Coincubation of peritoneal fluid from endometriosis patients with spermatozoa and its correlation with extent of DNA fragmentation

Author Block: G. K. Mansour, R. K. Sharma, A. Agarwal, T. M. Said, J. M. Goldberg, T. Falcone; Cleveland Clinic, Cleveland, OH

Objective: Oxidative stress and reactive oxygen species (ROS) in semen decrease sperm membrane integrity and consequently sperm function due to DNA damage. Evidence shows that endometriosis is a disease of oxidative stress. The objective of this study was to examine the effect of coincubation of peritoneal fluid of endometriosis patients on the extent of sperm DNA fragmentation.

Design: Prospective study.

Materials and Methods: Semen samples from 11 normal donors were prepared by density gradient separation. The samples were divided into 4 aliquots; group 1; control (bovine serum albumin (BSA 10%) + human tubal fluid media (HTF); groups 2 - 4: treated group (peritoneal fluid, 1:1 vol/vol). incubated with the sperm sample for 1.5, 4 and 24 h. DNA fragmentation of the spermatozoa was assessed using terminal deoxynucleotidyl transferase (TdT)-mediated dUTP nick end labeling (TUNEL).

Results: A significant difference was seen between the level of sperm DNA damage and the time of coincubation with the peritoneal fluid (Table). The extent of DNA fragmentation at 1.5 and at 4 hours was significantly different compared with both control and 24h incubation.

Conclusion: Peritoneal fluid from women with endometriosis causes significant DNA damage of the spermatozoa. This may be one of the many factor(s) contributing to infertility in these patients.

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Table: DNA fragmentation between control and peritoneal fluid from endometriosis patients

<table>
<thead>
<tr>
<th>Incubation (h)</th>
<th>DNA fragmentation (mean ± SD)</th>
<th>P value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 vs. 4</td>
<td>1.9 ± 1.57</td>
<td>0.23</td>
</tr>
<tr>
<td>1.5 vs. 24</td>
<td>7.5 ± 2.12</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>4 vs. 24</td>
<td>5.59 ± 1.57</td>
<td>0.0026</td>
</tr>
</tbody>
</table>

*P < .05 after Tukey-Kramer adjustment

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  Topic : Oxidative stress

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