COMPREHENSIVE CHROMOSOME SCREENING (CCS) IN SEVERE MALE FACTOR INFERTILITY COUPLES IMPROVES CLINICAL RESULTS


1PGD Molecular Cytogenetics, Igenomix, Spain
2IVF laboratory, Instituto Universitario IVI, Spain
3INCLIVA, Valencia University, Spain
4Fundación Instituto Valenciano de Infertilidad, FIVI, Spain
5Department of Obstetrics, School of Medicine Stanford University, USA

Introduction: Male meiotic disorders may evolve with low sperm count and numerical chromosome abnormalities in sperm, diminishing the chance of natural conception and increasing the risk of aneuploid offspring.

Objective: To evaluate the reproductive outcome of CCS cycles with array Comparative Genomic Hybridization (aCGH) in severe male factor infertility couples (sperm concentration ≤5x10^6/mL) without recurrent miscarriages or implantation failures and female age below 38 years.

Material and Methods: Day-3 single cell embryo biopsy was performed in 66 CCS cycles. After whole genome amplification, 24 chromosomes analysis was done by aCGH (BlueGnome, Cambridge, UK). Euploid embryos were transferred on day 5.

Results: A total of 459 embryos were analyzed, with 69.7% being abnormal after aCGH analysis. In 8.1% of the embryos complex abnormalities (≥3 affected chromosomes) were detected, 15.5% of the embryos had a chaotic pattern (most of the chromosomes affected), and 5.6% showed segmental aneuploidies (10Mb minimum size). Interestingly, 18.9% of the embryos were abnormal only for chromosomes different to the nine ones analyzed in the past with FISH technique in our laboratory (chromosomes 13, 15, 16, 17, 18, 21, 22, X, Y). The percentage of cycles that had embryo transfer with at least one euploid embryo was 87.9%, with 72.4% of clinical pregnancy rate per transfer and 63.6% per initiated cycle. Implantation and miscarriage rates were 62.8% and 2.4%, respectively.

Conclusion: Severe male factor infertility can contribute to the genesis of embryo aneuploidy and therefore aneuploidy screening of embryos can improve clinical outcome in these patients.