ISP-30-1  Endoplasmic reticulum (ER) stress induces vascular endothelial growth factor (VEGF) production in granulosa cells: implications for a novel therapeutic approach for OHSS

The University of Tokyo1, The University of Toyama2
Nozomi Takahashi1, Miyuki Harada1, Yasushi Hirota1, Osamu Yoshino1, Yoko Urata1, Gentaro Izumi1, Masashi Takamura1, Tetsuya Hirata1, Kaori Koga1, Osamu Wada-Hiraike1, Tomoyuki Fujii1, Yutaka Osuga1

[Objective] Given the emerging role of unfolded protein response (UPR), activated by ER stress, in regulating angiogenesis, we examined whether ER stress activated in granulosa cells (GC) regulates VEGF expression and whether tauorosodeoxycholic acid (TUDCA), an ER stress inhibitor already in clinical use for liver diseases, exerts a preventive effect on developing OHSS. [Methods] Cultured human GC were treated with hCG, tunicamycin (Tm), an ER stressor, and TUDCA. VEGF mRNA expression and protein secretion were examined by quantitative RT-PCR and ELISA, respectively. OHSS was induced in rats and TUDCA was injected i.p. Vascular permeability (VP) was measured and ovarian VEGF mRNA expression was examined. The study was approved by IRB. [Results] Tm increased the basal and hCG–induced VEGF mRNA expression and VEGF protein secretion in cultured human GC. Pretreatment of GC with TUDCA abrogated the effect of ER stress on the hCG–induced VEGF production. Administration of TUDCA suppressed the increase in VP observed in OHSS rats, with a concomitant reduction in VEGF mRNA expression in the ovary. [Conclusion] ER stress upregulates the hCG–induced VEGF production in GC and TUDCA prevents the development of OHSS by reducing VEGF production in GC. ER stress might be a novel therapeutic target for preventing OHSS, given its stimulatory effect on VEGF production in GC.

ISP-30-2  Fertilization of dysmorphic human oocytes and subsequent embryo development

Seoul National University Hospital, Seoul, South Korea1, Seoul National University College of Medicine, Seoul, South Korea2, Seoul National University Bundang Hospital, Seongnam, South Korea1
Eun Jeong Yu1, Jang Mi Lee1, Byung Chul Lee2, Seok Hyun Kim1

[Objective] To investigate the fertilization potential and subsequent embryonic development of dysmorphic mature oocytes with specific morphological abnormalities in intracytoplasmic sperm injection (ICSI) cycles. [Methods] From 35 consecutive ICSI cycles during a period of 5 years, in which at least one dysmorphic mature oocyte was obtained, the fertilization rate (FR) and embryonic development of 58 dysmorphic and 42 normal form oocytes (control 1) were compared. The FR and embryonic development of 441 normal form oocytes from another 119 ICSI cycles without dysmorphic oocytes served as control 2. Dysmorphic oocytes were classified as having a dark cytoplasm, cytoplasmic granularity, cytoplasmic vacuoles, refractile bodies in the cytoplasm, smooth endoplasmic reticulum in the cytoplasm, an oval shape, an abnormal zona pellucida, a large perivitelline space, debris in the perivitelline space, or an abnormal polar body. [Results] Overall, the FR was significantly lower in the dysmorphic oocytes group than in the normal form oocytes from the control 1 and 2 groups. Development up to the day-3 cleavage stage was significantly lower in the dysmorphic oocytes group than in the normal form oocyte group from control 2. However, the percentage of ≥6-cell embryos, and the percentage of grade A or grade B embryos at day-3 were similar between the dysmorphic oocyte group and the normal form oocyte groups. Dysmorphic oocytes with a dark cytoplasm or an abnormal polar body had a relatively good prognosis because they exhibited a 50% or greater chance of grade A embryo formation. [Conclusion] The fertilization potential of dysmorphic oocytes is lower, but their subsequent embryonic development was relatively good. Dysmorphic oocytes with a dark cytoplasm or an abnormal polar body develop into satisfactory quality embryos.

ISP-30-3  Assisted Reproductive Technology (ART) in Japan 2013. Annual report of Japan ART registry

Tokushima University1, Tokyo Medical and Dental University2, Saitama Medical University1, Tokyo Metropolitan Bokutoh Hospital1, Nippon Medical School2, Keio University1, National Center for Child Health and Development2, Akira Kuwahara1, Tomonori Ishikawa1, Osamu Ishihara1, Koji Kugii1, Rintaro Sawai1, Kouji Banno1, Hidekazu Saito1, Minoru Irahara1

[Objective] This is the 26th report of Japan ART Registry that include results of initiated ART cycles in 2013. [Methods] Each ART cycles were directly registered through Web–based registry by all of 587 ART units existing in Japan and analyzed. [Results] 537 units reported 368,764 initiated cycles (IVF 89,868, ICSI 137,479, GIFT 67, frozen embryo transfer (FET) 141,213, oocyte freezing 15, embryo transfer with frozen oocyte 122) and 41,216 live deliveries. Egg donation and PGD were not included in this data. Number of cycles increases with 13.0% compared to 2012 and 4.13% of neonates were estimated to be conceived with ART in Japan. In fresh embryo available cycles, 51.3% of cycles were decided to "freeze all". As most of these cycles were preferable cycles, the clinical pregnancy rates (PR) per aspiration and per transfer were relatively low as 6.7% and 20.8%, respectively. In contrast, PR per transfer in FET was 32.8%. As a result, 75.5% of live deliveries were delivered from FET. Single embryo transfer were performed 72.2% of fresh ET and 80.0% of FET, and multiple pregnancy rate was 3.54%. Live deliveries were done with 39,569 single, 1,479 twin and 9 triple pregnancies. [Conclusion] Number of ART was increased. ART pregnancies were reached to 4% of general conception in Japan, and 75% were derived from FET. SET was common as 75% and multiple pregnancy rate was low as 3.5%.