The ART of Reproductive Medicine: Oncofertility

AN INTRODUCTION TO A NEW APPROACH IN MEDICINE

Fred
55 year old leukemia survivor
Was treated with chemotherapy
Angry that he had not been able to become a parent

Adam
3 years old and diagnosed with leukemia
He has just started chemotherapy treatment.
Parents are worried about his future prospects of fatherhood.

Angela
15 years old and has just been diagnosed with leukemia
Has been scheduled for chemotherapy and radiation therapy.
Hopeful due to new research to preserve her fertility after surviving her cancer

70,000 patients exposed to chemotherapy or radiation therapy
Breast Cancer 30,000 cases/year
Lymphoid malignancies 30,000
Childhood cancers 6,500
Solid tumors (cervical, osteosarcoma) 5,000

5 Year Cancer Survival Rate
All cancers 64%
Breast cancer 90%
Childhood cancers 75%

2015 – 1 person in 285 children in the USA will be diagnosed with cancer
Attempts to Preserve Fertility Have Met with Little Success – There Are Only a Few Current Clinical Options

Effect of Chemotherapy on the Ovary

Premature Ovarian Failure (no eggs) - Infertility

Effect of Radiation Therapy on the Ovary

Testicular Failure (no sperm) - Infertility

Photos: Dr. Mary Zelinski, PhD, ONPRC

The Oncofertility Consortium:
The Preservation of Fertility for Cancer Patients

An Interdisciplinary Research Consortium

T.K. Woodruff, Northwestern University, Principal Investigator (PI)
http://oncofertility.northwestern.edu/
www.MyOncofertility.com

Our mission: Exploring and expanding options for the reproductive future of cancer survivors

Developing strategies to preserve fertility in women and men - real and theoretical (research)

What Are The Obstacles?

- What is the specific fertility threat of the life-preserving cancer drugs? Can we predict how new cancer drugs will affect fertility?
- How do we optimally store and recover gonadal tissue? Can we cryopreserve and grow human ovarian follicles?
- What are the key concerns and treatment decisions that are made at diagnosis and how do gender, race/ethnicity, socioeconomic and family status factor into decisions?
Further Considerations

- What role do healthcare practitioners and religious counsel play in the decision?
- What are the ethical and legal concerns regarding the use of advanced reproductive technologies in cancer patients?
- How do families facing a child’s cancer diagnosis decide whether or not to participate in the ovarian cryopreservation work?
- What is the cost/benefit analysis of fertility preservation?

Research Grants for Oncofertility

R01 grants
- Novel Methods for Cryopreservation and Recovery of Female Follicles
  M. Zelinska, ONPRC, OHSU
- Bioengineering Primate Follicles
- Preserving and Growth of Human Follicles
  R.J. Chang, University of California, San Diego; T. Woodruff, Northwestern
- Discovery in the Humanities and Social Science of Oncofertility
  L. Zoloth, Northwestern

P30 grants
- Biomaterials Core – L. Shea, Northwestern
- National Physicians Cooperative – M. Gerrity, Northwestern

Training modules
- R25 grant – Learning Modules in Oncofertility – Northwestern, ONPRC, UCSD
- T90/R90 grants - Training the Globally-ready Oncofertility Scholar – C. Coutifaris, U. Pennsylvania

From Bench to Bedside

This research will aid in developing safe and effective ways to protect human ovaries from damage by anticancer therapies and to restore fertility to these patients.

Photos: Microsoft Clip Art