SEMEN QUALITY SCORE IS PREDICTIVE OF NEGATIVE PREGNANCY FOLLOWING INTRACYTOPLASMIC SPERM INJECTION (ICSI) USING FROZEN EPIDIDYMAL SPERM FROM PATIENTS WITH OBSTRUCTIVE AZOOSPERMIA

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Objective: Epididymal sperm retrieval combined with ICSI is a treatment option for infertile men with obstructive azoospermia (OA). There is no consensus as to the impact of epididymal sperm characteristics on the outcome of ICSI. Our center has recently developed a semen quality (SQ) score using a statistical model that accounts for most of the variability observed among the battery of interrelated sperm variables. In this study, we examined the relationship of the new SQ score with the outcome of ICSI using frozen epididymal spermatozoa from patients with OA.

Design: Retrospective study

Materials/Methods: We collected data on 15 infertile men with OA who underwent microsurgical epididymal sperm aspiration. Samples were cryopreserved using TEST-yolk buffer with 20% egg yolk and 12% glycerol (Irvine Scientific, Santa Ana, CA). Pre-freeze and post-thaw (24 hrs. after freezing) semen analysis were performed on a computer-assisted semen analyzer (CASA, Cell-Trak, Model VP 110, Santa Rosa, CA) to determine sperm concentration (X10^6/mL), motility (%), curvilinear velocity (VCL, µm/s) and linearity (LIN; %). To compute SQ score, principal component analysis was applied to these 4 parameters after log transformation to reduce the effects of varying scales and abnormal distributions. Data was collected on fertilization and clinical pregnancy rates (per patient & per cycle).

Results: Twenty ICSI cycles were performed using frozen epididymal sperm. Study parameters are shown in the table. The mean ± standard deviation (SD) of pre-freeze SQ score (78 ± 17) was significantly higher than post-thaw SQ score (72 ± 15) (P < 0.0001). Using logistic regression, none of the 4 individual sperm characteristics (pre-freeze or post-thaw) was significantly correlated with the outcome of ICSI. However, post-thaw SQ score was significantly correlated with clinical pregnancy rates per cycle (P = 0.004). When various cutoffs of post-thaw SQ scores were examined for their potential to predict pregnancy following ICSI, we found that post-thaw SQ score of 80 had a sensitivity of 57%, specificity of 87%, positive predictive value of 67%, and negative predictive value of 87%.

Conclusions: Our results indicate that post-thaw SQ score <80 is significantly correlated with negative pregnancy outcome in ICSI cases using frozen epididymal sperm from infertile men with OA. Selecting samples with SQ scores >80 to be used for ICSI may help improve pregnancy rates and avoid financial, social, and emotional problems associated with failed ICSI attempts. The new SQ score may be a potential tool to predict the outcome of ART in a specific clinical situation.

Supported by: None

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<tr>
<th>Parameter</th>
<th>Female Partner's Age (mean ± SD)</th>
<th>Number of Oocytes Retrieved (mean ± SD)</th>
<th>Normal Fertilization Rate (%)</th>
<th>Pregnancy Rate per Cycle (%)</th>
<th>Pregnancy Rate per Patient (%)</th>
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<tr>
<td>ICSI with frozen-thawed epididymal sperm (n = 20)</td>
<td>32 ± 4</td>
<td>15 ± 6</td>
<td>56</td>
<td>50</td>
<td>67</td>
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