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TITLE

EARLY GNRH ANTAGONIST ADMINISTRATION IMPROVES OOCYTE AND EMBRYO QUALITY AND REDUCES EMBRYO CLEAVAGE ERRORS

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ABSTRACT

CONTEXT: Single site fertility clinic in Beirut, Lebanon

OBJECTIVE: To study the impact of a short and early Gonadotropin Releasing Hormone (GnRH) antagonist administration on oocyte quality and early embryo morpho-kinetics.

METHODS: Retrospective analysis of collected database.

PATIENT(S): A total of 334 infertile couples underwent an intra-cytoplasmic sperm injection (ICSI) cycle. 258 patients received the “conventional” antagonist protocol and 76 received the “Sandwich” antagonist protocol that consists in the administration of GnRH antagonist for 3 days before starting ovarian stimulation.

MAIN OUTCOME MEASURE(S): Oocyte and embryo morphological characteristics as well as embryo cleavage errors recurrence were analyzed using the Embryo-viewer Software (Vitrolife) to assess their quality.

RESULT(S): The number of oocytes (8.3 ± 6.22 vs. 6.9 ± 4.5 ; $P < 0.05$) and 2PN embryos obtained (4 ± 2.8 vs. 3.04 ± 2.5 ; $P = 0.006$) were significantly higher in the Sandwich protocol group. The Oocytes in the control group had a significantly larger first polar body (368 ± 121.7 vs. 335 ± 102.9 ; $P = 0.0253$), a higher percentage of cytoplasmic granularity (95.4% vs. 36.6%; $P < 0.0001$) and PVS debris (47.1% vs. 34.4%; $P = 0.04$) compared to the oocytes in the study group.

99 and 271 embryos, from study and control group respectively, were assessed using time-lapse monitoring. The synchronization of the second cleavage rate (33.7% vs. 15.4%; $P = 0.0027$) and the blastulation rate ($68.75\% \pm 32.8\%$ vs. $42.11\% \pm 32.54\%$; $P = 0.0005$) were significantly higher in the Sandwich protocol group. Embryo cleavage errors (4.04% vs. 15.9%; $P = 0.0014$) were significantly reduced in the Sandwich protocol group.

CONCLUSION: The administration of GnRH antagonist for 3 days before starting ovarian stimulation significantly enhances oocyte and embryo quality and reduces the recurrence of embryo cleavage errors.

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