

INTRODUCTION

Low fertilization rate is a threat to poor responder patients. Optimization of fertilization need to be done to achieve the optimal number of embryos. Several methods have been done and one of which is by viewing the position of meiotic spindle in oocytes. Meiotic spindle positions may be used to predict the quality of oocytes. Some studies stated that oocyte with abnormal meiotic spindle has a lower fertilization rate and poorer developmental potential. This study aims to analyze the relationship between spindle position and embryonic development after ICSI.

MATERIALS AND METHODS

A retrospective analytical study was conducted in 44 women who met the Bologna criteria and underwent IVF-ICSI cycles in Halim Fertility Center, Indonesia from January-November 2019. After retrieval, oocytes were assessed for maturation (MII). The number of metaphase II oocytes were then divided based on the location of the spindle prior to ICSI, group 1 with aligned spindle and group 2 with misaligned spindle. The outcomes assessed were fertilization rate and embryo cleavage rate. Fertilization check was assessed 17±1h and cleavage check was assessed 68±1h after ICSI.

RESULTS AND DISCUSSION

Based on Table 1 below, group 1 consisted of 67 oocytes with aligned spindle and group 2 consisted of 78 oocytes with misaligned spindle. The mean age of the women was 36.43±3.17. The fertilization rate between group 1 and group 2 were 59.09±43.46 and 37.61±42.31, respectively. The cleavage rate between group 1 and group 2 were 67.04±46.93 and 50.00±50.57, respectively. The result showed no significant difference in fertilization rate (p=0.067) and cleavage rate (p=0.190) between the two groups, but group 1 showed a higher fertilization and cleavage rate than group 2.

Table 1. Distribution of parameters between two groups

Parameter	Aligned Spindle (n=67)	Misaligned spindle (n=78)	p value
Number of Mature Oocytes (MII; mean±SD)	1.52±1.33	1.77±1.93	
Fertilization Rate (mean±SD)	59.09±43.46	37.61±42.31	0.067
Cleavage Rate (mean±SD)	67.04±46.93	50.00±50.57	0.190

Cohen et al. (2004) assumed the fertilization and cleavage rate of oocyte with aligned spindle was higher but not statistically significant compared to oocyte with misaligned spindle. Woodward et al. (2008) and Moon et al. (2003) mentioned that spindle position did not significantly affect fertilization or embryonic quality. In contrast, other studies have shown that fertilization rates were significantly higher in oocytes with aligned spindle than oocytes with misaligned spindle (Kilani *et al.*, 2011). The disparity may be explained by the wide variety of embryo quality classification systems or because of the small number of samples.

CONCLUSION

Viewing the meiotic spindle position prior to ICSI may increase the fertilization and embryo cleavage rate in poor responder patients, although it is not significant.

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