

ASSOCIATION OF SPERM DNA CYTOMETRY WITH ICSI OUTCOME

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Introduction and objectives: Fertilization and subsequent development depends in part on the inherent integrity of the sperm DNA. Analysis of sperm DNA content can be done by flow cytometry. It can classify sperm subpopulations into: condensed sperm chromatin (CSC) of mature sperm, non-condensed sperm chromatin of haploid spermatid (non-CSC), diploid cells and sub-haploid sperm with low DNA content. Our objective was to investigate the DNA content of the sperm cells in infertile patients undergoing ICSI.

Methods: Semen samples were collected from 39 infertile men. Each sample was divided into 3 aliquots for routine semen analysis, for ICSI preparation, and for flow cytometry analysis. Sperm DNA was tested using the cell cycle/DNA content assay by the flow cytometry. Patients were divided into two groups according to the pregnancy test: group I: pregnant (n = 17) and group 2: non-pregnant (n = 22).

Results: Table shows significant differences in CSC cells, non-CSC cells and sub-haploid sperm cells between the 2 groups (p <0.001, <0.01, <0.001 respectively). Group 2 showed significant negative correlation between sub-haploid cells with CSC, non-CSC sperm cells and diploid cells (r =-0.89, -0.67, -0.39). Similarly, pregnancy negative group also showed positive correlation between non-CSC with diploid cells. Group 1 showed significant negative correlation between haploid cells with non-CSC, and diploid cells (r =-0.57 and -0.59).

Conclusion: Sperm DNA cytometry can be used to predict ICSI outcome. Sub-haploid cell level may be helpful in predicting ART outcome.

DNA content sperm subpopulations	Pregnant (Group I) (n = 17)	Non-pregnant (Group II) (n = 22)
Condensed chromatin sperm (CCS) %	54.7 ± 3.9	18.3 ± 2.2 ^a

Non-Condensed chromatin sperm (non-CCS) %	5.8 ± 2.0	5.7 ± 1.0 ^a
Subhaploid sperm cells (%)	28.2 ± 3.0	73.9 ± 2.8 ^a
Diploid (spermatogenic) cells (%)	4.6 ± 2.2	1.9 ± 0.3
Results are expressed as mean ± standard error of mean. ^a →significant difference between positive pregnant (group I) and non-pregnant group (group II)		