THE UNIVERSITY OF TEXAS
MD Anderson Cancer Center
Proton Therapy

Men's Urinary and Bowel Function Safeguarded with Proton Therapy

Two MD Anderson-led studies conclude that patients' urinary, bowel function safe-guarded

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Andrew K. Lee, M.D

Two studies led by The University of Texas MD Anderson Cancer Center have found thatproton therapy preserves the quality of life, specifically urinary and bowel function, in men treated with this targeted radiation modality for prostate cancer.

Both studies, led by Andrew K. Lee, M.D., M.P.H., associate professor in MD Anderson's Department of Radiation Oncology, will be presented in a poster session at the 54th Annual Meeting of the American Society for Radiation Oncology (ASTRO).

"As oncologists, we obviously want good cancer control outcomes, but we also want to ensure that patients maintain a strong sense of continued quality of life after treatment, which can be very personal and subjective for each patient," said Lee.

"With this research, we looked at the well being of prostate cancer patients, post-treatment, and it was important that we obtain this information directly from men who actually underwent the therapy, rather than from their treatment providers," Lee continued. "In our own practice, we've observed that patients have done very well as measured by disease control and quality of life metrics. Our findings, both the wider-perspective multicenter study and the research conducted solely at MD Anderson, validate what we observe in our clinic."

The first, a multi-institutional study, and one of the largest quality of life studies of its kind ever conducted in such a patient population, involved more than 1,000 patients treated with proton therapy for various stages of prostate cancer. The men had all received proton therapy, with or without hormone therapy, at one of five proton therapy centers across the country. All participants were at least one year to more than 10 years post-treatment. The men completed the Expanded Prostate Cancer Index Composite (EPIC) survey, a comprehensive and validated tool designed to assess a patient's health-related quality of life, including function and bother after prostate cancer treatment. (The survey uses a scoring system of 1 to 100 in several quality of life areas; higher EPIC scores correlate with better function and quality of life.) The self-reporting was independently conducted by the patient, unaided by their respective treating institution.

This cohort of prostate cancer patients was compared to a cohort of 112 healthy men, all of whom did not have prostate cancer. The median age of those with prostate cancer and those without the disease was 65 and 64.8 years old, respectively.

In the post-treatment analysis, Lee and his colleagues found that men with prostate cancer treated with proton therapy reported excellent urinary and bowel summary scores, 89.8/100 and 92.7/100, respectively, similar to the healthy men, 89.5/100, and 92.4/100, respectively.

When comparing sexual function in both cohorts, the researchers found a statistically significant difference in the healthy men, compared to in those treated with proton therapy.

“However, when further analyzing these scores, it’s important to note that decreased sexual function is more often associated with those proton patients who also received hormone therapy, had higher Gleason scores, were older at time of treatment, and/or greater years post treatment,” Lee noted.

“In general, our patients are interested in learning how they will do compared to those treated with other modalities, but, more importantly, they want to know how they are going to do relative to their own normal state of health. With such a large data set, this study offers us a guide to have that discussion with patients considering proton therapy.”

The second study focused only on patients treated at MD Anderson for prostate cancer with proton therapy; the findings complement those of the multi-center study. All of the men were treated for localized prostate cancer with proton therapy with or without hormone therapy between 2006 and 2009.

For this prospective study, Lee looked at the quality of life scores of 299 men receiving one of two proton doses: one cohort (100 men) received 75.6 Gray Equivalents (GyE) at 1.8 GyE/fraction; the second cohort (199 men) received 76 GyE at 2 GyE/fraction. The median age of both groups was 65 years old. Study participants completed the EPIC survey before receiving proton therapy, and at periodic intervals following their therapy.

Lee and his MD Anderson colleagues found a small but statistically significant difference in both groups in urinary and bowel function from their baseline scores to their scores at three years post-treatment; however, these changes were not clinically significant. No meaningful difference in quality of life changes between the dose groups was noted, except for sexual bother.

The researchers also assessed for toxicities in these patients. The three-year cumulative rates of Grade 2 urinary side effects, defined by Lee as those requiring some medical intervention (e.g. alpha blockers), were 24.1 percent and 17.6 percent for the 75.6 GyE and 76 GyE groups, respectively. The three-year cumulative

rates of grade two rectal side effects were 10 percent and 13 percent for the first and second cohort, respectively. Only two men had Grade 3 toxicities, requiring additional medical or procedural intervention.

Three years post-treatment, both groups reported high satisfaction rates with their proton therapy, 91 percent and 93.5 percent.

Lee and his colleagues hope to compare the findings in the multi-center trial to patients who received other treatment modalities. He also plans to perform an analysis of a larger group of MD Anderson proton patients with longer follow up.

Besides Lee, other authors on the all-MD Anderson study include: Seungtaek Choi, M.D., Quynh Nguyen, M.D., TJ Pugh, M.D., Benson Mathai, Steven Frank, M.D., Karen Hoffman, M.D., Deborah Kuban, M.D., Sean McGuire, M.D., Ph.D. and Mark Munsell.

Other authors on the multi-institutional study include: Lawrence Levy, Seungtaek Choi, M.D., and Quynh Nguyen, M.D., all from MD Anderson; Carl Rossi, M.D., Scripps Proton Center; David Bush, M.D. and Jerry Slater, M.D., Loma Linda University Medical Center; Nancy Mendenhall, M.D., University of Florida Proton Therapy Institute; Sameer Keole, M.D., Radiation Medicine Associates; and Anthony Zietman, M.D., Massachusetts General Hospital.

For the multi-institutional study, the EPIC survey was distributed by ProtonBOB, a prostate cancer advocacy organization. None of the authors report financial declarations.