Clinically localized prostate cancer in 2017: A review of comparative effectiveness

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Abstract: Introducing the topic of comparative effectiveness for prostate cancer treatments with a reminder of the disease’s heterogeneity risks tautology. However, the profound variation both in this cancer’s biology and its clinical course is increasingly widely recognized, while management alternatives for clinically localized prostate cancer have exploded. Available options now include active surveillance, multiple surgical approaches to prostatectomy, various forms of external-beam and interstitial radiation, and a growing list of energy ablative technologies. Each treatment option has its own efficacy rate as well as its own set of complications, side effects and financial costs.

Difficulties comparing these options, together with the high prevalence of the disease, led the Institute of Medicine to include localized prostate cancer among the top 25 priority conditions for future comparative effectiveness research.

The sheer volume of possible treatment options, with their individual risks and benefits, can be confusing for patients and clinicians to research, understand and explain. To help clinicians navigate these treatment options, we have assembled this Urologic Oncology Seminar on the comparative effectiveness of treatments for clinically localized prostate cancer. The articles focus on high quality evidence-based medicine and most have included useful tables summarizing seminal trials and available resources.

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address these issues as they answer “What’s the best way not to treat prostate cancer?”

Most patients receiving treatment for localized prostate cancer elect either surgical extirpation with radical prostatectomy or a form of radiotherapy. Drs. Tyson, Penson, and Resnick compare the oncological efficacy of these treatments in “The comparative effectiveness of available management strategies for clinically localized prostate cancer” [5]. Of note, this article was prepared before the recent publication of the ProtecT trial, which compared patients for a median of 10 years after randomization to either surgery, radiotherapy, or active monitoring based on PSA assessments [6]. No difference was found in overall or prostate cancer–specific survival among the 3 groups, which was not unexpected given that 77% of the patients had Gleason 6 prostate cancer, a group with negligible 15-year prostate cancer–specific mortality [7]. However, increased rates of metastases and disease progression among the active monitoring patients (who did not undergo scheduled biopsies and many of whom had Gleason 7 cancers) suggest that the survival curves are likely to separate in subsequent analyses. Although the late oncologic outcomes comparing surgery and radiation were nearly identical, the rates of biochemical recurrence were 14% in the radiotherapy group and 4.6% in the surgery group, despite a much more stringent recurrence definition for radiation patients, suggesting that we may see mortality outcomes diverge in the future.

Modern radiotherapeutic options for localized prostate cancer have evolved substantially in recent years. There is now a growing number of different radiotherapies, some of which are aggressively marketed directly to patients [8]. Drs. Moon, Efstathiou, and Chen discuss the widespread adoption and efficacy of intensity-modulated and image-guided radiotherapy, hypofractionation, proton therapy, and stereotactic body radiotherapy in “What’s the best way to radiate the prostate in 2016?” [9].

Treatment of localized prostate cancer causes well-described side effects, including urinary incontinence, erectile dysfunction, and rectal toxicity that deleteriously affect patients’ quality of life. Concern about these side effects often affects patients’ choice of treatment, thus understanding and describing them are an important aspect of comparing the different treatment modalities. Efforts to objectively study these conditions helped to lead the development of validated instruments that continue to be refined and improved. Drs. Shirk and Saigal describe the development of the various validated instruments currently in use and summarize the research using them in “From QOL to QALYs: comparing non oncologic outcomes in prostate cancer survivors across treatments” [10]. Again, findings from the randomized ProtecT trial were published as the article was completed. This trial confirmed that surgery is associated with more incontinence and less obstructive urinary symptoms than other options; radiation caused more bowel symptoms; and surgery caused more early erectile dysfunction, with differences across treatments in sexual function markedly attenuating with longer follow-up [11].

Finally, with the increased focus on the cost of care in today’s healthcare environment, much public and governmental scrutiny has been placed on the high financial costs of localized prostate cancer treatment. A modern comparison of different treatment options would be incomplete without a cost analysis of these expensive treatments, which Drs. Muralidhar and Nguyen perform in “Maximizing resources in prostate cancer: a summary of cost-effectiveness studies” [12].

We are hopeful that this seminar series is useful and educational to the broader urologic community will provide helpful resources in the invariably complex task of counseling a newly diagnosed patient with prostate cancer about the myriad management options available to him.

References