Title: ASSOCIATION OF ASTHENOZOOSPERMIA WITH OXIDATIVE STRESS SCORES IN INFERTILE PATIENTS

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Objective: Infertile men may have normal or low sperm motility depending upon their clinical condition. Oxidative stress (OS) is reported as one of the major causes for low sperm quality. Our aim was to examine the association of sperm motility with sperm DNA damage and OS scores in infertile men.

Design: Prospective study.

Materials and Methods: Semen samples were collected from 100 infertile men. Patients were classified based upon sperm motility into: group I (motility < 50%) and group II (motility ≥ 50 %). Semen aliquots were used for measurements of seminal reactive oxygen species (ROS), seminal plasma total antioxidants (TAC) and sperm DNA fragmentation. OS scores [ROS/TAC, ROS/TUNEL, TAC/TUNEL, ROS/TAC/TUNEL] and log 10 (ROS+5) were calculated.

Results: Group I (n = 39) had higher seminal ROS (p = 0.01), Log10 (ROS+5) (p = 0.01), and TUNEL+ (%) (p = 0.001) compared to group II (n = 61). Group I showed lower scores of ROS/TAC (p = 0.024), ROS/TUNEL (p = 0.001), TAC/TUNEL (p = 0.003), and ROS/TAC/TUNEL (p = 0.003).

Comparison of OS scores in infertile patients with asthenozoospermia
(Group 1) vs. infertile men with normal motility (Group 2)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group I (n = 39)</th>
<th>Group II (n = 61)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log10(ROS+5)</td>
<td>2.74 ± 1.17</td>
<td>2.14 ± 1.19</td>
<td>0.01</td>
</tr>
<tr>
<td>TAC</td>
<td>1920.87 ± 546.45</td>
<td>1961.21 ± 725.52</td>
<td>0.72</td>
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<tr>
<td>(micromoles Trolox equivalent)</td>
<td></td>
<td></td>
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<tr>
<td>ROS-TAC score</td>
<td>47.12 ± 9.83</td>
<td>51.84 ± 9.85</td>
<td>0.024</td>
</tr>
<tr>
<td>TUNEL+ (%)</td>
<td>37.15 ± 25.13</td>
<td>21.68 ± 17.63</td>
<td>0.001</td>
</tr>
<tr>
<td>ROS-TUNEL Score</td>
<td>45.68 ± 10.63</td>
<td>52.97 ± 8.57</td>
<td>0.001</td>
</tr>
<tr>
<td>TAC-TUNEL score</td>
<td>46.11 ± 11.41</td>
<td>52.76 ± 8.05</td>
<td>0.003</td>
</tr>
<tr>
<td>ROS-TAC-TUNEL score</td>
<td>45.82 ± 10.85</td>
<td>52.76 ± 8.57</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Values are Mean ± SD; P< 0.05 was significant between the two groups with Wilcoxon rank sum test.

Conclusions: Infertile men with asthenozoospermia have high seminal ROS, high sperm DNA fragmentation and low OS scores (ROS/ TAC/ TUNEL). These findings may explain the abnormal sperm motility in these men and should be considered during their management.

Support: None.

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