Physician versus AI: Comparison of REI to AI Oocyte Predictions in 177 In Vitro Fertilization Cycles

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Objective: To analyze the predictive accuracy of four REI's compared with Cycle Clarity AI mature oocyte prediction algorithm at an individual and daily laboratory level.

Materials and Methods: Patients at Coastal Fertility Specialists underwent 177 conventional ART ovarian stimulation with gonadotropins, GnRH antagonists, and GnRH agonist triggers. All ultrasound follicular monitoring was performed using only Cycle Clarity without manual measurements. Four board certified REI's predicted the total number of mature oocytes based on the last follicular ultrasound, estradiol and progesterone concentrations within 4 days of retrieval. Cycle Clarity predicted the number of mature oocytes based solely on the two dimensional follicular sizes and follicular growth rates prior to agonist trigger.

Result(s): 177 patients underwent 177 ART cycles resulting in 3,866 measured follicles greater than 10 mm in average diameter. Results are located in table 1. REI's under predicted the number of mature oocytes by 4.85% while AI over predicted the number of mature oocytes by 0.71%. At the daily embryology laboratory level the AI algorithm was accurate within 10 mature oocytes for the day in 76% of the laboratory days and within ten 2PN embryos 82% of the laboratory days.

Table 1:

	Actual	REI Pred	AI Pred
Mature Oocytes	2,227	2,120	2,242
Average Mature Oocytes	12.58	11.97	12.67
% diff from actual		4.85%	0.71%

Conclusion(s): AI analyzed ovarian ultrasounds using only follicular size and growth rates can be utilized to accurately predict the number of mature oocytes per retrieval and per day in the embryology laboratory to help with workload estimation.

Impact Statement: AI was as accurate as REI's in predicting the number of mature oocytes in an IVF cycle.

References: None