Preface

Among the growing number of malignancies associated with obesity, endometrial cancer risk and prognosis has long been identified with overweight and obesity, and ovarian cancer has more recently been identified as having a positive association. Endometrial cancer has, in fact, been recognized as having the greatest obesity-associated increase in risk and the most alarming obesity-associated increase (sixfold) for death among all cancers in women. Endometrial cancer is the fourth most common cancer in women with an estimated 61,380 new cases and 10,920 deaths in 2017. Ovarian cancer is less common, estimated at 22,440 cases in 2017, but higher in mortality with 14,080 deaths expected in 2017. Almost all aspects of uterine and ovarian cancers, across the spectrum from etiology, epidemiology, diagnosis, selection, and response to intervention, survivorship, and impact of lifestyle on survivorship, as well as effects of ethnic background and age are affected by obesity as well as by other components of energy balance, especially physical activity and exercise.

The overall goal of this volume is to examine the intersection of these factors, their impact on disease progression, and the important influence of research on modifying energy balance to better understand and improve disease prevention, management, and prognosis. The volume is divided into three sections. The first section on epidemiology reviews relation of obesity to endometrial cancer and to ovarian cancer and provides insight into public understanding of the importance of obesity as a risk factor for gynecologic malignancies. The second section describes major aspects of biology and the linkages connecting obesity to gynecologic cancers including hormonal status, adipokines, adipose stromal cells, and in particular, use of model systems to study the impact of energy balance on gynecologic malignancies. Section three focuses on prevention strategies including hormonal and lifestyle interventions to disrupt the linkage between obesity and gynecologic malignancies. The volume concludes with chapters focused on management strategies for obese patients with gynecologic malignancies and their precursors.

The contributors to this volume are drawn from the world’s leading physicians and scientists seeking to better understand the relation between energy balance and gynecologic malignancies and improve their outcomes. In Chap. 1, Melissa Merritt, Imperial College London, UK, and Marc Gunter, International Agency for Research
on Cancer, Lyon, France, review epidemiologic evidence for the association of obesity with endometrial cancer and its modulation by factors affecting circulating estrogens. In Chap. 2, Carmen Jochem, Inga Schlecht, and Michael Leitzmann, University of Regensburg, Regensburg, Germany, review the epidemiologic evidence relating obesity to ovarian cancer. Chapter 3, written by Shannon Armbruster and Pamela Soliman, University of Texas MD Anderson Cancer Center, Houston, TX, deals with the public awareness, or lack thereof, of the relation between obesity and gynecologic malignancies. In Chap. 4, Louise Brinton and Britton Trabert, National Cancer Institute, Bethesda, MD, explore the important contributions of estrogen and progesterone as modulators of the impact of obesity on gynecologic malignancies. Chapter 3, written by Shannon Armbruster and Pamela Soliman, University of Texas MD Anderson Cancer Center, Houston, TX, deals with the public awareness, or lack thereof, of the relation between obesity and gynecologic malignancies. In Chap. 5, describes the relation of obesity to precursors of endometrial cancer and potential interventions. Starting the section on mechanisms linking obesity to gynecologic cancer, Elizabeth Connor, Ofer Reizes, and Caner Saygin, Lerner College of Medicine at Case Western Reserve University and Cleveland Clinic, Cleveland, Ohio, in Chap. 6, describe the potential role of adipokines as mediators of this relation. Chapter 7 by Ann H. Klopp, University of Texas MD Anderson Cancer Center, describes the contribution of adipose-derived stromal cells to gynecologic cancers. In Chap. 8, Rosemarie Schmandt and Katherine Naff, University of Texas MD Anderson Cancer Center, discuss the use of rodent model systems to study the effects of obesity, diet, and exercise for prevention of gynecologic malignancies. The third section of this volume, focused on prevention strategies, begins with Chap. 9 written by Faina Linkov, Sharon Goughnour, Shalkar Adambekov, Robert Edwards, Nicole Donnellan, and Dana Bovbjerg, University of Pittsburgh, Pittsburgh, PA, who survey lifestyle interventions to reduce the risk of obesity-associated endometrial cancer. Chapter 10 by Sarah Kitson and Emma Crosbie, University of Manchester and St. Mary’s Hospital, Manchester, UK, focuses on a mechanistic approach to overcome insulin resistance and prevent endometrial cancer using hormone and metabolic strategies.

The fourth section of this volume is composed of chapters focused on treatment strategies to most effectively address the issues associated with energy balance and to improve outcomes in patients with gynecologic malignancies. In Chap. 11, Joseph Dottino, Karen Lu, and Melinda Yates, University of Texas MD Anderson Cancer Center, Houston, TX, discuss strategies and unique considerations for management of endometrial cancer precursors in obese women. Nora Nock, Case Western Reserve University, Cleveland, OH, in Chap. 12, reviews impact of trials involving exercise, diet, and behavioral counseling in women with gynecologic cancers. In Chap. 13, Tianyi Huang and Shelley Tworoger, Harvard University, Boston, MA, analyze the complex and controversial relation of physical activity with ovarian cancer risk and survival. In Chap. 14, Amanika Kumar and William A. Cliby, Mayo Clinic, Rochester, MN, discuss important aspects of understanding the nuances of intraoperative and perioperative management of gynecologic malignancies in the obese patient. Terri Woodard, University of Texas MD Anderson Cancer Center and Baylor College of Medicine, Houston, TX, and Jessica Robin, Baylor College of Medicine, Houston, TX, in Chap. 15, discuss unique challenges and strategies
for preserving fertility while treating women with gynecologic malignancies. In Chap. 16, Leslie Clark and Victoria Bae-Jump, University of North Carolina, Chapel Hill, NC, review the biologic mechanisms and possible therapeutic use of metformin as adjuvant therapy for ovarian and endometrial cancers.

Overall, this volume provides a comprehensive treatise on the latest studies concerning the intersection of gynecologic malignancies with energy balance, which together constitute a major challenge and opportunity for research scientists and clinicians, especially those dealing with the expanding population of women confronted by challenges in energy balance. This volume should be a valuable resource to physicians, oncologists, gynecologists, nurses, nutritionists, dieticians, and exercise therapists dealing with women with challenges and/or questions regarding the linkage between energy balance and cancer. Moreover, because of the magnitude and severity of these problems, this volume should serve as an important resource for cancer researchers, especially for scientists studying lifestyle modification and prevention strategies as well as more fundamental aspects of genetics, pharmacology, and endocrinology.

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