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The effect of selective assisted hatching (sAHA) on pregnancy rates in human IVF-ET

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In human IVF-ET, the development and morphology of the embryo have been known to affect implantation and pregnancy rates(PRs). Although the mechanism of implantation is unknown now, it is thought that the hatching process precedes implantation and that the hatching is related to implantation and PRs. Assisted hatching is based on the hypothesis that some embryos fail to escape from their zonae during blastocyst expansion because zona hardening usually occures *in vitro* culture.

The present study was carried out to investigate the effect of sAHA on implantation and PRs.

Subjects were 352 cases underwent IVF-ET at the Infertility Clinic in Cheil General Hospital from Jan to July, 1994. sAHAs were tried among subjects who were over 35 yrs of age, serum FSH conc. over 15mIU/ml, zona thickness over 17μm, number of IVF case over 3 times, and who underwent ICSI.

Method of sAHA was to drill zonae of embryo treated with acidic Tyrode's solution (pH 2.3) using micromanipulator.

The results were as follows; 1.PRs of control and sAHA groups were 27.2(63/232) %, 37.8(14/37)% respectively. 2. According to age, PRs of control groups were 33.9 (20/59)% in ≤29 yrs, 26.1(30/115)% in 30~34 yrs and 22.4(13/58)% in ≥35 yrs. PRs of sAHA groups were 46.2(6/13)% in 30~34 yrs, 33.3(8/24)% in ≥35 yrs. 3. In the ICSI group, PRs of control and sAHA groups were 20.0(4/20)%, 35.7(10/28)% respectively.

As a result, it is suggested that sAHA technique improves the PRs in the above selective groups, especially in aged groups. Therefore, it is concluded that sAHA can be used to improve the PRs in human IVF-ET.

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GENE EXPRESSION OF IGFBP-1 OF MOUSE EMBRYO, MOUSE ENDOMETRIUM IN COCULTURE SYSTEM

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The primary function of the endometrium is to accept developing embryo during implantation.

It is evident that when embryos are cocultured with a monolayer of epithelial cells of various origins, quality of embryos is improved through stimulating embryo growth rate and rescuing poor growing embryos. Production of IGFBP-1 by human endometrium appears to be stimulated when cocultured with mouse embryo. We sit ten 2-cell stage embryos of ICR mouse onto endometrial stromal cells of ICR mouse in a well of 4-well dish. Another ten of 2-cell stage embryos are placed in a empty well as the embryo control. And a well has not any embryo as the cell control. The embryos of the coculture group were at the blastocyst stage(90%) and was begining to entry the hatching out stage at 4th day, while the embryos of the embryo control were just at the blastocyst stage(80%). It revealed that the embryos of the coculture group grew better and faster. The cells and embryos of these three groups were harvested at 3th, 5th and 8th day. The total RNA were extracted to amplify the mouse IGFBP-1 and glyceraldehyde-3-phosphate dehydrogenase (GAPDH, as an internal control) cDNA by reverse transcription-polymerase chain reaction(RT-PCR). We designed the primer according to the mouse IGFBP-1 cDNA and the mouse GAPDH cDNA. The amplified IGEBP-1 fragment size was 0.79 Kb and the GAPDH fragment was 0.45 Kb. We use the complementary DNA of the mouse IGFBP-1 to prepare a probe specific for mouse IGFBP-1. After confirming the same amount of the DNA of GAPDH by taking a picture of the gel under UV-light, we do the southern blot by using the IGFBP-1 fragment as the probe to compare the mRNA expression of IGFBP-1 among the coculture, the embryo and the endometrial cell groups at 3th,5th and 8th day. Densitometric analysis of southern blot revealed an increase of 1.6-fold,4.5-fold and 2.3-fold in IGFBP-1 expression in coculture group compared to cell control at 3th, 5th and 8th day. But the IGFBP-1 expression was not detected in the embryo control. The result revealed that the embryo can enhance the IGFBP-1 gene expression of the endometrial stromal cell in coculture system.