SUMMARY OF SCIENTIFIC BREAKTHROUGHS
FROM THE 2019 ASTRO ANNUAL MEETING

THE ROLE OF RADIATION THERAPY IN CANCER CARE

ASTRO

TARGETING CANCER CARE

Introduction

Hearing a cancer diagnosis is scary. Overwhelming. Confusing. Many questions flood your mind when you learn you or a loved one have cancer. And trying to learn and understand all the treatment options can be daunting to say the least. At the American Society for Radiation Oncology (ASTRO), our mission is to advance the practice of radiation therapy by promoting excellence in patient care, which includes promoting radiation oncology research and disseminating results to both our members and patients.

For more than 100 years, doctors have been using radiation therapy, also known as radiotherapy, to treat patients diagnosed with cancer. Radiation therapy is often combined with other treatment options, like chemotherapy or surgery, or used as a stand-alone treatment. Radiation therapy is an effective option for many people faced with a cancer diagnosis. In fact, nearly two-thirds of all cancer patients are treated with radiation during their illness.

Radiation therapy targets cancer cells and damages the DNA of the cell. The radiation destroys the ability of the cancer cells to reproduce and repair, causing the cells to die. Once these cancer cells die, the body naturally eliminates them. Normal cells that surround the cancer cells are affected by the radiation treatment as well, but the normal, healthy cells can repair themselves far better than the cancer cells. Advances in radiation therapy have allowed doctors to better target the cancer to reduce the risk of side effects from radiation. Despite the name, radiation therapy does not cause a patient to become radioactive. Radiation therapy treatments allow most patients to continue with their typical daily activities. Side effects vary based on the location and type of cancer, and many patients continue to work or go to school while undergoing treatments.

With radiation therapy, research often focuses on this question: What is the right dose of radiation for each patient? Sometimes more intense therapy is needed, and in others, is it possible to reduce the amount and intensity of treatments while still achieving excellent outcomes for patients? How do radiation oncologists find the right balance between reducing treatment doses to improve patients' quality of life while making sure that the reduced treatment remains powerful enough to stop the cancer from spreading?

The answer is research, where scientists and physicians work together to discover new cancer treatments. Today, radiation oncologists are actively researching safe and effective radiation treatments, including more personalized approaches and studies of lower doses for a variety of cancers.

In an effort to disseminate the latest science related to radiation therapy, ASTRO prepared this pamphlet, which highlights some of the top research presented at our 2019 Annual Meeting.

We encourage you to review all of your treatment options, including radiation therapy, with your primary care physician before determining which option or combination of options is best for you and your lifestyle.

Theodore L. DeWeese, MD, FASTRO
Chair, ASTRO Board of Directors

Gynecological

Gynecologic cancers include malignancies of the female genital tract involving the vulva, vagina, cervix, uterus, fallopian tubes or ovaries. The American Cancer Society estimates that more than 113,000 women will be diagnosed with some form of gynecologic cancer in 2020.

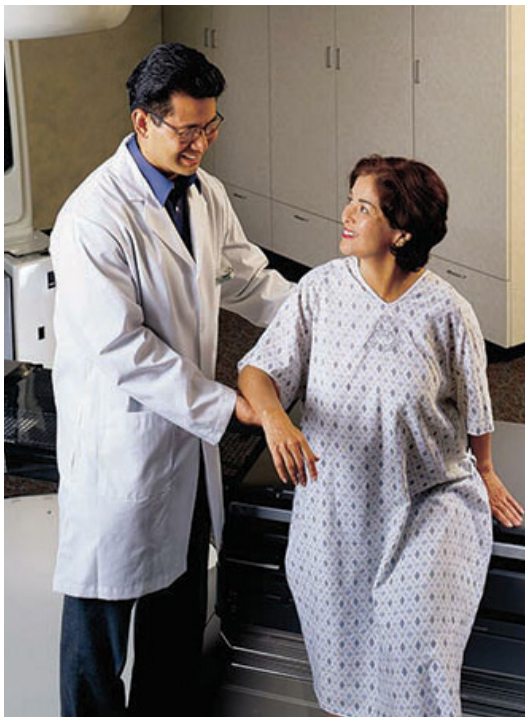
Women with high-risk endometrial cancer live longer when chemotherapy is added to radiation therapy

When it comes to treating women with endometrial cancer, physicians usually start by performing surgery to remove as much of the cancer as possible. Typically, this includes a hysterectomy to remove the woman's uterus (the endometrium is the uterus's inner lining), fallopian tubes and ovaries. If the cancer is more advanced, nearby lymph nodes may also be removed.

But then what? A recommendation for additional treatment after surgery (called adjuvant treatment) to reduce the risk of the cancer coming back depends on the risk factors found in the cancer tissue, for example high grade, unfavorable histological type or advanced stage. Women with so-called high-risk endometrial cancer comprise about 15-20% of the endometrial cancer patients. These women typically receive chemotherapy and/or radiation therapy once they recover from surgery, with the exact therapy and dose depending on cancer stage and other factors. Radiation oncologists are eager to learn the results of high-quality trials that compare different treatments head-to-head.

One such study has found that women with high-risk endometrial cancer who received both chemotherapy and radiation therapy lived longer than those who received only radiation. This study, known as the PORTEC-3 clinical trial, included 660 women who were randomly assigned to receive both chemotherapy and radiation or radiation therapy alone. Among women in the combined therapy group, 81.4% were still alive after five years. In the radiation-only group, 76.1% were still alive after five years.

According to lead author, Stephanie M. de Boer, MD, Leiden University Medical Center, Leiden, Netherlands, women who had a cancer type known as serous endometrial cancer had worse outcomes. This was true regardless of which treatment they received. In the combined treatment group, 71.4% of patients with serous disease were alive after five years, while only slightly more than half of patients in the radiation-only group, 52.8%, survived that long. In addition, women with stage III endometrial cancer were also found to benefit more from chemotherapy than those with stage I-II disease.



Dr. de Boer and her colleagues also analyzed cancer recurrence trends among the participants. They found that 30% of the radiation-only patients developed cancer that came back but in different parts of the body, while only 22% of patients in the combined therapy group did. When patients' endometrial cancer did return, this was most often (80%) during the first two years after surgery.

Dr. de Boer emphasized that the findings apply mostly to patients who have advanced disease. "While women with stage III disease benefitted from receiving chemotherapy plus radiation, pelvic radiation therapy remains the standard of care among patients who have stage I-II disease, even with high-risk characteristics, as also found in the U.S. GOG-249 trial, which was published this year," she said.

Radiation oncologists can offer sexual health resources following cervical cancer treatment

Sexual health is often overlooked in the aftermath of a gynecologic cancer diagnosis and treatment, especially since many women who have finished treatment are just relieved to have survived. "Both the mental stress and dealing with side effects from radiation therapy and chemotherapy are known to reduce interest in sex," said Kathrin Kirchheiner, PhD, a clinical psychologist at the Medical University of Vienna in Austria. "But in many women, that desire comes back and is an important part of being alive and well." Dr. Kirchheiner and her colleagues run the longstanding EMBRACE clinical trial, which studies patients with locally advanced cervical cancer who were treated with external radiation therapy, chemotherapy and internal radiation therapy (brachytherapy). To date, more than 20 studies have been published using EMBRACE data.

In the newest one, Dr. Kirchheiner focuses specifically on EMBRACE patients' sexual health. As part of their follow-up care, more than 1,400 cervical cancer patients from 22 medical centers around the world completed questionnaires about their sexual activity and quality of life.

Participants completed their first questionnaires after receiving their cervical cancer diagnosis but before starting treatment. They also completed questionnaires during the first three years after treatment so that the researchers could learn about how treatment for cervical cancer affects women's ability to have and enjoy sex. "We already knew that radiotherapy causes changes in the vagina that can lead to sexual problems," Dr. Kirchheiner said. "However, the findings indicate that nearly 60% of the patients studied are sexually active after treatment. Sexual problems were found in around one-third of those patients."

Dr. Kirchheiner hopes that these study results will help improve patients' quality of life in the months and years following treatment. "There are very effective intervention strategies to either prevent vaginal side effects or to reduce existing symptoms," she said. "We need to talk about it more openly and implement sexual health programs as integral parts of cancer rehabilitation."

But don't feel you need to wait for your radiation oncologist to raise the subject. "My core message to patients is that your sexual life is not over after radiation therapy and chemotherapy, but you might need to adapt to changes in your vagina caused by radiation therapy," Dr. Kirchheiner said. "Talk to your radiation oncologist because help is available if you already experience sexual problems, such as vaginal dryness, the feeling of vaginal shortening or tightening or pain during intercourse."

Post-operative IMRT for endometrial and cervical cancers results in fewer GI and urinary side effects

In this study of women getting radiation after surgery for endometrial and cervical cancer, the authors wanted to find out if fewer gastrointestinal (GI) and urinary symptoms would occur if they used intensity-modulated radiation therapy (IMRT), a technique that adjusts the radiation beam to the shape of a tumor, allowing for the same effective doses of radiation to be delivered while minimizing exposure to surrounding healthy tissue, instead of standard 4-field radiation therapy for pelvic radiation.

Patients completed questionnaires at various times during and after radiation to report GI and urinary symptoms. A total of 279 patients took part.

The authors found that women who received IMRT had fewer GI symptoms at the end of radiation and one year after completing radiation compared to women who received standard 4-field radiation. There were no differences in GI symptoms between the two groups at three years after completing radiation.

Women who received IMRT also had fewer urinary symptoms at the end of radiation and at three years after completing radiation. The study also compared how effective treatment was in controlling cancer and found no difference between the two groups.

This study shows that IMRT to the pelvis after surgery results in fewer patient-reported GI and urinary symptoms compared to standard 4-field radiation. This reduction in symptoms happens both during radiation and afterward when effects still show up. As a result of this study, lead author Anamaria Yeung, MD, suggests that IMRT in this setting should become standard instead of 4-field pelvic radiation.