Title: Prediction of ICSI outcome by sperm chromatin parameters
Objective: A variety of assays are available to evaluate the sperm chromatin status. Sperm DNA cytometry can differentiate cells into sub-haploid damaged, mature condensed haploid and immature sperm chromatin subpopulations. In addition, Aniline blue test can detect defects in the histones/protamines replacement. Intracytoplasmic sperm injection (ICSI) is an important option for the treatment of severe cases of male infertility. The aim of our study was to evaluate if parameters of sperm chromatin assay may help in predicting ICSI outcome in patients with male infertility.

Design: Prospective study.

Materials and Methods: Semen samples were collected from 42 infertile men with no female factor infertility. Routine semen analysis was done and an aliquot of semen used for sperm chromatin assay by 2 assays: sperm DNA cytometry and aniline blue test. Another aliquot used for ICSI. Pregnancy test was done after 2 week from the embryo transfer to the female partner. Receiver operating curve (ROC) were calculated for sperm DNA cytometry and aniline blue test to predict pregnancy following ICSI.

Results: For detection of pregnancy and outcome of ICSI: % of condensed chromatin haploid showed a cutoff value of (22.7%) with area under the curve (AUC, 0.85), sensitivity (94.7%) and specificity (65.2%). The % aniline blue non-stained sperm showed a cutoff of (73.5%) with AUC (0.57), sensitivity (63%) and specificity (52.2%). Patients with % of haploid sperm below the cutoff value showed a higher incidence of sperm DNA fragmentation as expressed by high sub-haploid sperm percentage compared to patients with % of haploid sperm above the cutoff (p <0.001) (see table).

Conclusions: Mature condensed haploid sperm chromatin is the best predictor for ICSI outcome. Men show severe sperm DNA damage when the damage is below the haploid cutoff value.

Support: None