

EVALUATION TELOMERE LENGTH IN HUMAN CUMULUS CELLS ASSOCIATED WITH COMPETENT OOCYTES AND EMBRYOS

En-Hui Cheng¹, Chun-Chia Huang², Lii-Shung Huang³, Maw-Sheng Lee³, Tsung-Hsien Lee⁴, Chung-Hsien Liu⁴, Yang-Tse Shih⁴

¹ Department of Biochemistry, Medical College of Chung-Shan Medical University (Taiwan)

² IDivision of Infertility, Lee Women's Hospital (Taiwan)

³ Institute of Medicine, Chung Shan Medical University (Taiwan)

⁴ Department of Obstetrics and Gynecology, Chung-Shan Medical University Hospital (Taiwan)

Purpose: It is important to use non-invasive methods to find age-related markers in the reproductive system. Since oocyte maturation (or development) is dependent upon the surrounding cumulus cells, we examined the telomere length in cumulus cells from different age groups.

Materials and methods: We had collected cumulus clumps from women treated with IVF cycles. In order to evaluate the effects of cumulus cells on the quality of oocytes and embryos, we used real-time quantitative PCR to determine the levels of telomere length. We also analyzed the relationship between embryo quality and the length of telomere in cumulus cells, we characterized cleavage-stage embryos on from day 1 to days 3. All statistical analyses were performed using the Statistical Package for the Social Sciences, version 14.0. A confidence level of $P < 0.05$ was considered to be the limit of statistical significance for comparison purposes.

Results: We collected 142 cumulus clumps from 4 different age group (<30, 30-34, 35-39, >39) in this study. We first reported analysis telomere length in cumulus cells by method of real-time quantitative PCR. The relative average telomere length in >40 years group was lower than other groups. Our results demonstrated that telomere length were associated with age and Day 3 embryo quality.

Conclusions: We suggested that telomere length in cumulus cells may be more suitable be aging marker than women age. The associated oocytes or embryo quality may be important elements in expanding by true aging demonstrated with telomere length.