EDITORIAL

MRI and prostate cancer: the next frontier

Laurence H. Klotz, Editor-in-Chief

Imaging lesions prior to treatment is deeply ingrained in urologic practice. One would no sooner consider operating on a renal cancer, a kidney stone or an obstructed ureter without imaging than one would fly to the moon. And yet, we routinely manage prostate cancer without any imaging beyond transrectal ultrasound (TRUS). Although TRUS technology and accuracy are improving, this technology remains a very limited means of assessing tumour extent for most practitioners, and the results of TRUS are not generally incorporated into treatment decisions.

The consequence is that we rely on prostate-specific antigen (PSA) and biopsy data to make treatment decisions. This approach, although reasonably effective (due to the power of Gleason scoring and the correlation between PSA and cancer volume), is also quite flawed. Undersampling of the anterior prostate, failure to systemically biopsy the entire prostate, and labile fluctuation of PSA all contribute to uncertainty about extent of disease. Yet the prostate is not "terra incongnito." It is a relatively small, accessible organ. We should not have to "guess" what the extent of disease is.

To that end, magnetic resonance imaging (MRI) has recently come of age. The advent of diffusion weighting and dynamic contrast enhancement has led to tremendous advances in imaging quality. It is now possible, in most cases, to evaluate disease with unprecedented accuracy. The manuscript by Kim and colleagues from Ottawa reports a sensitivity of 94% for cancer location and 82% for extraprostatic extension.[1] Specificity is also high. This study was done using relatively "low-tech" MRI, i.e., 1.5 Tesla and an abdominal coil.

This advance is real. It has the potential for substantial improvement in the results of prostate cancer management. Tough decisions about whom to place on surveillance, whether to perform nerve sparing and whether to offer focal therapy will be made with more confidence. More accurate staging would reduce overtreatment at the favourable end of the spectrum, and reduce undertreatment at the unfavourable end.

Based on this data and other emerging and recently published studies, MRI should likely become part of the staging workup of patients with newly diagnosed prostate cancer. In England, where MRI is widely available and relatively inexpensive, it has increasingly become part of the standard workup for newly diagnosed patients. Adoption of this approach in Canada would require a major shift in resources. At the moment, it is simply not possible to obtain an MRI for newly diagnosed prostate cancer patients in most regions of the country. It will require a concerted effort to change this.

This issue includes 2 guideline-related publications of general interest. A common criticism of guideline development is that, once developed and promulgated, the impact of a guideline on clinical practice is rarely evaluated. The group from Calgary deserves congratulations for analyzing the outcome of a guideline recommending neoadjuvant chemotherapy for invasive bladder cancer.[2] Remarkably, the rate of neoadjuvant chemotherapy increased from 0.8% to 14% pre- and post-guideline. This was a retrospective study, and other factors influencing practice cannot be excluded, including a general change in attitude by clinicians between 2002 and 2007. The study demonstrates the value of guidelines, notwithstanding there is still a lot of upside potential. The figure should be more like 65%. (I have recently shifted from an adjuvant to neoadjuvant approach, influenced by guidelines such as this one and recent data on the low rate of adjuvant therapy in post-cystectomy patients).

I have mixed reaction to the high-intensity focused ultrasound (HIFU) guideline. The authors have rejected HIFU as an alternative to accepted treatments for localized prostate cancer.[3] The first statement in the Key Evidence section is "There is currently no randomized evidence comparing the efficacy of HIFU to accepted curative treatments for localized prostate cancer." This is, of course, a high bar that most other treatments (with the notable exception radical prostatectomy, compared to watchful waiting in the Scandinavian study) do not pass. The authors acknowledge this with the later statement

that, in spite of the absence of randomized trials, "each approach has evolved as a standard treatment option based on mature clinical data from well-designed prospective studies." Thirty-four HIFU studies in almost 7500 patients were reviewed. It appears to be the lack of maturity of the studies that results in a recommendation against HIFU. Lack of maturity by definition characterizes the data on every new treatment for the first or second decade. The results of the existing studies are summarized very well, but there is no comment about how they compare with other treatments. (In fact, they appear to compare relatively well.) High-intensity focused ultrasound admittedly has some hurdles to pass before it would be considered a standard therapy (including completion of several comparative FDA trials currently underway in the United States). However, the key statement in the guideline that "HIFU cannot currently be recommended as an alternative to accepted curative treatment approaches for localized prostate cancer" seems out of keeping with the relatively favourable data summarized in the report. We encourage our readers to read this article and draw your own conclusions.

References

1. Kim B, Breau RH, Papadatos D, et al. Diagnostic accuracy of surface coil magnetic resonance imaging at 1.5 T for local staging of elevated risk prostate cancer. *Can Urol Assoc J* 2010;4:257-62.
2. Miles BJW, Fairey AS, Eliasziw M, et al. Referral and treatment rates of neoadjuvant chemotherapy in muscle-invasive bladder cancer before and after publication of a clinical practice guideline. *Can Urol Assoc J* 2010;4:263-7.
3. Lukka H, Waldron T, Chin J, et al. High-intensity focused ultrasound for prostate cancer: a practice guideline. *Can Urol Assoc J* 2010;4:232-6.