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Abstract Category: 25. Procedures and Techniques-Laboratory: ART (SART)

Abstract Topic: 7. Embryo Culture

Poster presentation only? No

Are you a fellow in training in an American Board of Obstetrics and Gynecology approved program leading to certification in Reproductive Endocrinology and Infertility? No

Data is submitted for a separate scientific abstract and video presentation: No

Awards:

IRB Approval: The study material in this abstract has been approved by the local Institutional Review Board (IRB) if any human subjects or any human material was utilized.

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Accept Complete Responsibility: I accept complete responsibility for the data at the time of submission.

Title: L-CARNITINE IMPROVES EMBRYO QUALITY AND INCREASES BLASTOCYST DEVELOPMENT RATE IN COUPLES UNDERGOING ICSI

Objective: Stabilization of the mitochondrial membrane leads to increase in the supply of
energy to the organelle and protect the cell from apoptotic death. L-Carnitine (LC) is a potent antioxidant that increases the supply of energy to the organelles, stabilizes the mitochondrial membranes, and protects cells against DNA damage. The objective of our study was to examine if supplementing the culture media with LC improves embryo quality and the %BDR in couples undergoing ICSI.

**Design:** Prospective clinical study.

**Materials and Methods:** We included those patients who had more than 15 fertilized oocytes and were not interested in embryo cryopreservation at day 3. A total of 617 oocytes obtained from 38 infertile couples (12 with male factor infertility, 11 female factor infertility and 15 combined male and female factor infertility) were fertilized by ICSI. Embryos (2PN) were classified into two groups; Group A (n = 131): embryos were incubated in ISM1 cleavage culture medium (Medicult, Denmark) supplemented with 0.3mg/mL LC and Group B (n = 147): embryos incubated in ISM1 cleavage culture medium without LC. On day 3, embryos in both groups were transferred to ISM2 extended culture medium (Medicult Denmark) with LC (group A) or without LC (group B). Only grade 1 embryos were allowed for incubation to day 5 and blastocyst development rate (%BDR) was assessed.

Comparison of % grade 1 embryos at day 3 and %BDR at day 5 between Groups A and Group B

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group A (%)</th>
<th>Group B (%)</th>
<th>* P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Grade I embryos (day 3)</td>
<td>100.0 (100.0, 100.0)</td>
<td>60.0 (50.0, 71.4)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>% BDR (day 5)</td>
<td>75.0 (60.0, 100.0)</td>
<td>50.0 (33.3, 66.7)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*P value <0.05 was considered significant by Wilcoxon test. Values are median (25th and 75th percentile).

**Results:** LC at 0.3mg/mL concentration significantly improves the quality of embryos at day 3 and the %BDR at day 5 compared with the untreated group (P<0.001 and P<0.001 respectively).

**Conclusions:** Supplementation of LC in the culture media results in a significant improvement in embryo quality and %BDR. Use of LC in culture media may provide a novel approach to improve the ICSI outcome in infertile couples.

**Support:** None

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