Direct Correlation between β-hCG levels prior to Oocyte Retrieval and Blastocysts Formation.

How Come We All Missed It?
Nothing to Declare? 

YES!

With the new executive order. The IRS give me 42.3% back of my travel expenses.
• Thousands of studies addressing multiple combinations of gonadotropins
• Handful of studies about isolated effect of hCG.
• Decrease dose of hCG trigger, (10,000, 5,000 or 2,500), dose not affect pregnancy (Efstraction et al 2007)
• Patients BMI and number of follicles >14mm are the only predictors for hCG scum level (Detti et al 2007)
• Decrease pregnancy rate of 1% for every increase of BMI by 5 point. In egg donation, recipient’s BMI <40 have no effect (SART registries 2008-2010)

• Serum β-hCG level correlate to pregnancy and delivery but not to the number of good embryos. (day 3 embryos)
• Negative correlation of patients BMI with serum β-hCG level.
• β-hCG value might be a new therapeutic target for better IVF outcome.
Methods

- Retrospective review of 712 IVF cycles
- Patients age < 40
- Data collected, BMI, number of retrieved oocytes, egg maturity, blastocysts formation rates & serum β-hCG 12-14 hours after injection
- 3 BMI groups, normal <25, overweight 25-29.9 and obese > 30
- Mean β-hCG and one standard deviation above or below the mean was calculated for each BMI group
- Serum β-hCG level was correlated to the data
Pharmacokinetics of Human Chorionic Gonadotropins Injection in Obese and Normal-Weight Women

Divya et Al. 2014
β-hCG affects blastocysts formation in young age (<39yrs) patients’ IVF cycles

**β-hCG (mIU/ml)**
- Low (<63), n=42
- Medium (63-243), n=427
- High (>243), n=243
% of cycles with low $\beta$-hCG / total cycles
β-hCG affects blastocysts formation in IVF cycles of youngest (<35yrs) patients with different BMI.
Triggering with 20,000 IU of β-hCG improves blastocysts formation in repeated IVF cycles of patients with high BMI (>= .30).
Triggering with 20,000 IU of β-hCG improves blastocysts formation in repeated IVF cycles of patients with high BMI (≥30).
Triggering with 20,000 IU of β-hCG improves blastocysts formation in repeated IVF cycles of patients with high BMI (>= 30).
Triggering with 20,000 IU of β-hCG improves blastocyst formation in repeated IVF cycles of patients with low BMI (<= 25.5).
Triggering with 20,000 IU of β-hCG improves blastocysts formation in repeated IVF cycles of patients with low BMI (<= 25.5).
Triggering with 20,000 IU of β-hCG improves blastocysts formation in repeated IVF cycles of patients with low BMI (<= 25.5).
Takeaways

• Serum $\beta$-hCG on the day before retrieval is a critical clinical parameter in IVF cycle
• Low $\beta$-hCG happened at any BMI value in the same rate and have bad outcome
• Increasing the dosage of HCG treatment for selected patients improve outcome
• Treating high BMI patients with higher dosage of HCG improve their results to the level of normal BMI patients
Takeaways

*HCG value after trigger might be a new therapeutic target for better IVF treatment outcome.

*β-hCG level should be a tested parameter in IVF study for better understanding of the results.

*Prospective study is needed to establish optimal level of HCG and therapeutic approach to correct and rescue cycle with low β-hCG.