Use Of Advanced Treatment Technologies For Prostate Cancer Increases Among Men With Low-Risk Disease

Use of advanced treatment technologies for prostate cancer, such as intensity-modulated radiotherapy and robotic prostatectomy, has increased among men with low-risk disease, high risk of noncancer mortality, or both, a population of patients who are unlikely to benefit from these treatments, according to a study in the June 26 issue of *JAMA*.

"Prostate cancer is a common and expensive disease in the United States. In part because of the untoward morbidity of traditional radiation and surgical therapies, advances in the treatment of localized disease have evolved over the last decade. Chief among these are the development of intensity-modulated radiotherapy (IMRT) and robotic prostatectomy," according to background information in the article. "During a period of increasing population-based rates of prostate cancer treatment, both of these advanced treatment technologies have disseminated rapidly. However, the rapid growth of IMRT and robotic prostatectomy may have occurred among men with a low risk of dying from prostate cancer. Recognizing the protracted clinical course for most of these cancers, clinical guidelines recommend local treatment only for men with at least a 10-year life expectancy."

"Aggressive direct-to-consumer marketing and incentives associated with fee-for-service payment may promote the use of these advanced treatment technologies," the authors write. "The extent to which these advanced treatment technologies have disseminated among patients at low risk of dying from prostate cancer is uncertain." They add that understanding patterns of new technology use in this population is particularly important given the growing concerns about overtreatment.

Bruce L. Jacobs, M.D., M.P.H., of the University of Michigan, Ann Arbor, and colleagues conducted a study to assess the use of advanced treatment technologies, compared with prior standards (i.e., traditional external beam radiation treatment [EBRT] and open radical prostatectomy) and observation, among men with a low risk of dying from prostate cancer. Using Surveillance, Epidemiology, and End Results (SEER)-Medicare data, the researchers identified a retrospective group of men diagnosed with prostate cancer between 2004 and 2009 who underwent IMRT (n = 23,633), EBRT (n = 3,926), robotic prostatectomy (n = 5,881), open radical prostatectomy (n = 6,123), or observation (n = 16,384). Follow-up data were available through December 2010. Low-risk disease was defined as clinical stage ≤T2a, biopsy Gleason score ≤6, and prostate-specific antigen level ≤10 ng/mL. High risk of noncancer mortality was defined as the predicted probability of death within 10 years in the absence of a cancer diagnosis.

The researchers found that the use of advanced treatment technologies was

common among men with low-risk disease (an increase from 32 percent in 2004 to 44 percent in 2009), those with a high risk of noncancer mortality (from 36 percent in 2004 to 57 percent in 2009), and those with both low-risk disease and a high risk of noncancer mortality (from 25 percent in 2004 to 34 percent in 2009).

Among all patients diagnosed with prostate cancer in SEER, the use of advanced treatment technologies for men unlikely to die of prostate cancer increased from 13 percent in 2004 to 24 percent in 2009, a relative increase of 85 percent. "That is, rates of IMRT and robotic prostatectomy use increased from 129.2 per 1,000 patients in 2004 to 244.2 per 1,000 patients diagnosed with prostate cancer in 2009. At the same time, the use of prior standard treatments for men least likely to benefit decreased from 11 percent in 2004 to 3 percent in 2009," the authors write.

"The increasing use of both IMRT and robotic prostatectomy in populations unlikely to benefit from treatment was largely explained by their substitution for the treatments they aim to replace, namely EBRT and open radical prostatectomy."

The researchers suggest that the absolute magnitude of the use of advanced treatment technologies in these populations has two important implications. "First, both treatments are considerably more expensive than the prior standards. Start-up costs for both approach $2 million. Further, IMRT is associated with higher total episode payments, which translate into an additional $1.4 billion in spending annually. Thus, the implications of any potential overtreatment with these advanced treatment technologies are amplified in financial terms."

"Second, and perhaps more important, the implementation of these technologies in populations unlikely to benefit from treatment occurred during a time of increasing awareness about the indolent nature of some prostate cancers and of growing dialogue about limiting treatment in these patients. Our findings suggest that even during this period of enhanced stewardship, incentives favoring the diffusion of these technologies outweighed those related to implementing a more conservative management strategy."

"Continued efforts to differentiate indolent from aggressive disease and to improve the prediction of patient life expectancy may help reduce the use of advanced treatment technologies in this patient population," the authors conclude.

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