GYN, George Washington University

## ABSTRACT

HP-hMG (Menopur®) has 75IU of FSH and 75IU of hCG-derived LH activity. It contains 9.9 IU/vial of hCG and 0.4 IU/vial of LH, making > 90% of its LH activity hCG-derived. Two previous studies characterized serum hCG levels during ovarian stimulation (Platteau 2004, Arce 2013). In both, serum hCG was assessed on day 6 and a favorable impact on pregnancy rate was noted. In the study by Platteau, the mean level of hCG was  $1.4 \pm 0.5$  IU/L on day 6, and the hCG levels on the day of hCG administration was not reported. However, patient characteristics were not evaluated to see if any could affect these levels, specifically whether BMI or amount of gonadotropin use affected hCG levels.

## OBJECTIVES

We retrospectively evaluated  $\beta$ -hCG levels across different time points during ovarian stimulation in our program, specifically on days 5-6, 7-8, and on the day of hCG administration in cycles using mixed FSH/hMG and those using mono-hMG.

## METHODS

238 cycles using HP-hMG were evaluated: 157 were HP-hMG only cycles (mono hMG group), and 81 were mixed FSH-HP-hMG cycles at 1:1 ratio (mixed group). The FSH used was uFSH (Bravelle®) or recFSH (Gonal-F® or Follistim®). All patients received HP-hMG (Menopur®) from day one of stimulation.

hCG levels were assessed on days 5-6, days 7-8, and again on the day of hCG administration.

We also correlated hCG levels with the following parameters: age, day 3 FSH, day 3  $E_2$ , AMH, Vitamin D, BMI, days of stimulation, peak  $E_2$ , peak  $P_4$ , and total gonadotropin IU use.

|          | Day 5-6        | Day 7-8        | Day of hCG      | P       |
|----------|----------------|----------------|-----------------|---------|
| Mono-hMG | $3.4 \pm 1.4$  | $3.88 \pm 1.6$ | $3.7 \pm 1.5$   | <0.0001 |
| FSH/HMG  | $1.6 \pm 0.87$ | $2.14 \pm 2.5$ | $1.98 \pm 0.92$ | <0.0001 |

## RESULTS

hCG levels were detected **at all time points assessed and increased steadily** during ovarian stimulation in both groups, but were **significantly higher in the mono group** compared to the mixed group across all time points assessed and they plateau by the day of hCG administration:  $3.4 \pm 1.4$  IU/L vs  $1.6 \pm 0.87$  IU/L on day 5-6 ( $P < 0.0001$ ),  $3.88 \pm 1.6$  IU/L vs  $2.14 \pm 2.5$  IU/L on days 7-8 ( $P < 0.0001$ ), and  $3.7 \pm 1.5$  IU/L vs  $1.98 \pm 0.92$  IU/L on day of hCG administration ( $P < 0.0001$ ).

Using multivariate analysis, we could not find any correlations between hCG levels at the studied time points and any patient parameters. Specifically, neither BMI, peak  $E_2$ , nor gonadotropin dose affected hCG levels.

## CONCLUSIONS

This is the first study evaluating hCG levels in HP-hMG (Menopur®) cycles during ovarian stimulation in both mono-hMG and mixed FSH-HP-hMG cycles across several time points. hCG levels are detected as early as days 5-6 of stimulation, and increased steadily across the cycle to a peak on the day of hCG administration. The lack of correlation with any tested parameter however implies that other factors, such as renal clearance, are most likely the cause for inter-patient variability.

Platteau P Fertil Steril. 2004; 81(5): 1401-1404.  
Arce JC Gynecol Endocrinol. 2013; 29(1):46-50.