The Improving Landscape of Urologic Oncology

The first issue of Cancer Control dedicated to urologic malignancies was published just over 15 years ago. Since then, advances in both technology and our knowledge of these malignancies have significantly improved the management of prostate, bladder, kidney, testis, and penile cancer. While a significant gap remains in our understanding of the molecular mechanisms that promote and suppress cancer, the gap is closing and newer better treatments have been developed that benefit our patients as never before.

At the time of that inaugural issue 15 years ago, the concept of active surveillance for prostate cancer did not exist, radiation delivery consisted in 3-D conformal technology, the majority of prostatectomies were performed through an open surgical approach, and the only effective systemic therapy available for metastatic prostate cancer was hormonal blockade. Now, active surveillance is included in clinical guidelines as a valid option in the management of selected men with early localized prostate cancer, the majority of surgeries are performed by laparoscopy with robotic assistance, and improved radiation therapy technologies (intensity-modulated radiation therapy with image guidance, and high-dose radiation therapy, hypofractionation) have been developed to deliver optimal therapeutic doses with decreased toxicity. Six systemic therapies, including a vaccine, are currently approved for use in advanced prostate cancer, and research efforts are continuing to bring to clinical practice the next generation of drugs that affect specific molecular pathways based on the molecular makeup of individual tumors.

Fifteen years ago, the management of bladder cancer, both superficial and invasive, was poorly defined and MVAC (methotrexate, vinblastine, doxorubicin, and cisplatin) was the only available systemic therapy for metastatic disease. Since then, guidelines for the management of superficial, invasive, and metastatic bladder cancer have improved, and less toxic chemotherapeutic agents for systemic therapy have become available.

The management of localized kidney cancer consisted mainly in radical nephrectomy, and there were no effective systemic treatments for metastatic cancer. Today, we have clear guidelines for the management of selected localized kidney cancers by active surveillance, partial nephrectomy or focal ablation with cryosurgery or radiofrequency ablation. The management of kidney cancer has evolved into a more “personalized” approach with many commercially available targeted therapies.

In this issue of Cancer Control, the authors bring us up to date on several changes and aspects in the evolving field of urologic oncology.

A significant challenge across the disease spectrum of prostate cancer is accurate staging. Advances in technological developments have improved the application of imaging to assist the practitioner in screening, staging, assessing for disease recurrence, and monitoring treatment efficacy. In the first article in this issue, Dr Outwater and colleagues review these technologies, including endorectal MRI and sodium-fluoride PET-CT, and also their application in different clinical scenarios.

While the role of active surveillance for the management of localized prostate cancer is now better defined, some patients will progress when pursuing this management strategy and will not benefit from intervention at the time of progression. In the last 10 years, focal therapy for prostate cancer has been investigated as a management option for men with low-grade, small-volume disease who present with unifocal lesions or multiple lesions in which one is considered the clinically significant focus that drives tumor aggressiveness. My colleagues and I present a review of the current status of focal therapy as well as the challenges with patient selection, strategies for follow-up, and determination of long-term efficacy.

Several agents are available to treat metastatic prostate cancer, such as hormonal blockade, cytotoxic agents, bone-targeted agents, and immunotherapy. How does one sequence these multiple therapies? Drs Liu and Zhang discuss the mechanism of action of these agents and review the clinical trials leading to approval by the US Food and Drug Administration (FDA). They present the rationale for sequencing and combining these agents in men with advanced disease.

The standard of care for invasive bladder cancer is radical cystectomy preceded by neoadjuvant chemotherapy. Bladder preservation is a management alternative for selected patients with invasive bladder cancer. An experienced multidisciplinary team determines the best patients for this treatment option and follows a complex protocol that requires combining aggressive endoscopic resection of the primary tumor, arranging for the logistics of timing chemotherapy with radiation therapy, and preparing to proceed with timely cystectomy when indicated. Patients treated...
with chemoradiation require long-term multidisciplinary follow-up. Dr Biagioli and colleagues review the available literature on bladder preservation and discuss the logistic requirements needed to implement this management option.

Drs Gupta and Mahipal next review the current status of systemic chemotherapy available for metastatic bladder cancer as well as its use in the neoadjuvant and adjuvant settings.

Solid renal tumors are discovered more frequently at an early stage and are amenable for management by observation, partial nephrectomy, or thermal ablation with either cryosurgery or radiofrequency. Drs Buethe and Spiess discuss the guidelines for evaluation of small renal masses and the outcomes with the different treatment alternatives currently available.

Then, Dr Fishman reviews current available targeted agents for metastatic kidney cancer and the clinical trials leading to FDA approval. He presents an algorithm describing the sequential use of these agents.

Finally, an “Infections in Oncology” feature reports on the still rare but increasing problems from infections from fluoroquinolone-resistant organisms after transrectal procedures, including placement of fiducial markers for radiation therapy.

The improvements in urologic oncology over the past 15 years are partly derived from major scientific discoveries that have provided a better understanding of the mechanisms that regulate cancer. These have led to more and better systemic treatments. In addition, the major technological advances in instruments to perform surgery and to administer radiation therapy have already led to improved clinical care and outcomes. It will be interesting to speculate about what areas of urologic oncology will be most impacted by the changes that will occur during the next 15 years. That further progress will be made, however, is certain.

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