P-19 20 kHz Sawtooth Magnetic Fields 전자파가 생쥐의 발정주기에 미치는 영향

정경아[1] · 이윤실[2] · 계명찬[1]

원자력병원 방사선영향연구실[2], 한양대학교 생명과학과[1]

Background & Objectives: 현대 사무직 근로여성의 생활전자파에 노출에 따른 생식생리학적 변화 유무를 조사하기 위한 동물모델 실험임.

Method: 이유기 이후의 생쥐 (ICR) 암컷에 20 kHz sawtooth magnetic fields (6.25 uT peak intensity)을 하루 8시간씩 6주간 노출한 후 최종 노출 10일 간에 걸쳐 질상피 도말법을 통해 발정주기의 변화를 조사하였다.

Results: 전자파 노출군에서는 발정주기의 1 또는 2 단계가 지속되는 빈도가 높았으며 그 결과 10일 간에 걸쳐 1주기의 발정이 진행되지 않은 동물의 비율이 대조군 보다 유의하게 많았다. 그러나 특정 발정주기의 길이에는 전자파 노출군의 대조군과 유의한 차이가 없었다.

Conclusions: 결론적으로 TV 세트와 PC모니터에서 방출되는 정도의 20 kHz sawtooth magnetic fields의 전자파는 생쥐 발정주기의 진행을 지연시키는 것으로 나타났다. 이 결과는 사무 근로환경하에서 노출된 전자파가 암컷의 생식능력에 교란인자로 작용할 수 있음을 의미한다. 생쥐에서 확인된 결과이므로 인체 (여성)에서 이 수준의 전자파 노출이 생리주기에 미치는 영향에 대한 연구가 필요하다.

P-20 Comparison of Embryonic Developmental Capacity and Pregnancy Rates of Fertilized Oocytes in IVF, ICSI and TESE-ICSI Cycles

Park KS[1], Park YK[2], Lee TH[1], Chun SS[1]

Department of Obstetrics & Gynecology[1] and Urology[2], Kyungpook National University Hospital

Background & Objectives: We performed this study to compare the quality of embryos and blastocysts, and pregnancy rates in IVF, ICSI and TESE-ICSI cycles.

Method: Oocytes were collected from female patients (≤35 years old) of IVF (group I), ICSI (group II) or TESE-ICSI cycles (group III). Fertilization rate was examined in the following morning after oocytes retrieval, and fertilized oocytes were co-cultured until embryo transfer. On day 2 and 5~7, grade of embryos (<4- or ≥4-cell) and blastocysts (BG1, 2, 3 or early) was evaluated. Clinical pregnancy rate was determined by detecting G-sac with tranvaginal ultrasonogram after transfer of embryo(s) and/or blastocyst(s) on day 2~3 and/or day 5~7. We analyzed the results by Duncan's multiple range test and considered statistically significant when p value was less than 0.05.

Results: Fertilization rate was significantly higher ($p<0.05$) in group I (79.0±21.2%) than in group II and III (56.8±21.6% and 36.7±25.3%). Development rate was significantly higher ($p<0.05$) in group I and II (95.8±13.8% and 98.1±4.8%) than in group III (83.4±18.6%). Rate of ≥4-cell embryos was signi-

ficantly higher ($p<0.05$) in group I (74.7±32.2%) than in group II and III (54.7±28.3% and 60.3±38.1%). Blastulation rate was higher in group I (59.5±25.3%, $p<0.05$) and II (58.6±35.0%, NS) than in group III (40.4±36.5%). BG1 rate was higher in group I (36.9±32.2%) than in group II and III (23.5±38.9% and 26.3±22.7%) but statistically not significant. Clinical pregnancy rate (/cycle) was significantly higher ($p<0.05$) in group I and II (40.7±49.3% and 41.7±51.5%) than in group III (12.5±33.6%). No differences were found in the rates of multiple pregnancy and abortion among these three groups. Ongoing pregnancy rate (/cycle) was higher in group I (34.5±47.8%, $p<0.05$) and II (33.3±49.2%, NS) than in group III (12.5± 33.6%). Embryonic implantation rate was higher in group I (15.1±20.2%, $p<0.05$) and II (14.7±20.6%, NS) than in group III (5.1±15.6%). However, embryonic implantation rate was increased in ET including blastocyst(s) among three groups.

Conclusions: Fertilized oocytes obtained from TESE-ICSI cycle were harder to be successfully cultured to blastocyst stage for 5~7 days than those from IVF and ICSI cycles. However, all blastocyst(s) ET increased the embryonic implantation rate equally in IVF, ICSI and TESE-ICSI cycles.

P-21 Ultrastructure of Human Embryonic Stem (hES) Cells and Spontaneous and Retinoic Acid Induced Differentiating hES Cells

Eun Young Kim, Sung Hye Park[1], Kil Saeng Chung[2], Won Don Lee[3], Sepill Park, Jin Ho Lim[3]

Maria Infertility Hospital Medical Institute/Maria Biotech, [1]Seoul National Uinversity, College of Medicine, [2]Kon-Kuk University, [3]Maria Infertility Hospital

Background & Objectives: Ultrastructural and immunohistochemical studies of the four groups of cells, i.e., hES, embryoid bodies (EBs) and spontaneously and retinoic acid (RA) induced differentiating cells were carried out to investigate the detailed phenotype of these cells.

Method: Undifferentiated hES cells (NIH Code: MB01) and day 4 EBs were prepared. To initiate neuronal differentiation, EBs were further treated with 1 μM RA for 4 days. And then RA treated EBs were dissociated and plated onto a 0.1% gelatin-coated dish in a neuron differentiation medium (N2) for 14 days. Also, to examine the spontaneous differentiation characteristics, RA treated EBs were further cultured in EB culture medium for 14 days as an EB state. For immunohistochemical study, cells were fixed with 4% paraformaldehyde, and paraffin-embedded tissues were cut to 2~3 μm thickness. The expression was detected using the peroxidase labeled streptavidin biotin complex technique and also hematoxylin counter staining was performed. For transmission electron microscopy of various cell type, the hES cells, EB cells and differentiating cell-colonies were fixed in 2.0% glutaraldehyde, embedded in epoxy resin and stained with uranyl acetate and lead citrate.

Results: Immunohistochemically, the EB cells showed strong immunoreactivity for CD34, CD117, nestin and CD56. Differentiating hES cells were composed of different kinds of cells expressing pancyto-