Despite hype, costly prostate cancer treatment offers little relief from side effects

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Prostate cancer patients receiving the costly treatment known as proton radiotherapy experienced minimal relief from side effects such as incontinence and erectile dysfunction, compared to patients undergoing a standard radiation treatment called intensity modulated radiotherapy (IMRT), Yale School of Medicine researchers report in the *Journal of the National Cancer Institute*.

Standard treatments for men with prostate cancer, such as radical prostatectomy and IMRT, are known for causing adverse side effects such as incontinence and erectile dysfunction. Proponents of proton radiotherapy argue that the physical properties of protons may decrease these common side effects.

"Proton radiotherapy is increasing in popularity and more and more proton centers are being built throughout the country," said the study's lead author James Yu, M.D., assistant professor of therapeutic radiology at Yale Cancer Center and member of the Yale Cancer Outcomes, Public Policy, and Effectiveness Research (COPPER) Center at Yale. "However, there is a surprising lack of information about whether proton radiotherapy is actually superior to IMRT."

To find out, the Yale COPPER team studied a national sample of about 30,000 men with Medicare coverage who received treatment with either IMRT or proton radiotherapy for prostate cancer from 2008 to 2009. During this time, there were six centers offering proton radiotherapy in the United States and the authors found that some men travelled across the country for the treatment.

The team found that the incidence of complications such as problems with urinary function was slightly lower for proton radiotherapy at six months after treatment, but by 12 months after treatment there was no longer any difference. Despite the fact that there was no longer term benefit to the treatment in terms of side effects, Medicare paid over $32,000 per course of treatment, compared to less than $19,000 for a course of IMRT.

"We were surprised by these findings," said Cary Gross, senior author of the study and co-director of the COPPER Center. "Cancer centers are paying up to $100 million to build their own proton centers, and patients are travelling long distances to undergo proton therapy because the conventional wisdom has been that proton radiotherapy is better than IMRT. Our results suggest that this enthusiasm for proton therapy may be premature; it remains to be seen how proton radiotherapy will compare to IMRT at 10 or 15 years post-treatment."

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