

The effect of sperm chromatin anomalies on pronucleus different size after IVF and ICSI

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Abstract

Pronucleus size, morphology and orientation are known to affect embryo quality, implantation and pregnancy success. The present study was aimed at evaluation of the possible relationship between sperm chromatin maturity tests (CMA3, aniline blue, SDS, SDS+EDTA) and semen parameters with percentage of zygotes with pronucleus size asynchrony. Semen of 115 men from IVF and ICSI couples were analyzed for sperm concentration, motility, morphology and the said tests. At least 17-19 hours after sperm insemination or ICSI, oocytes were scored for presence and relative size of their pronuclei and then the relationship between percentage of zygotes with pronucleus size asynchrony and semen parameters and the above tests was evaluated. A positive significant relationship was obtained between percentage of zygotes with unequal pronucleus size with protamine deficiency, excessive histones and ability of sperm to undergo decongestion in ICSI cases. However, no correlation was observed between this phenomenon and any of semen parameters and aforementioned tests in IVF cases. The result of this study and other studies show that evaluation of chromatin status is of paramount importance, since protamine deficiency not only directly affects fertilization rate, but also affects pronuclear morphology which influences embryo development, implantation and pregnancy success in IVF and ICSI. The effect of abnormal chromatin status on development of zygote might be mediated via abnormal pronucleus formation since sperms with abnormal chromatin are injected into oocytes during ICSI.

Keywords: Pronucleus size asynchrony, Sperm chromatin, ICSI, IVF and Protamine deficiency.

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