Pediatric and Adolescent Oncofertility

Best Practices and Emerging Technologies

Teresa K. Woodruff
Yasmin C. Gosiengfiao
Editors

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Preface

We are delighted to publish the fifth book in a series in partnership with Springer about the emerging area of oncofertility now including pediatric and adolescent patients. There has been a remarkable increase in the number of options for adult male and female cancer patients since the publication of our first book *Oncofertility: Fertility Preservation for Cancer Survivors* (ed. Woodruff and Snyder, 2007). The second book *Oncofertility: Ethical, Legal, Social and Medical Perspectives* (eds. Woodruff, Zoloth, Campo-Engelstein, Rodriguez, 2010) addressed complex issues and created a broad dialogue globally around what is possible and needed for cancer patients in a variety of settings. We then turned our attention to a definitive book on medical practice *Oncofertility Medical Practice: Clinical Issues and Implementation* (eds. Gracia and Woodruff, 2012), which provides not only the most up-to-date information on clinical decisioning but also includes the IRB and consent procedures and forms. Since oncofertility is at the intersection of a variety of fields, creating a way to communicate complex ideas across disciplines and patient groups led to a very popular *Oncofertility Communication: Sharing Information and Building Relationships Across Disciplines* (eds. Woodruff, Clayman, and Waimey, 2014). The books have been and are being translated into multiple languages, and, in many ways, I felt we had covered the intellectual terrain for this field. But it became abundantly clear that the emerging issues associated with pediatric and adolescent cancer patients required a fresh look at this topic to inform the field about the concerns, gaps, current solutions, and research that will change the field in the coming years. I'm delighted that Dr. Yasmin Gosiengfiao, M.D., Attending Physician, Division of Hematology, Oncology & Stem Cell Transplantation, Ann & Robert H. Lurie Children's Hospital of Chicago, and Assistant Professor of Pediatrics, Northwestern University Feinberg School of Medicine, joined me in inviting an outstanding group of authors and soliciting diverse subject matter that will ensure that the reader is as up to date as possible.

The chapters in this book start with a "must read" from Drs. Leslie Appiah and Dan Green outlining the "Fertility Risks with Cancer Therapy." If you have time for only one chapter, this is the one to read. We then invited a group of experts in pediatric and adolescent female and male issues ranging from options, sexual function,

new research, and testing for gonadal reserve. Even as we think a great deal about oncofertility, this book also covers, for the first time, the emerging area of fertility management for patients with disorders of sex development and sexual minorities and fertility concerns for b-thalassemia patients. Pediatricians, endocrinologists in particular, are seeking information in this area that is contemporary and difficult, thinking about consent, assent, age, ethics, and other core issues.

Finally, we give information on providing fertility preservation consults, the ethics of this field, and insurance and reimbursement issues as well as chapters that address issues that emerge from our Global Oncofertility Network.

We had a great deal of help on this project from Leandra Stevenson, and the editors thank her for ensuring this project could be completed in a timely fashion.

We hope you enjoy *Pediatric and Adolescent Oncofertility - Best Practices and Emerging Technologies* – let us know what you think!

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Chapter 1
Fertility Risk with Cancer Therapy

Leslie A. Appiah and Daniel M. Green

Introduction

Advances in cancer treatments have significantly changed the outcome for pediatric cancers with 5-year survival rates approaching 75–80 %. With improvements in treatment, 1 in 25 cancer survivors will be of reproductive age [1]. Fertility compromise occurs in 8–12 % of female survivors [2] and one-third of adult male survivors of childhood cancer [3]. Manifestations of gonadal injury include disordered puberty from hormonal deficiency, decreased reproductive and sexual function, psychosocial effects, and menopause-related health problems in female survivors such as cardiac, skeletal, and cognitive dysfunction. Standard options for fertility preservation include sperm, oocyte, and embryo banking. Investigational options include testicular, ovarian, and immature oocyte cryopreservation [4, 5]. Most options are invasive and costly, and standard options in females require a minimum of 2 weeks of intervention prior to proceeding with cancer treatment [6]. Estimating risk prior to therapy allows determination and implementation of the appropriate fertility preserving therapies. Identifying agents that protect the ovary prior to and during cancer therapy may mitigate the need for invasive and costly fertility preserving therapies while preserving hormonal function after cancer treatment.

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