Commentary

Use of sperm DNA fragmentation test in ART setting: is it a promising diagnostic test?

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Professor Agarwal and colleagues described the different aspects of sperm DNA fragmentation (SDF) testing in clinical setting (1). As they commented, several assays have been introduced for analysis of SDF. However, the SDF testing is not routinely performed in andrology laboratories, despite many studies confirming that high SDF rates in seminal samples is associated with lower pregnancy rates in ART treatment cycles. In order to make an assay become a routine procedure, it should have advantages such as: being inexpensive, simple, less time consuming and highly efficacious.

TUNEL is a staining test that is expensive, but does not require special equipment. In addition, the smears can be made on the glass slides and be preserved for future assessment. But different studies expressed variable cutoff values for TUNEL. Moazzam *et al.* reported 15% DFI for normal fertile men without varicocele (2). Also, Muratori and associates reported DFI in fertile men as high as 28.9% (23–39%) using TUNEL test (3). Others reported calculated threshold value for TUNEL assay to distinguish between fertile and infertile men as 20% (4). The problem is that the majority of these studies reported their variable findings from neat semen; while in ART setting, the prepared sperm samples are important for clinical application. Another important issue is the exact interval between sperm ejaculation and ART procedure for the collection of the healthiest spermatozoa. We previously reported that prolonged incubation time for prepared normozoospermic samples caused an increase in DFI at 37 ℃ (5). Notwithstanding, the best temperature for sperm incubation after preparation is not known. It was also reported that prepared sperm incubated at room temperature caused less time dependent DFI, as compared with incubation at 37 ℃ (6). In addition, the quality of culture media in the protection of sperm DNA should be considered in the ART setting, as variations in HALO test was shown during sperm processing and incubation using different culture media (7).

In recent years, the controversial role of SDF testing in repeated pregnancy loss (RPL) has been debated by many reproductive scientists. It was noted that an advantage of SDF testing may reside in RPL cases with unknown cause, where the men are normozoospermic. Carlini *et al.* reported that semen samples from couples with RPL showed higher SDF than those from fertile or infertile males (8). However, no significant differences were noted in the live birth rates between low and high sperm DNA fragmentation when ICSI treatment was used (9).

So, what is the exact treatment strategy for patients with high SDF? The change of life style is difficult for many patients. The use of TESE has adverse effects such as inflammation, hematoma, de-vascularization, fibrosis, and decline of testicular hormonal function (10). TESE procedure is also invasive and stressful. Therefore, a high efficient sperm selection method is the best strategy for helping these patients. Recently, methods like MSOME, PICSI dishes and magnetic-activated cell sorting (MACS) have been introduced. It seems that MACS is the most effective method for deletion of apoptotic sperm cells

as it can detect the cells with apoptotic signs [annexin V (used as an apoptotic sperm marker)] (11). Therefore, SDF tests have solely predictive value for both patients and clinical team.

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Footnote

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