P4. **Sperm chromatin structure assay by flow cytometry**

Mihaela Zlei[1], Simona Cumpata[2],
Bogdan Doroftei[2,3]
[1]*Laboratory of Molecular Biology, Regional Institute of Oncology, Iasi, Romania*
[2]*Origyn Fertility Center, Iasi, Romania*
[3]"Gr. T. Popa" University of Medicine and Pharmacy, Iasi, Romania

Introduction. Sperm chromatin structure assay (SCSA) is a reliable test for sperm DNA fragmentation index (DFI) and high DNA stainability (HDS) and offers information predictive for male infertility, including for those patients with normal semen parameters that would otherwise be assigned with idiopathic infertility. SCSA also indicates whether the changes are reversible, thereby assisting clinical decisions. A high technical variability comes with a worldwide use of such a tool, therefore there is need for further studies validating clinically useful threshold values. Additional information may be provided by the complex SCSA assay, with potential implications on male infertility diagnosis and associated therapy options.

Materials and methods. Semen samples from 35 patients referred to the Origyn Fertility Center, Iasi, Romania (October 2013-January 2014), were SCSA tested. DFI, HDS and three additional FCM-derived parameters were evaluated: CVcomp (CV% of the signal from compact sperm DNA), %mod, and %high (% of sperm with fragmented DNA, having a moderate/ high fluorescence). Samples were processed based on a standardized protocol (SCSA Diagnostics Inc.). Internal assay validation (intra- and inter-assay coefficients of variation of 5,57 and 8,02 %, respectively) was performed on a FACS AriaIII (BD Biosciences) flow cytometer. The FlowJo (TriStar Inc.) software was used for FCM data processing.

Results. Semen samples from normozoospermic subjects (n=12) showed a statistically decreased CVcomp (p=0.019) when compared with those with an altered spermogram, while DFI and HDS were variable. Other significant data showed an association between high (>11) values of CVcomp with a decreased %high (p=0,045), a male/mixed-related cause of infertility (p=0,034), and a declared patient exposure to heat (p=0,047). There was a negative correlation between DFI and vitality (r=-0.76, p=0.021) and mobility (r=-0.53, p=0.028). No other statistically significant data were obtained for SCSA parameters evaluated.

Conclusions. Studies on larger cohorts are necessary to confirm these findings. Some of the patients within the study group are in the process of pending for clinical decision, therefore, there is still too early for correlation with the outcome of assisted reproductive procedures.

Acknowledgement: The current survey was supported by National Authority of Scientific Research of Romania (POSCCE Grant 1357 "Infertility a tree pieces puzzle: couple investigation, infertility diagnostic, possible therapy").