

AGE AS A PREDICTOR FOR OOCYTE REPAIR CAPACITY FOR SPERM DNA DAMAGE

Amr Abdel Kader^{1,2}, Hussein Abdelrazik¹, Reda Mahfouz¹, Rakesh Sharma¹, Ashok Agarwal¹, Tommaso Falcone¹

¹Reproductive Research Center, Department of Obstetrics - Gynecology and Glickman Urological Institute, Cleveland Clinic, Cleveland, OH. ²Department of Obstetrics & Gynecology, Alexandria University, Alexandria, Egypt.

Introduction and Objectives: The role of sperm DNA damage as an effector of ICSI outcome is now more clearly understood. However this effect is not sharply demarcated and variability of results is not explained. Female age is a well known contributing factor on ICSI results. That may be partially related to oocyte nuclear aging; impairing its DNA repairing capacity and acting as a regulator for sperm DNA damage effect on ICSI outcome. The objective of this study was to test the association between female age and the extent of DNA damage on ICSI outcome. **Methods:** Twenty-one couples undergoing infertility treatment by ICSI were involved in the study. Sperm DNA damage was assessed by Comet assay and DNA damage was classified as mild, moderate and severe. The effect of female age on fertilization rate, % of grade A embryos in patients with partners having mild and moderate or severe DNA damage was analyzed **Results:** Of the 21 couples, sperm from 3 male partners showed severe DNA damage and these were excluded from the analysis due to their small sample size. Female patients were divided according to age into 2 groups: Group I with patients < 32y and group II with patients' age \geq 32y. Twelve female patients were in group I, with mean age 27.3 ± 2.6 , while 9 were in group II, with mean age of 34.4 ± 2.5 . The mean fertilization rate was 80.1% in group I versus 69.5% for patients in group II and the embryo grade A was 74.5% vs. 52.4%. Patients in group I with male partners having mild DNA damage had fertilization rate of 82.5% and embryo grade A of 72.3%. Patients in group II with male partners having mild DNA damage had fertilization rate of 75.5% and embryo grade A of 51.3%. In couples with male partners with moderate DNA damage, group I patients had fertility rate and embryo grade A of 72.8% and 71%, while patients in group II showed 72.2% and 43.9% respectively. **Conclusion:** Sperm DNA effects on ICSI outcome are female age dependent. In young age group, decline in fertilization rate is increasing with increase in sperm DNA damage, while embryo grade is not affected. In older women, although fertilization rate is not affected, embryo grade decreases with increase in sperm DNA damage. A larger sample size will be helpful in defining the exact algorithm combining female age and sperm DNA damage for prediction of success rates in ICSI.