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First clinical outcomes after personalized embryo transfer using the new endometrial receptivity test in recurrent implantation failure patients

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Introduction

Lack of synchronization between an embryo and the timing of endometrial receptivity is thought to be a cause of RIF. Therefore, correctly identifying the window of implantation (WOI) is essential for maximizing the effectiveness of assisted reproduction treatments.

Objective

While the widespread endometrial receptivity assay (ERA) uses microarray analysis to determine the transcriptomic profile of 238 genes, the ERPeak[SM] test analyses 48 genes by RT-qPCR, a methodology that has been demonstrated to have the highest sensitivity, widest dynamic range and least bias for gene expression analysis. This is the first report of clinical outcomes using ERPeak[SM] testing for RIF patients.

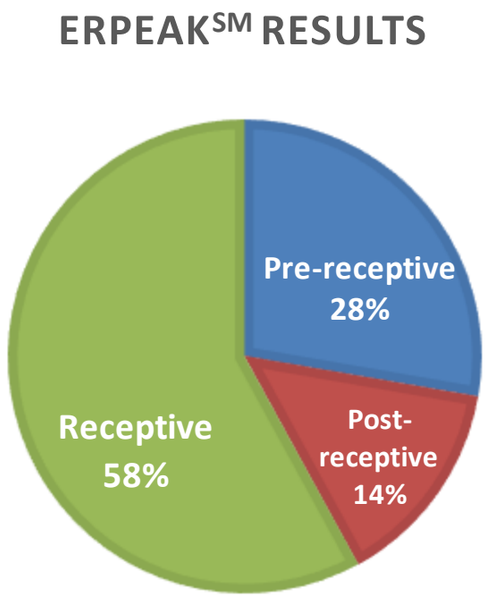
Materials & Methods

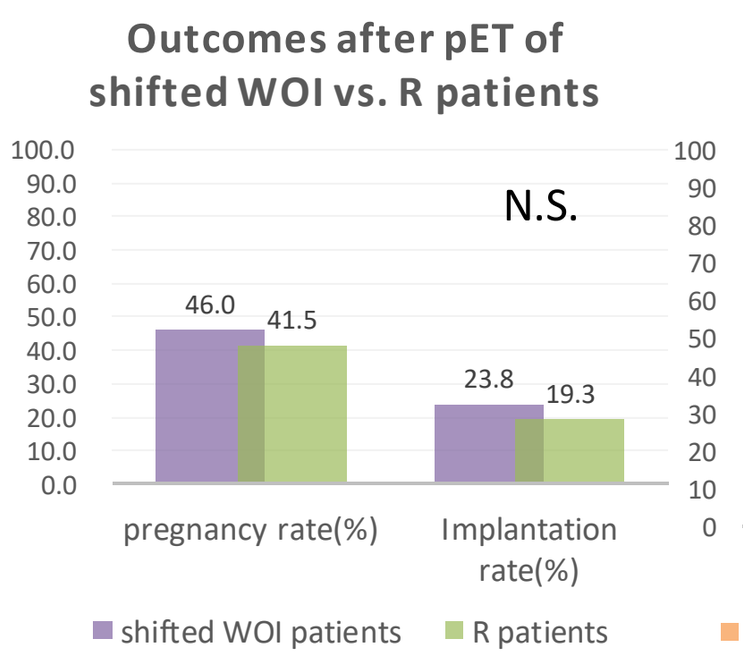
A retrospective review was performed for 137 patients who underwent ERPeak[SM] testing in our clinic between April and October 2019. A total of 119 patients under 45 years old, who had 2 or more failed embryo transfers and underwent personalized embryo transfer (pET) after ERPeak[SM] testing, participated in this study. A hormone replacement cycle had been performed for all patients. The first day of progesterone administration was defined as P+0. An endometrial biopsy was performed on day P+5 in an HRT cycle. After the ERPeak[SM] test result was given as receptive, pre-receptive or post-receptive, pET was performed in a subsequent cycle on the day where the ERPeak[SM] test indicated optimal receptivity.

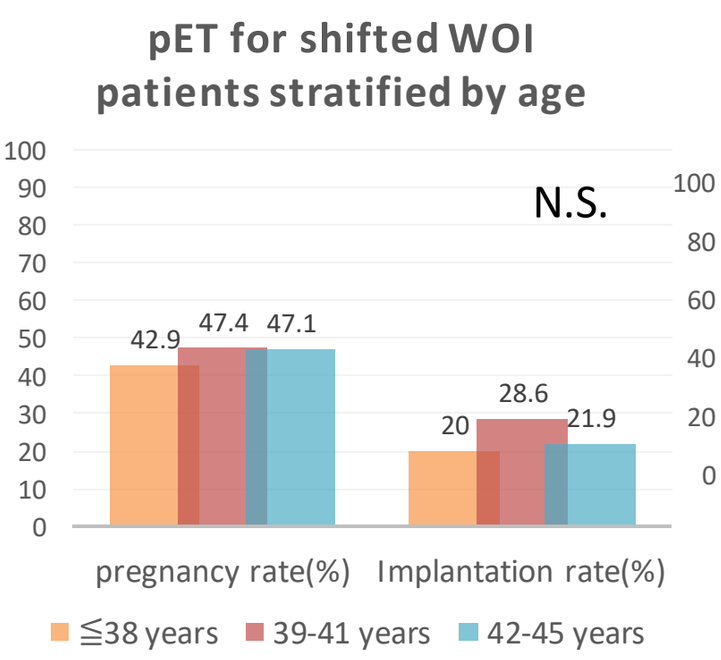
- In receptive cases, we also considered embryonic developmental speed to set the day of transfer: blastocyst grade 3,4,5 and 6 were transferred on day P+5, P+5.5, P+6.0 and P+6.5, respectively.

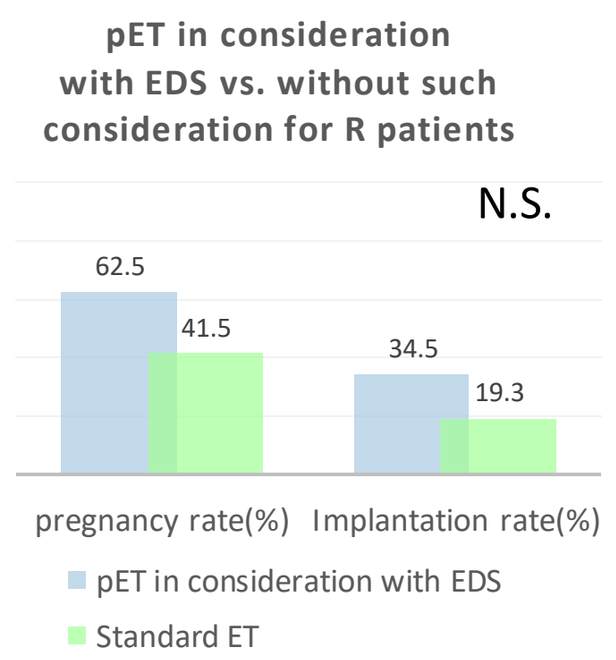
Results

- Of 119 RIF patients (average age, 38.8 years), ERPeak[SM] testing showed a shifted WOI result in 50 patients (42.0%) and a receptive (R) result in 69 patients (58.0%). In the shifted WOI group, 66.0% (33/50) indicated a pre-receptive state and 34.0% (17/50) resulted in post-receptive state.
- After pET for shifted WOI patients, we found that the pregnancy rate and implantation rate were similar between shifted WOI and R patients (46.0% vs. 41.5% and 23.8% vs. 19.3%, respectively), which is consistent with previous studies of pET based on the ERA test.
- pET for shifted WOI patients showed similar pregnancy rate (42.9%, 47.4% and 47.1%) and implantation rate (20.0%, 28.6% and 21.9%) stratified by patients' age (≦38, 39-41, 42-45 years old), respectively.
- Among R patients, 16 patients received pET in consideration with embryonic developmental speed (EDS) and 53 patients without such consideration. the pregnancy rate and implantation rate of the former group were higher (62.5% vs. 41.5% and 34.5% vs. 19.3%) compared to the latter, although differences were not statistically significant.









Conclusions

- A shifted WOI detected by ERPeak[SM] was frequently observed in RIF patients. pET for shifted WOI patients after ERPeak[SM] testing was consistent with ERA for pregnancy outcomes regardless of patients' age.
- pET for R patients in consideration with embryonic developmental speed may also improve pregnancy outcomes.

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