Effect of vitrification on apoptosis in mouse blastocysts

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Abstract

Introduction: In recent years there have been a great advances in vitrification of embryos. However, there is no reliable vitrification protocol to ensure a high embryo survival rate, Because the mechanisms of embryo injury has not been discovered precisely. The aim of the present study was to determine the effects of vitrification on apoptosis in mouse blastocysts.

Materials and Methods: Ninety five mouse blastocysts were obtained by flushing from Swiss Albino mouse and randomly divided into control and experimental groups. Blastocysts in the control group (52) were cultured in M16 media for 2 hours and then the apoptotic index were obtained after staining by TUNEL technique with PI. Blastocysts in the experimental group (43) were vitrified just after flushing in EFS40 solution and kept in LN2 for one month. After thawing and culture in M16 for 2 hours, the apoptotic indices were obtained by TUNEL staining.

Results: The results showed that the mean number of blastomers in the vitrified blastocysts group (44.91±2.47) was not significantly different (P=0.176) from those that seen in the control group (50.23±2.9), while the mean number of apoptotic blastomers in vitrified blastocysts group (4.08±0.28) was significantly higher (P=0.02) as compared to the control group (4.93±0.22). The mean apoptosis Index in vitrified blastocysts (11.87±0.63) was significantly higher (P<0.004) than the control group (9.12±0.67).

Conclusion: we can conclude that the vitrification can increase apoptotic cell death in mouse blastocysts.

Key Words: Vitrification, Apoptosis, Mouse blastocyst, and TUNEL.

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