HYPERGLYCOSYLATED HUMAN CHORIONIC GONADOTROPHIN (HCG-H) IN EMBRYO CULTURE MEDIA AS A BIOMARKER FOR ANEUPLOIDY DETECTION

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INTRODUCTION

Detection of aneuploid embryos is an important approach to ensure better pregnancy outcomes and live birth rates during ART procedures. Currently applied techniques for detection of aneuploidy, such as preimplantation genetic screening (PGS) are invasive and relatively expensive. Therefore, additional non-invasive methods are under development aiming to select the euploid embryos.

The purpose of this study was to assess the prediction value of the hyperglycosylated human chorionic gonadotropin (hCG-H) secreted from human embryos as a biomarker for aneuploidy.

MATERIALS AND METHODS

Culture media samples were collected on the fifth day of embryo cultivation from the culture plates of 155 good quality embryos, from 90 patients undergoing intracytoplasmic sperm injection (ICSI) (Fig. 1). The presence or absence of aneuploidy was assessed by next-generation sequencing (NGS) technique. The hCG-H concentration in the culture media was measured using ELISA kit (Cusabio Biotech, CBS-E15803h) according to the manufacturer’s instructions. Statistical analysis was performed by SPSS version 21 (IBM Corp., Armonk, NY, USA).

RESULTS

The obtained results showed that hCG-H concentration was significantly higher in the culture media from aneuploid embryos in comparison to the euploid embryos (0.72 ± 0.30mIU/ml vs. 0.62 ± 0.12mIU/ml, p=0.02, respectively) (Fig. 2).

CONCLUSION

Our results suggest that chromosomal aberrations in human embryos could be predicted by an increased secretion of hCG-H. However, the application of this characteristic as a single biomarker is not recommended and should be combined with other non-invasive biomarkers.

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