

spermatogenesis have an effect on fertilization rate, pronuclear (PN) morphology, embryo development and pregnancy outcome in ICSI.

**Method:** Laboratory and clinical data were evaluated in consecutive 82 cycles of ICSI. Data from frozen-thawed sperm and female factor cases were excluded. The patients were classified into normal spermatogenesis (Nor-Sp) group (n=56), including normal ejaculated and obstructive azoospermic patients, and defective spermatogenesis (Def-Sp) group (n=26), including severe oligo-astheno-teratozoospermia (OATS) and non-obstructive azoospermic patients. Oocytes and embryos were cultured with GIII series media. Fertilization was monitored 18~20 hours after ICSI and PN feature was classified into three morphological patterns based on the number and the distribution of nucleoli within PN at 18~20 hours and 24~26 hours after ICSI, respectively. Grades of embryo were examined on the basis of developmental speed, size of blastomeres, and patterns of fragmentation. Sequential embryonic score was calculated by PN morphology and embryonic development. Clinical pregnancy and delivery outcome were determined.

**Results:** Fertilization rate and PN feature were not significantly different between Nor-Sp and Def-Sp group (73.9% vs. 70.9%). In Nor-Sp group, total sequential embryonic score was  $35.6 \pm 12.7$  and mean of transferred sequential embryonic score was  $11.8 \pm 3.5$ . In Def-Sp group, total sequential embryonic score was  $36.4 \pm 16.0$  and mean of transferred sequential embryonic score was  $11.4 \pm 3.4$ . There were no significant differences between two groups in mean of total sequential embryonic score and transferred embryonic score. Mean age of females was similar between Nor-Sp ( $32.0 \pm 3.0$ ) and Def-Sp group ( $30.0 \pm 2.0$ ). Pregnancy rate of Nor-Sp group was higher than that of Def-Sp group (46.4% vs 23.0%,  $p=0.054$ ), and delivery rate of Nor-Sp (41.1%) was higher than that of Def-sp group (19.2%;  $p=0.079$ ).

**Conclusions:** We did not observe paternal effects neither on the fertilization or the early embryonic development. Clinical pregnancy and delivery rate were higher in Nor-Sp group than that of Def-Sp group. These data suggest that pregnancy and delivery outcomes may be affected by defective spermatogenesis in male factor infertility. This finding should be further evaluated with large sample size.

## P-24      사람의 다양한 조직으로부터 얻은 중간엽 및 유사 중간엽 줄기세포의 특성 비교분석

김지영 · 박세아 · 박수연 · 강현미 · 김진영 · 김해권

서울여자대학교 자연과학대학 생명공학과

**Background & Objectives:** 본 연구는 사람의 다양한 조직에서부터 얻은 중간엽 줄기세포 및 유사 중간엽 줄기세포의 유전자와 단백질의 발현을 비교하고자 시행하였다.

**Method:** 골수로부터 얻은 중간엽 줄기세포와 양수, 양막, 제대, 지방 조직으로부터 분리한 유사 중간엽 줄기세포를 RT-PCR과 세포 면역화학반응을 통하여 유전자 및 단백질의 발현양상의 차이점을 알아보았다. 또한, 이들 중 양막과 지방로부터 얻은 줄기세포에서 심장 근육세포 특이 유전자의 발현양상을 알아보았다.

**Results:** 유전자의 발현양상의 경우, 골수에서 얻은 줄기세포는 BMP4, SCF, HLA-ABC, HLA-DR,

nestin을 발현하였고, OCT4, PAX6, Brachyury는 발현하지 않았다. 양수 줄기세포는 골수유래 줄기세포와는 달리, OCT4를 발현하였으며, BMP4와 nestin을 발현하지 않았다. 제대와 지방에서 유래한 줄기세포는, OCT4와 PAX6를 제외한 나머지 유전자의 발현양상이 골수유래 줄기세포와 같았다. 양막 줄기세포는 OCT4를 발현하였으며, 나머지 유전자의 발현양상은 골수유래 줄기세포와 같았다. 단백질의 발현양상의 경우, 골수유래 줄기세포는 세포외 기질 분자인 fibronectin, collagen type I, II, III, IV, XII와 표면항원인 ICAM, VCAM, VCAM과 세포골격인자인  $\alpha$ -SMA, vimentin을 모두 발현하였다. 또한, 내피 세포인자인 vWF와 MHC antigen인 HLA-ABC, HLA-DR를 발현하였고, 배아줄기세포 인자로 알려져 있는 TRA 1-60 역시 발현하였다. 양수에서 유래한 줄기세포는 HLA-DR을 제외한 단백질의 발현양상은 골수유래 줄기세포와 같았으며, 제대에서 유래한 줄기세포는 골수유래 줄기세포와 발현양상이 같았다. 지방 줄기세포는 collagen type IV과 VCAM을 발현하지 않았고, 양막에서 유래한 줄기세포는 collagen type II, IV, ICAM, VCAM, vWF, HLA-DR은 발현하지 않았다. 마지막으로 이들 중 양막과 지방에서 유래한 줄기세포를 이용하여 심장 근육세포에 특이적인 유전자의 발현양상을 살펴 본 결과, 양막줄기세포는  $\alpha$ SA, Cmlc1,  $\alpha$ -CA, ANP,  $\beta$ -MHC를 발현하였고, BNP, C-Vml2  $\alpha$ MHC는 발현하지 않았다. 지방유래 줄기세포는 Cmlc1은 발현하지 않았으며, ANP,  $\beta$ -MHC의 발현 정도가 양막 줄기세포에 비해 약하게 발현되었고, 나머지 유전자는 동일하게 발현되었다.

**Conclusions:** 본 연구결과에서는 사람의 다양한 조직으로부터 얻은 중간엽 및 유사 중간엽 줄기세포의 유전자와 단백질의 발현양상이 다르게 나타났다. 따라서 치료의 목적에 따라 관련 유전자 및 단백질이 발현되는 조직의 세포를 선택함으로써 세포치료제 개발에 유용하게 사용될 것으로 사료된다.

## P-25 Relationship between FSH Receptor Genotypes and Ovarian Responses of Controlled Ovarian Hyperstimulation with Exogenous FSH

Hyoung-Song Lee<sup>1</sup>, Sun Hwa Cha<sup>2</sup>, In Ok Song<sup>2</sup>, Mi Kyoung Koong<sup>2</sup>,  
Inn Soo Kang<sup>2</sup>, Jin Hyun Jun<sup>1</sup>

<sup>1</sup>Laboratory of Reproductive Biology and Infertility, <sup>2</sup>Department of Obstetrics and Gynecology, Cheil General Hospital & Women's Healthcare Center, Sungkyunkwan University School of Medicine

**Background & Objectives:** The prediction of ovarian response and clinical outcome in controlled ovarian hyperstimulation (COH) with exogenous FSH would be of great benefit to management of infertile patients. Several reports have been showed the relationship between FSH receptor (FSHR) genotypes and ovarian responses in COH cycles. In this study, we evaluated the association of FSH receptor SNP with ovarian responses and clinical outcomes of COH cycles in patients undergoing IVF.

**Method:** Genomic DNA was extracted from peripheral blood and Thr307Ala (T/A) and Asn680Ser (N/S) of SNP in FSHR gene were screened by PCR-RFLP. We investigated the frequency of FSHR genotypes and clinical outcome was compared by FSHR genotypes. Selected patients (n=53) who had performed both short and long COH protocol in our hospital within five years were subjected for evaluation