P18

A comparison of the effect of Polyvinylpyrrolidone (PVP) and SpermSlow™ on human spermatozoa

M Nel, Dr M-L Windt-De Beer, E Erasmus, Prof TF Kruger

AEVITAS Fertility Clinic, Cape Town

INTRODUCTION:
Intracytoplasmic sperm injection (ICSI), as well as other micromanipulation assisted reproductive technology (ART) methods, such as physiologic ICSI (PICSI) and intracytoplasmic morphologically selected sperm injection (IMSI), are routinely used in many fertility laboratories around the world. An integral part of these methods is the manipulation of spermatozoa in preparation of the injection into the oocyte. It is common practice to place prepared spermatozoa in a viscous holding medium to facilitate the handling, manipulation and slowdown of spermatozoon movement during the immobilization and injection processes of ICSI. The possible effect of these holding mediums on basic semen parameters, as well as the sperm DNA and structural integrity of spermatozoa, is of importance.

AIM:
To evaluate the possible effect of 7% Ready-to-use PVP Solution (SAGE, Cooper Surgical) and SpermSlow™ (Origio, Cooper Surgical) on human spermatozoa after different incubation periods using an eosin viability stain, chromatin packaging analysis (CMA_3 staining analysis) and DNA fragmentation analysis (TUNEL analysis).

MATERIALS AND METHODS:
The excess semen from 90 routine semen analysis samples was used and processed with a routine swim up method. Each sample was divided into nine Eppendorf tubes and incubated (37°C) with PVP, SpermSlow and Sperm Washing medium (control) at 5, 30 and 60 minute time intervals respectively. After incubation, the test samples were washed and the possible effect of the incubation medium/times on spermatozoa tested with an eosin viability stain, chromatin packaging analysis (CMA_3 staining analysis) and DNA fragmentation analysis (TUNEL analysis).

RESULTS:
Statistical analyses with P-values of <0.05 were considered statistically significant. However, whether or not PVP and SpermSlow™'s data sets were clinically equivalent had to be established. The conventional significant test has little relevance in an equivalence trial. Senior scientists in the reproductive biology field were approached to establish an equivalence margin for all the variables tested. Using the equivalence margins, it was possible to establish whether or not PVP and SpermSlow™ were clinically equivalent. The equivalence margin for sperm viability was set at ±20%. The equivalence margins for both CMA_3 and TUNEL positive parameters were set at ±10%. Results showed that although PVP and SpermSlow™ treated sperm outcomes often differed significantly after typical statistical analysis, clinically these two mediums were shown to be equivalent (using a specific statistical test for equivalence) for the tested outcomes.

CONCLUSION/DISCUSSION:
PVP and SpermSlow™ had no detrimental effect clinically on sperm viability, chromatin packaging or DNA fragmentation rate. Based on this study's results, either PVP or SpermSlow™ can be used for IMSI purposes. However, the study did not include the technical aspects of the usage of PVP and SpermSlow™.