traction. Failure to quanitate spermatogenesis with Johnsen's score index does not explain the poor correlation between testicular sperm extraction and histological patterns.

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Ovarian Failure Post-Chemotherapy in Young Cancer Patients-Risk Assessment Indicate the Need for Intervention. 1D. Meirow, 1A. Lewin, 2R. Or, 2E. Rachmilewitz, 3S. Slavin, 1J. G. Schenker, D. Abramovich, 2D. Ben-Yehuda. 1Department of Obstetrics and Gynecology, 3Department of Bone Marrow Transplantation Hebrew University-Hadassah Medical School, Jerusalem, Israel.

Objectives: The development and widespread use of combination chemotherapy and radiotherapy have opened new vistas for long-term survival of young patients with cancer. Many adolescent and childhood lymphomas, leukemias and several solid tumors can now be cured. Frequently however, the price that is paid for success is ovarian failure and infertility. There is an urgent need to adjust new assisted conception techniques in order to minimize the sterilizing effects of treatment and to improve the quality of life of young survivors. Ovarian failure rate according to disease, treatment protocol and patient’s age was evaluated, in order to assess the risk facing each group.

Design: Clinical prospective study of cancer patients with proved normal ovarian function was conducted to evaluate ovarian failure risk according to disease, treatment protocol and patient’s age.

Materials and Methods: Patients were evaluated prior to chemotherapy administration. Only patients with normal menstrual cycles and normal gonadotropin levels and were included. Treatment protocol (drugs, doses and treatment cycles) were recorded. Gynecological evaluation including hormonal profile were performed months/years post treatment.

Results - Ovarian function was evaluated in 112 patients with lymphoma (41), leukemia (38) breast ca. (24) and other malignancies (9) aged 13-50. Ovarian failure rate for NHL was 49% (ages: up to 30- 19%, 31 to 40 62%, 41 to 50 75%). Ovarian failure rate for AML was 21% (ages: up to 30-0%, 31 to 40 42%, 41 to 50 50%). For breast cancer Ovarian failure was 66%. In 63 patients aged 13-51 bone marrow transplantation for cancer treatment caused sterility in all but 3 patients.

Conclusion: There were significant differences in ovarian failure rate, according to disease, patients with lymphoma and breast cancer who received long protocols (6 mo.) had a higher ovarian failure rate than patients with leukemia (although treatment for leukemia is more aggressive). High-dose chemotherapy in conjunction with bone marrow transplantation induce ovarian failure irrespective of the patient’s age. The population of cancer survivors has increased and this trend will continue in the future. Thus, the late complications of these treatments has assume greater significance. If the subject of fertility is discussed prior to treatment and the cases are properly selected, intervention can be offered (IVF with embryo cryopreservation or ovarian tissue cryopreservation) to rescue gametes and to overcome treatment-induced infertility.

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The Oocyte Factor in Severe Ovarian Hyperstimulation Syndrome (OHSS). 1M. A. Aboulghar, 1R. T. Mansour, 1G. I. Serour, 1A. Ramzi, 1A. Kamal, 1Y. Amin. 1The Egyptian IVF-ET Center, Maadi, Cairo, and 2the Department of Obstetrics and Gynecology, Faculty of Medicine, Cairo University, Cairo, Egypt.

Objectives: The implications of the high Estradiol (E2) levels and the large number of oocytes in OHSS on the outcome of assisted reproduction is not clear in the world literature. Our objective is to study the oocyte maturity, fertilization rate (FR), implantation and pregnancy rates in severe OHSS.

Design: Retrospective study with an age matched control group who were stimulated for in vitro fertilization (IVF) or ICSI during the same period with the same stimulation protocol.

Material and Methods: Group A = 42 patients who developed severe OHSS during ovulation induction for IVF or ICSI. They were diagnosed by the presence of ovarian enlargement more than 10 cm in diameter and massive ascites, diarrea and abdominal pain. Group B = 42 patients, an age matched control group who received the same stimulation protocol and did not develop OHSS. Based on clinical, hormonal and ultrasonic examination group A was subdivided into group A1 = 31 patients with polycystic ovaries (PCO) and group A2 = 11 patients who were high responders with no PCO. On the same basis group B was similarly subdivided into group B1 = 5 patients and group B2 = 36 patients. Oocyte maturity was diagnosed by the extrusion of the first polar body in ICSI and by the morphological appearance of the cumulus-corona cell complex in IVF.

Results: The mean E2 level, the mean number of oocytes per puncure, the percentage of mature oocytes, the FR were 6700±2350 pg/ml, 25±8.5, 62.7%, 41.5% in group A, and 2420±1540 pg/ml, 12.8±6.2, 76.4%, 59.4% in group B respectively. The difference was statistically significant in all items. The mean number of embryos per transfer, the implantation rate and the pregnancy rate were 3.9, 11%, 31% in group A and 3.7, 11.4%, 31% in group B. The difference was not significant between the 2 groups. In group A1, the mean number of oocytes, the percentage of mature oocytes and the fertilization rate were 27±8.1, 60% and 36% as compared to 21±6.6, 78 and 62% in group A2 respectively. The difference was statistically significant between all parameters.

Conclusion: The lower oocyte maturity and quality resulted in a lower FR in the OHSS group. However, the final number of embryos was compensated by the larger number of oocytes. In group A, the quality of embryos that reached embryo transfer (ET) were not different from the control group as shown by the similar implantation and pregnancy rates in both groups. This also suggests that
the extremely high levels of E2 in OHSS did not affect the endometrial receptivity. There was a highly significant difference in the percentage of PCO between groups A and B. This explains in part the reasons for the development of OHSS and its severity in group A, and the inferior quality of the oocytes in this group. Group A2 included high responders with no PCO. They produced significantly higher quality of oocytes and higher FR.

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Objectives: To identify cycles in which all the oocytes had different morphological abnormalities and relate it to fertilization rate (FR), pregnancy rate (PR), and outcome in our ICSI program.

Design: Retrospective study comparing the results of normal and abnormal oocyte ICSI cycles.

Materials and Methods: Analysis of oocyte morphology was done after removal of cumulus-corona cells using hyaluronidase. Examination was done under an inverted phase microscope at 400 × magnification. The oocytes were considered abnormal if it contained: 1) dark granular cytoplasm, 2) vaculated cytoplasm, 3) extracytoplasmic fragments, 4) irregular outline of the cytoplasm, 5) structureless zona. Immature oocytes were excluded from the study except when all the oocytes from one patient were immature at the time of retrieval. Cycles with normal oocytes were used as a control group.

Results: A total of one thousand ICSI cycles were revised and 66 cycles (6.6%) were diagnosed to have abnormal morphology for all oocytes (137 oocytes with extracytoplasmic fragments, 121 with vaculated cytoplasm, 185 with dark granular cytoplasm, 56 with irregular cytoplasmic membrane, and 8 with structureless zona). Three patients had the same kind of abnormal oocytes in previous ICSI cycles, and nine had previous total failure of fertilization. At the time of fixation, 32% rhesus oocytes did not contain a sperm (Group I); in Group II, 13% contained a single female pronucleus and 5% contained female karyomeres and in Group III, 44% oocytes contained multiple pronuclei and 10% demonstrated microtubule-mediated motility necessary to bring the male and female pronuclei into close apposition. A defect in one or more of these events is likely to lead to fertilization failure, whether conceived naturally in vivo or with the use of assisted reproduction, such as in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI).

Conclusion: Advanced Imaging of ART Failures: A New Diagnostic Approach. O. Khorram, C. Simerly, J. Jones, L. Hewitson, G. Schatten. Depts. of OB/GYN and Zoology, University of Wisconsin, Madison, WI.

Objectives: Fertilization in mammals culminates in the intermixing of the parental genomes on the mitotic apparatus prior to the first cleavage division. The success of this procedure is governed by several important events such as the completion of meiotic maturation of the oocyte with the extrusion of the second polar body, sperm penetration, the decondensation of the sperm nucleus and the maternal chromosomes into male and female pronuclei, the restoration of the sperm centrosome and the nucleation of microtubule-mediated motility necessary to bring the male and female pronuclei into close apposition. A defect in one or more of these events is likely to lead to fertilization failure, whether conceived naturally in vivo or with the use of assisted reproduction, such as in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI).

Design: The cytoskeletal elements of failed to fertilize oocytes from human IVF (39 oocytes) and ICSI (24 oocytes) were examined.

Material and Methods: Oocytes were fixed and labelled with specific probes to cytoskeletal molecules and examined with sophisticated digital conventional and confocal microscopy.

Results: This imaging permits the fertilization failures to be classified into three groups: Group I - unfertilized oocytes (no sperm present); Group II - parthenogenetically activated oocytes and Group III - oocytes arresting post-sperm incorporation. Following IVF, 28% oocytes had not been penetrated (Group I); in Group II, 13% contained a single female pronucleus and 5% contained female karyomeres and in Group III, 44% oocytes contained multiple pronuclei and 10% demonstrated microtubule nucleation/sperm aster defects. Following ICSI, 21% did not contain a sperm (Group I); 4% developed parthenogenetically (Group II) and in Group III, 67% contained multiple pronuclei and 8% underwent premature chromosome condensation (PCC). In a parallel study, 31 arrested rhesus monkey oocytes fertilized by ICSI were examined for the cause of fertilization failure and categorized into the same three groups. At the time of fixation, 32% rhesus oocytes did not contain a sperm (Group I); in Group II, 48% were parthenogenetically activated and 3% developed female karyomeres and in Group III, 13% underwent PCC and 6% developed multiple pronuclei.

Conclusions: The types of fertilization failure reported here were found in human oocytes fertilized by either IVF or ICSI and in rhesus oocytes fertilized by ICSI demonstrating the utility of the rhesus monkey as an animal model to examine the causes of fertilization failure in humans. These discoveries have important implications for studying centrosome inheritance and function in a variety of species.