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LETTER TO EDITOR

Endometrial receptivity array for individualized determination of endometrial receptivity

Sir,

I read the article 'Endometrial thickness on the day of embryo transfer is a poor predictor of IVF treatment outcome' by Griesinger and colleagues with interest (Griesinger *et al*., 2018). I want to congratulate the authors for the excellent article and make some remarks. I concur with the result of the article that endometrial thickness (EMT) is a poor predictor of IVF outcome because, in essence, EMT is a tool to determine endometrial receptivity to help decide embryo transfer (ET). The determination of endometrial thickness as a quantitative measurement of endometrial receptivity has been a favored option because of its simplistic non-invasive nature and not demanding any advanced machinery. While an increased EMT does show a trend towards improved implantation rates, pregnancies have been reported in EMT less than 7 mm. This does not seem surprising as receptivity is determined by a number of factors contributing to the endometrial milieu. Thus, using EMT to determine whether ET needs to be done, although practical, does not seem to equate to the best predictability. We are currently ushering in an era of individualized treatment, which calls for customization of therapeutic options. In keeping with the trend, ERA (endometrial receptivity array) seems to be gaining traction. An ERA is a customized expression microarray that identifies the transcriptomic signature of the window of implantation (WOI) (Miravet-Valenciano *et al*. 2015). It determines endometrial receptivity by comparing the transcriptomic profile of the test sample to natural or hormone replacement cycle (Miravet-Valenciano *et al*. 2015). It identifies 238 genes and is fed to a computational predictor which determines the receptive period regardless of endometrial thickness (Mahajan, 2015; Miravet-Valenciano *et al*. 2015). Transcriptomics is the study of gene expression, and during the receptive phase, there is a receptor awakening causing upregulation of gene expression (Mahajan, 2015). It is also an excellent diagnostic test because it has good sensitivity and specificity of 0.99758 and 0.8857, respectively (Díaz-Gimeno *et al*., 2013). It was also affirmed that it has less intraobserver variability and is highly reproducible i.e. does not change for 1–2 years. Mahajan *et al*. in their study found that 75% of the patients with EMT <6 mm had a receptive endometrium and a pregnancy rate of 66.7% was achieved in this group (Mahajan, 2015). ERA has also given an insight into the effect of COS (controlled ovarian stimulation) on the WOI, which was found to be defective (Haouzi *et al*., 2009). Also, WOI of implantation was found to be displaced in a third of the cases of repeated implantation failure(RIF), which shows that synchronization of embryo development and endometrial growth could not be accomplished just impeding embryo adhesion (Ruiz-Alonso *et al*. (2013). Ruiz-Alonso *et al*. (2013) first coined the term pET (personalized embryo transfer) (Ruiz-Alonso *et al*. (2013) which probably holds the key to effectively treating a significant number of cases of infertility: those with adenomyosis, endometriosis and chronic endometritis (because of altered ER) (Mahajan, 2015), thin endometrium and RIF and even those undergoing COS. Determining the individualized receptive window could prevent embryo wastage and the need for multiple IVF cycles, thus averting the considerable financial and psychological burden that comes along with it.

Conflict of interest

None declared.

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