American Society for Reproductive Medicine 2020 Virtual Congress

October 17-21, 2020

OVARIAN RESERVE AND RESPONSE TO STIMULATION AMONG PATIENTS UNDERGOING FERTILITY PRESERVATION FOR CANCER (ONCOFERTILITY) COMPARED TO THOSE PATIENTS WITHOUT A CANCER DIAGNOSIS

Devora Aharon, MD[1], Sydney Chang, MD[1], Dmitry Gounko, MA[2], Joseph A. Lee, BA[2], Alan B Copperman, MD[1] and Erkan Buyuk, MD[1]

1. Obstetrics, Gynecology and Reproductive Science, Icahn School of Medicine at Mount Sinai, Klingenstein Pavilion 1176 Fifth Avenue 9th Floor New York, New York, United States, 10029.
2. Reproductive Medicine Associates of New York, 635 Madison Ave 10th Floor New York, New York, United States, 10022

OBJECTIVE:

Whether malignancy has a harmful effect on ovarian function is currently unknown, with studies demonstrating conflicting results regarding ovarian reserve and response to stimulation among cancer patients.[1-2] The objective of this study is to determine whether oncofertility patients undergoing fertility preservation have reduced ovarian reserve and cycle outcomes compared to oocyte cryopreservation patients without cancer.

DESIGN:

Retrospective cohort study

MATERIALS AND METHODS:

Patients who underwent fertility preservation prior to undergoing chemotherapy and/or radiation for cancer treatment from February 2006 through May 2020 were included. Controls were other fertility preservation patients matched by age (within 2 years) and cycle year in a 2:1 ratio. Patients with a prior oophorectomy or prior chemotherapy or radiation were excluded. Age, BMI, AMH, basal antral follicle count (bAFC), basal estradiol (bE2) and follicle stimulating hormone (bFSH) values, number of oocytes and mature oocytes (MII) retrieved, and ratio of MII to oocytes retrieved were compared between the groups using comparative statistics. Linear regression was used to compare cycle outcomes and control for confounders.

RESULTS:

A total of 187 cancer patients who underwent fertility preservation were identified and included in the analysis, matched to 374 controls. 146 patients had breast cancer (75.4%), 19 had hematologic cancers (10.2%), 14 had endometrial or cervical cancers (7.5%), and 13 had other cancers (6.9%). Oncofertility patients were similar to patients without cancer in terms of age, BMI, AMH, bAFC, and bFSH. Oncofertility patients had significantly higher bE2 (62.4 ±56.1 vs. 46.0 ±33.0, p=0.001). Number of oocytes retrieved was similar between oncofertility patients and egg freezers without cancer (15.5 ±11.7 vs. 13.6 ±8.8, respectively, p=0.41). Oncofertility patients had a significantly lower number of MIIs retrieved (9.44 ±9.37 vs. 9.71 ±7.06, p=0.03) and MII/oocyte ratio (0.59 ±0.29 vs. 0.70 ±0.22, p=<0.0001). After adjusting for age, BMI, AMH, bAFC, bE2, and bFSH, egg freezing in patients without cancer was not associated with number of MIIs retrieved (β=-0.733, p=0.30) but was significantly associated with a higher MII/oocyte ratio (β=0.075, p=0.007).

CONCLUSIONS:

Oncofertility patients had similar ovarian reserve testing and oocytes retrieved, however the ratio of mature oocytes to total number of oocytes retrieved was lower when compared to egg freezing patients without cancer. This may be due to the effect of the underlying disease process on oocyte maturation, a shorter time frame to start and complete a cycle, or a physician bias in either the stimulation protocol or retrieval process to maximize oocyte yield in cancer patients who face potentially sterilizing treatment. Clinicians should counsel patients that while outcomes may not be identical in patients with cancer, fertility preservation with oocyte freezing can result in a satisfactory yield of mature oocytes for future use.

REFERENCES:

1. Lefebvre T, Mirallié S, Leperlier F, Reignier A, Barrière P, Fréour T. Ovarian reserve and response to stimulation in women undergoing fertility preservation according to malignancy type. Reprod Biomed Online. 2018;37(2):201-207. doi:10.1016/j.rbmo.2018.04.047
2. Molly M. Quinn, Hakan Cakmak, Joseph M. Letourneau, Marcelle I. Cedars, Mitchell P. Rosen, Response to ovarian stimulation is not impacted by a breast cancer diagnosis, Human Reproduction, Volume 32, Issue 3, March 2017, Pages 568–574, https://doi.org/10.1093/humrep/dew355