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Are the outcomes of assisted reproduction technologies affected by seasonal changes?

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Introduction: Several epidemiological studies noted a variation in natural conception and birth rates not only in animals but also in humans. The existence of a seasonal influence on the outcome of human assisted reproduction technologies is still debated. According to conflicting data, we aimed to investigate whether the outcomes of intracytoplasmic sperm injection (ICSI) are affected by seasonal changes or not.

Methods: In a retrospective cohort study, a total of 3670 patients undergoing their first ICSI between the years 2011 and 2015 were divided into four season groups according to the date of beginning of stimulation. The mean of retrieved oocytes, embryo transferred and MII oocytes and percentage of fertilization, implantation, and pregnancy rates were compared among these groups and the influence of each season on these parameters was evaluated. Data analysis was performed using SPSS version 21. Chi-square test and one way analysis of variance (ANOVA) were used for statistical analysis and P value<0.05 was considered significant.

Results: The women were in average age of 34.99 ± 6.55 years. 76 % of them had primary infertility and the rest had secondary infertility. The mean duration of infertility was 6.11 ± 5.34 years. The indications for treatment were female factor, male factor, both male and female factors and unexplained in 44.15%, 37.15%, 10.05% and 8.65%, respectively. The percentage of pregnancy rate was significantly higher during summer than other seasons. (Spring: 36.9%, summer: 44.5%, fall: 38.3, winter: 43.9%, P=0.001). The percentage of implantation rate was significantly higher during summer than other seasons (P=0.0001). There wasn't any statistically significant difference in the groups in terms of fertilization rate and embryo transferred. The mean of retrieved oocytes and MII oocytes varied significantly within the different seasons and was highest in summer (P=0.004 and P=0.015, respectively).

Conclusion: Our study demonstrated statistically significant differences in ICSI outcomes such as pregnancy rate, implantation rate, retrieved oocytes and MII oocytes according to season and we saw better results in summer. Therefore a change of routine fertility treatments concerning the season should be taken into consideration.

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