



Lack of evidence to support the superiority of TLI over conventional morphology to select among euploid embryos determined by PGT-A

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Dear Editor:

Screening for a highest-quality embryo is an important condition for in vitro fertilization (IVF) to achieve a healthy singleton pregnancy. Many new methods and technologies are constantly trying to meet this demand. Time-lapse imaging (TLI) is a new technology widely applied in recent years. It allows continuous observation of embryos in situ and objectively acquires abundant embryonic development kinetic parameters. However, the effectiveness of TLI in assisted reproduction has been controversial, and we are concerned that there are still many issues worthy of further exploration.

Rocafort et al. [1] combines time-lapse imaging system, preimplantation genetic testing (PGT), and traditional morphological grading to optimize embryo selection methods, providing more references for selecting the best-development embryo and singleton embryo transfer (< 35 years old). However, the criteria for screening embryos based on morphology are controversial, and the classification is not accurate enough. More importantly, assigning BA and AB to a same group may not be appropriate, which may affect the quality of the embryos selected for transplantation.

A study with large sample conducted by Wang et al. [2] showed that trophectoderm (TE) grade is a good predictor of euploid embryos. But according to another large sample euploid blastocysts performed by Nazem et al. [3], there was no difference in the various pregnancy outcomes of blastocysts with a TE grade of A or B (inferred from the literature); then, inner cell mass (ICM) became a better predictor. This indicates that when transplanting euploid embryos, the grade of AB should be preferred over the grade of BA. Therefore, it may

not be appropriate to consider the grade of AB and BA as equivalent in the study of Rocafort. In addition, the expansion of blastocyst may be an important factor influencing pregnancy outcomes; expansion grade of 4 or 5 may result in better ongoing pregnancy and live birth rates [3].

Finally, Rocafort et al. [1] used TLI to provide developmental time of 2–3 cells and 3–4 cells as an adjunct to embryo screening. These time parameters are closely related to the speed of blastocyst formation and ultimately affect the date of blastocyst biopsy. Studies have shown that faster-developing euploid blastocysts biopsied on day 5 have a better implantation rate (IR) or live birth rate (LBR) compared with that slower counterparts biopsied on day 6 [4, 5]. The same finding was found in Rocafort et al. [1], which is consistent with other literature. That means the biopsy day reflects the overall developmental speed of the embryo and contains some information that reflects the early developmental speed. Therefore, when comparing the pregnancy outcomes of the two groups, the same biopsy day should be the premise. Otherwise, it will potentially expand the probability of selecting the day 5 biopsy embryo in the TLI group. In contrast, the control group only referenced the best-developed embryos of 2–3 days when the high-quality blastocysts were difficult to choose, which could not represent the developmental speed of the embryos, and reduced the probability of selecting the day 5 biopsy embryos compared with the TLI group.

If all of the above factors are included in the final selection of the embryo, it could be expected that the quality of transplanted embryos in the control group will be significantly improved, and whether the results are still statistically different requires additional analysis. One more thing, women aged ≥ 35 years had not been included by Rocafort, which means that even without considering the above issues, the conclusions of the study are still limited. We believe that advanced women deserve more attention as their demand for assisted reproduction is more urgent than younger ones.

In conclusion, there is still lack of evidence to support the superiority of TLI over conventional morphology to select among euploid embryos determined by PGT-A.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest

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