In Advanced Kidney Cancer, Antibiotic Use Lowers Efficacy of Immunotherapy

Summary includes updated data not in the abstract

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Expert Perspective

“As cancer immunotherapy options grow and evolve, we’re beginning to understand more about the relationship between gut bacteria and the immune response to cancer,” said ASCO Expert Sumanta Pal, MD, moderator of today’s presscast. “It’s remarkable that antibiotic use could have such a negative impact on the efficacy of immunotherapy. This study suggests that patient antibiotic use should be considered carefully so that the possible benefits of immunotherapy are not compromised.”

ALEXANDRIA, Va. – A new retrospective analysis suggests that immunotherapy may be less effective in patients who receive antibiotics less than a month before starting treatment. In the study, cancer worsened more quickly in such patients than in those who did not receive antibiotics (median progression-free survival 2.3 months vs. 8.1 months). The study will be presented at the upcoming 2017 Genitourinary Cancers Symposium in Orlando.

According to the authors, this study is the first to analyze the impact of antibiotics on immune checkpoint inhibitors and provides the first evidence of a relationship between the gut microbiome (microbes residing in the gut) and patients’ response to immunotherapy.

The researchers believe that the negative effect of antibiotics is due to the antibiotics wiping out the “good bacteria” in the gut. Earlier, research in mice suggested that certain microorganisms dwelling in the gut interact with the immune system in a way that seems to help immune checkpoint inhibitors work better.

“These early findings show that doctors prescribing cancer immunotherapy should pay closer attention to antibiotic use,” said lead study author Lisa Derosa, MD, a PhD candidate at the Gustave Roussy Cancer Institute, Paris-Sud University in Villejuif, France. “This research may be
relevant to more than just kidney cancers, as antibiotics are commonly prescribed to patients with cancer to prevent or treat infections related to cancer treatment or weakened immune system.”

The Study
The analysis included 80 patients with metastatic renal cell carcinoma who were enrolled in prospective clinical trials of immune checkpoint inhibitors. The patients were treated with single-agent PD-1 or PD-L1 inhibitors, combinations of PD-1 inhibitors and CTLA-4 inhibitor or combinations of PD-L1 inhibitor and bevacizumab. Overall, 16 patients had been treated with broad-spectrum antibiotics (antibiotics that work against a wide range of bacteria) up to one month before receiving the first dose of immunotherapy.

Key Findings
Cancer worsened faster in patients who had received antibiotics, regardless of factors such as patient age, gender and tumor characteristics. According to the authors, there is preliminary indication that overall survival may also be shorter with antibiotic use, but longer follow up is needed to reach a definitive conclusion.

Next Steps
The researchers plan to enroll additional patients in this study. At the same time, they will continue studies in mice to try to pinpoint the types of gut bacteria that affect response to immune checkpoint inhibitors and the kinds of antibiotics that have the greatest impact on outcomes. Meanwhile, other ongoing studies in kidney and lung cancers are exploring the connection between antibiotic use and outcomes with cancer immunotherapy.

About Kidney Cancer
An estimated 64,000 people will be diagnosed with kidney cancer in 2017 in the United States, and more than 14,400 will die of the disease. The rates of kidney cancer have been steadily rising over the last decade. Renal cell carcinoma is the most common type of adult kidney cancer, making up about 85% of diagnoses.

This study was supported by grants from the Philanthropia Foundation.

View the full abstract.

For your readers:
- Guide to Kidney Cancer
- Understanding Targeted Therapy

2017 Gastrointestinal Cancers Symposium News Planning Team:
Sumanta K. Pal, MD, American Society of Clinical Oncology (ASCO); Daniel A. Hamstra, MD,
About the American Society for Radiation Oncology:
The American Society for Radiation Oncology (ASTRO) is the premier radiation oncology society in the world, with more than 10,000 members who are physicians, nurses, biologist, physicists, radiation therapists, dosimetrists and other health care professionals that specialize in treating patients with radiation therapies. As the leading organization in radiation oncology, the Society is dedicated to improving patient care through professional education and training, support for clinical practice and health policy standards, advancement of science and research, and advocacy. ASTRO publishes three medical journals, *International Journal of Radiation Oncology, Biology, Physics*, *Practical Radiation Oncology*, and *Advances in Radiation Oncology*, developed and maintains an extensive patient website and created the *Radiation Oncology Institute*, a non-profit foundation to support research and education efforts around the world that enhance and confirm the critical role of radiation therapy in improving cancer treatment. Learn more about ASTRO.

About ASCO:
Founded in 1964, the American Society of Clinical Oncology, Inc. (ASCO®) is committed to making a world of difference in cancer care. As the world’s leading organization of its kind, ASCO represents more than 40,000 oncology professionals who care for people living with cancer. Through research, education, and promotion of the highest-quality patient care, ASCO works to conquer cancer and create a world where cancer is prevented or cured, and every survivor is healthy. ASCO is supported by its affiliate organization, the Conquer Cancer Foundation. Learn more at [www.ASCO.org](http://www.ASCO.org), explore patient education resources at [www.Cancer.Net](http://www.Cancer.Net), and follow us on Facebook, Twitter, LinkedIn, and YouTube.

About the Society of Urologic Oncology:
The Society of Urologic Oncology (SUO) was created in 1984 to enable qualified members primarily interested in the care of patients with malignant genitourinary diseases to meet for the purpose of discussion, development, and implementation of ideas to improve care. The Society

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and its bylaws conform to the guidelines and bylaws of the American Urological Association (AUA).

The purpose of the SUO is to develop educational and research initiatives and to study issues in urologic oncology and provide physician statements that represent a state of the art assessment of these issues to other organizations.

The Society also provides a forum for identifying the urologic oncologist as a physician with specific expertise in the study and treatment of genitourinary malignancies. In recognition of the multidisciplinary efforts involved in the study and treatment of genitourinary malignancies, the Society seeks to incorporate multiple disciplines in achieving these goals. The Society supports the activities of multiple disciplines in the common objectives of seeking an increased understanding and successful treatment of genitourinary malignancies.

The SUO seeks to improve the care of patients with malignant urologic disease and to provide a forum for the discussion of problems relating to malignant urologic disease. Our objectives include: 1) Stimulating research in and the teaching of urologic oncology, 2) Disseminating the principles of urologic oncology to the medical profession at large, 3) Bringing urologists into a Society whose work is entirely, or principally with malignant disease, 4) Being identified as the most qualified organization on matters relating to urologic oncology, and 5) Standardize fellowship training in urologic oncology.

Please visit our website, suonet.org or call (847) 264-5901 for more information on how to become a member.