

Pregnancies After Microinjection of Human Spermatozoa into Human Oocytes

Sir,

The use of In-Vitro Fertilisation (IVF) has become an accepted treatment for couples with male factor infertility¹. However, there must be adequate number of motile spermatozoa if there is to be a favourable outcome. The introduction of Intra Cytoplasmic Sperm Injection (ICSI) technique by Palermo *et al*² has encouraged an increase in the clinical use of the procedure in men with very poor semen parameters. We present our initial experience with this technique. Twelve patients underwent initial treatment. Ovarian stimulation was performed with a combination of gonadotrophin hormone releasing hormone (GnRh) analogue and hMG and/or Metrodin. A total of 89 oocytes were obtained by transvaginal aspiration. Seventy-six oocytes were noted to be in metaphase II and 13 in metaphase I (they were allowed to mature to metaphase II stage) with their respective cumulus cells and corona radiata. The husbands were asked to produce a semen sample on the day of oocyte pick-up. A combination of sperm preparation techniques (either percoll gradient or swim-up technique) were used to recover as many motile sperms as possible. A total of 83 metaphase II oocytes were injected with a single sperm using micropipettes controlled by two Narishige (Narishige USA, Inc) micromanipulators. Fertilisation was noted in 69 oocytes (83%). Thirteen excess good quality embryos from 2 patients were cryopreserved for use at a later date. Eleven patients had a total of 43 embryos transferred (one patient had no fertilisation from the only oocyte obtained). This resulted in 7 pregnancies (63.6%) per embryo transfer (ET), the outcome of which to date are as follows:

a) 3 (27%) ongoing pregnancies at approximately 20 weeks gestation. (1 twin pregnancy and 2 singleton pregnancies).

- b) 3 had clinical pregnancies with well defined gestation sacs but these ended in first trimester abortions.
- c) 1 had a biochemical pregnancy as evidenced by rise in the beta hCG values.

ICSI by passes many steps in the fertilisation process viz: the spermatozoon's binding and penetration into the zona pellucida and its fusion with the oolemma. ICSI may allow fertilisation by spermatozoa with deficient kinetic properties or possible anomalies of the acrosome. Lanzendorf *et al*³ showed that human oocytes are capable of surviving the mechanical insertion of a spermatozoon directly into the ooplasm. While mechanical damage to the oocyte may occur it is heartening to know that to date fertilisation and cleavage with successful pregnancies have been obtained without increasing the incidence of chromosomal anomalies in the embryo. Our initial experience has shown very encouraging results, thus making another mode of assisted reproductive technique available to our infertile couples.

S P Rachagan, FRCOG, C K Fong, FRCOG, Haris Hamzah, FRCOG, Siti Zaliha, MRCOG, T S Tan, MRCOG, J Yow, BSc, Stephen Junk, BSc, PIVET Infertility Services Subang Jaya Medical Centre Petaling Jaya Malaysia

References

1. Van Uem JFHM, Acosta AA, Swanson RS *et al*. Male factor evaluation in 'In-vitro fertilisation'. Norfolk experience. *Fertil Steril* 1985;44 : 375-7.
2. Palermo G, Joris H, Devroey P *et al*. Pregnancies after intracytoplasmic injection of single spermatozoon into a oocyte 1 auctet. *Lancet* 1992; 340: 17-18.
3. Lanzendorf SE, Maloney MK, Veeck LL *et al*. A preclinical evaluation of pronuclear formation by microinjection of human spermatozoa into human oocytes. *Fertil Steril* 1988;49 : 835-42.