

Evaluation of ICSI-Selected Epididymal Sperm Samples of Obstructive Azoospermic Males by the CKIA System

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The objective of this study was to evaluate nuclear normality in intracytoplasmic sperm injection (ICSI)-selected epididymal sperm from obstructive azoospermic (OA) patients. We evaluated whether the selection criteria used in routine ICSI (morphology and motility at a magnification of 400x) is adequate for selecting "normal" sperm from epididymal samples. Surgically retrieved spermatozoa from the caput epididymis of 15 OA patients and ejaculated sperm samples from 9 normospermic donors were evaluated with a DNA-specific stain (Feulgen) and in combination with the computerized karyometric image analysis (CKIA) system. Original (unselected) samples and ICSI-selected sperm were compared in donor and patient samples. In the original fraction, a larger variation in almost all measured parameters was found in epididymal sperm than in ejaculated sperm. After sperm selection, the morphometry was comparable between epididymal and ejaculated sperm. However, for those parameters related to the DNA stainability and chromatin texture (nuclear condensation), significant differences between patients and donors were observed. This result suggests that the size and form of the sperm do not necessarily hold similar internal structures. Thus, the frequency of "normal" sperm significantly increased after ICSI selection, but the improvement was more marked in donor than in OA patients' samples. In conclusion, at least a twofold increase in the number of normal spermatozoa was achieved after ICSI selection. The heterogeneity in the stainability and chromatin condensation of epididymal samples from OA patients indicates that some of the selected spermatozoa have a hypocondensed or hypercondensed chromatin. Even in the best of donor cases, no more than 55% of the selected sperm scored normal with CKIA, indicating that the present routine ICSI selection criteria are not sufficient for selecting normal condensed nuclei.

Key words: Sperm selection, sperm normality, chromatin, condensation, DNA stainability

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