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Title:

MAX DAY 3 FSH PREDICTS REPRODUCTIVE OUTCOME BETTER THAN SAME CYCLE FSH LEVELS: WAITING FOR A "GOOD MONTH" CONVEYS MINIMAL BENEFIT

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Objective:
Follicle stimulation hormone(FSH) remains a measurement for predicting ovarian reserve, along with forming vaginal egg retrieval(VOR) expectations. Patients repeating an IVF cycle have been discouraged from proceeding if Day 3(D3) FSH levels are elevated; encouraged to skip a month and wait for a lower FSH level ("Good Month") to improve outcome. Also, whether patients with adverse maximum(Max) FSH(≥13mIU/ml)will have better retrieval outcomes in latter cycles if levels decrease is unknown. Our study seeks to determine the utility of cycle-specific and Max FSH values in predicting VOR outcomes of multiple IVF cycles patients.

Design:
Retrospective analysis

Materials and Methods:
Patients (n=9176) who completed IVF cycles (n=15669)(2002-2014). FSH with a same-day E2 >100 pg/mL were excluded. The power of Max FSH or D3 FSH to predict cycle cancellation using a logistic regression model scored with a receiver operating characteristic (ROC) curve was assessed. For completed cycles, a generalized linear model predicting matured oocytes (MII) counts by Max FSH and D3 FSH after considering residual deviance from age, previous E2 surge level and previous MII count was created.

Results:
Max FSH up to and including the current cycle D3 predicted a cancellation more than Max FSH prior to D3 or D3 FSH (AUC of 0.72, 0.71 and 0.61, respectively). In prior cycle MII count, age, peak E2 levels, and Max FSH; D3 FSH explained the remaining MII count deviance more than Max FSH prior to or in the current D3 FSH (290/4948 vs 229/4948 or 134/4948, $p<0.05$). In residual deviance from the optimal FSH parameter (Max FSH up to D3), current cycle D3 FSH explained 27/4659 of the residual deviance ($p<0.01$). Max FSH ≥13 mIU/mL had significantly fewer retrieved MIIs (n=5.69) than those with <13

mIU/mL (n=11.57). Inclusion of D3 FSH significantly improved MII count prediction after accounting for residual deviance from previous MII count, age and previous peak E2.

Conclusions:

Our study demonstrated that Max FSH levels better predict VOR outcomes than D3 FSH. In multiple cycle patients with prior elevated Max FSH>13 mIU/mL, we showed these patients associated with a retrieval of approximately one less MII if their D3 FSH remained >13 mIU/ml when compared with those with a D3 FSH ≤13 mIU/ml. We predicted a modest increase in VOR suggesting a delay in IVF cycle until a "Good Month" does not enhance reproductive outcome.

Support:

None.