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PREDICTION OF OVARIAN RESPONSE WITH AN AUTOMATED AMH ASSAY (ELECSYS_) IN GnRH ANTAGONIST CYCLES.

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OBJECTIVE: To define the predictive capability of ovarian response of an automated AMH assay (Elecsys_) in GnRH antagonist cycles in unselected population.

DESIGN: Single center cohort study including all ovarian stimulation cycles performed with a GnRH antagonist protocol between January 2015 and January 2017, in women in which serum AMH was determined within 6 months before stimulation with the Elecsys_ automated assay.

MATERIALS AND METHODS: A cohort of 1248 women aged 18-48, undergoing 1448 ovarian stimulation cycles for IVF (n¼1119), fertility preservation (n¼252) or oocyte donation (n¼77) in a private infertility center. SerumAMHwas determined in house with a fully-automated platform based AMH assay (Elecsys_) within 6 months before treatment. Ovarian stimulation was performed in all cases with a GnRH antagonist protocol, and a customized dose according to doctor's judgment of recombinant FSH, HMG, or a combination of both.

RESULTS: Patients' age was 36.4_5.0 and the mean ovarian response was 11.0_5.0 oocytes. From 1448 cycles, 270 (18.6%) were low responders (0-3 oocytes), 539 (37.2%) were suboptimal (4-9 oocytes), 341 (23.5%) had an optimal response (10-15 oocytes), and 298 (20.6%) were high responders (>15 oocytes). AMH was correlated with the number of oocytes retrieved (spearman rho ¼ 0.74). The ROC curve analysis of AMH to exclude each ovarian response category showed an AUC (95% CI) of: 0.85 (0.83-0.88) for low; 0.67 (0.64-0.69) for suboptimal; 0.66 (0.63-0.69) for optimal, and 0.89 (0.87-0.91) for high response (p<0.001 for all categories). The median (Interquartile range) of AMH for each ovarian response category were: 3.6 (1.7-6.5); 7.8 (4.9-12.1); 15.2 (9.5-21.8); 27.6 (18.8-41.6) pMol/L for low, suboptimal, optimal and high response respectively. Optimal AMH cutpoints for excluding a low, suboptimal or excessive response were 6.4, 13.4 and 14.2 pMol/l respectively. The multivariable regression analysis showed that serum AMH by itself explained 47% (R2¼0.470) of the variation of ovarian response. The addition of age, body weight and total dose of gonadotrophins showed a limited impact on the model, as increased this value to 50.9% (R2¼0.509)

CONCLUSIONS: The assay shows high capability for the exclusion of a low (%3 oocytes) and high (>15) ovarian response, and good for suboptimal (4-9) and optimal

(10-15) responses. Serum AMH determination with an automated assay allows physicians to counsel properly to patients when planning to undergo ovarian stimulation, as the number of estimated oocytes to be retrieved can be defined with high precision. Decisions regarding prognosis and/or gonadotrophins doses can be based on these findings