BRCA 1 / 2 GENE MUTATIONS DO NOT AFFECT THE CAPACITY OF CUMULO-OOCYTE COMPLEXES TO MATURE IN VITRO IN BREAST CANCER CANDIDATES FOR FERTILITY PRESERVATION.

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Abstract Body

Introduction: BRCA 1/2 genes play a critical role in the safeguarding of DNA integrity. Their mutation put women at increased risk of breast and ovarian cancers. Several line of evidence indicate that this genetic status may also be associated with ovarian dysfunction, in particular reduced ovarian reserve. In vitro maturation (IVM) of cumulo-oocyte complexes (COCs) retrieved at germinal vesicle stage, followed by vitrification of metaphase 2 oocytes, may represent an option for women seeking fertility preservation (FP), in whom ovarian stimulation is unfeasible. Since BRCA genes may play a role in the formation of synaptonemal complexes during meiosis, we hypothesized that their mutations might influence the oocyte maturation process. The present investigation aimed to compare IVM outcomes in breast cancer patients, carriers or not for BRCA 1/2 gene mutations.

Patients and methods: Retrospective analysis of 115 breast cancer candidate for FP using IVM. Number of COCs retrieved, maturation rates and number of metaphase 2 oocytes cryopreserved were compared according to BRCA mutation status.

Results: Overall, BRCA mutation carriers (n=28) and controls (n=87) were comparable in terms of age (31.9±3.4 vs. 31.7±4.0 years, respectively, NS) and ovarian reserve tests (antral follicle count: 20.0±9.4 vs. 21.4±9.8 follicles, NS; serum AMH levels: 3.0±1.6 vs. 3.7±2.1 ng/mL, NS, respectively). The number of COCs retrieved did not differ significantly between BRCA gene mutation carriers (9.0±6.1 vs. 10.1±7.4 oocytes, NS). After similar IVM rates (68.7±20.4 vs. 60.0±17.0%, NS), the number of metaphase 2 oocytes cryopreserved was similar in BRCA mutation carriers and patients not mutated (5.1±3.1 vs. 5.9±4.9, NS, respectively).

Conclusion: Despite a possible role of BRCA genes during the meiosis process, oocyte capacity to mature in vitro in mutated patients remains intact. Further investigations are needed to corroborate these preliminary findings.