



Editorial – referring to the article published on pp. 359–367 of this issue

Do Percutaneous Renal Tumor Biopsies at Initial Presentation Affect Treatment Strategies?

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As outlined by Remzi and Marberger [1] in the current issue, the use of percutaneous biopsies in the evaluation and management of small renal tumors is currently being reevaluated for several reasons, including the observed stage migration, improved biopsy techniques, alternative treatment strategies, and an improved understanding of the natural history of small renal tumors. However, the most important question regarding the use of percutaneous biopsy remains: How will the biopsy results alter eventual treatment?

A major impetus for changing the approach to the management of small renal tumors has been the observed stage migration of renal tumors at initial presentation. A review of the Surveillance, Epidemiology, and End Results (SEER) registries demonstrated a 52% increase in the incidence of kidney cancer between the years 1983 and 2002 [2]. Interestingly, the largest increase in was noted in tumors <4 cm in maximal diameter, with the incidence of tumors <2 cm and tumors 2–4 cm in maximal diameter increasing by 285% and 244%, respectively. Coupled with the increase in incidentally detected small renal tumors, minimally invasive treatment strategies have been introduced in an attempt to decrease treatment-associated morbidity. While nephron-sparing surgery remains the standard of care for renal tumors <4 cm, ablative and observational therapies are gaining acceptance, especially in the management of elderly and infirm patients. Unfortunately, ablative and observational therapies

are frequently undertaken without pathologic evaluation of the renal tumor. A recent meta-analysis by Kunkle et al [3] evaluating the clinicopathologic features and oncologic outcomes among small renal mass treatment strategies in >6000 tumors noted a significant difference in the occurrence of pathologic evaluation between excisional, ablative, and observational therapies. Tumors treated with cryoablation, radiofrequency ablation, and observation lacked pathologic evaluation in 18%, 43%, and 54% of patients, respectively. Furthermore, it is important to realize that of the tumors undergoing observation with available pathology, the vast majority of pathologic assessment was performed at the termination of a course of observation, and few tumors underwent pathologic assessment prior to initiating or during a period of observation. Regardless of the type of treatment employed, the lack of pathologic data has obvious implications for the timing and type of posttreatment surveillance.

Contemporary prospective in vivo series as outlined by Remzi et al demonstrate the improvements in accuracy obtained with enhanced imaging and biopsy techniques, with the ability to accurately differentiate benign and malignant disease ranging from 89% to 96% in prospective series [1]. However, the insufficient/inconclusive biopsy results range widely, from 3% to 21% in different series. Although accuracy in regard to histologic subtype and nuclear grade was somewhat lower, ranging from 78% to 92% and 70% to 76%, these features do not often

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dictate treatment algorithms in patients presenting with small renal tumors. Another recent review by Lane et al compared the precision of renal tumor biopsies in series published before and after 2001 [4]. The accuracy in differentiating benign and malignant disease increased from 88% to 96% in series published after 2001, while the number of insufficient/inconclusive biopsies remained relatively unchanged. In addition to the improved accuracy of biopsies in contemporary series, a decreased rate of complications has also been noted. Although encouraging, when considering these apparent improvements in the accuracy and safety of percutaneous biopsies, one must remember that they represent the results obtained at experienced and high-volume centers and likely do not reflect the results obtained at low-volume institutions.

Despite the improved accuracy and low complication rates associated with renal mass biopsies, a common prejudice against their routine use in the initial evaluation of renal tumors is that the results will not ultimately affect treatment. Obviously, the impact of the results on treatment strategy is dependent on the individual clinical scenario. For example, a renal biopsy of a 3-cm tumor revealing oncocytoma in a 75-yr-old patient with multiple medical comorbidities has much different implications than the same findings in a 40-yr-old patient with no medical comorbidities. Despite the known risk of coexistent renal cell carcinoma with oncocytoma, 10% to 18%, the 75-yr-old patient would likely be best served by a course of active surveillance. However, the finding of benign histology in a young healthy patient is not as straightforward. Although benign, oncocytomas can still be associated with significant morbidity. Dechet et al noted tumor-related constitutional symptoms in 15% and gross hematuria in 12% of patients in a series of 138 oncocytomas [5]. Additional insight into the natural history of oncocytomas detected on percutaneous biopsy has been provided by Neuzillet et al [6]. In their series of 15 patients undergoing active surveillance following the diagnosis of oncocytoma on renal biopsy, 40% (6 of 15) eventually underwent surgical excision despite the benign findings on initial biopsy. Indications for surgery included large tumor size at presentation, observed tumor growth kinetics, and patient preference. Patients undergoing surgical therapy were significantly younger than those continuing observation, and only one patient, 17% (1 of 6), demonstrated coexistent renal cancer at the time of nephrectomy. Of the 60% (9 of 15) of patients continuing active surveillance, none had developed tumor-related symptoms at a

mean follow up of 50 mo. Although the majority of patients in this series avoided surgical therapy, the cost and potential morbidity of a lifetime of active surveillance in a young patient must be considered given the low morbidity of surgical therapy [7].

In patients in whom malignant disease is detected at the time of biopsy, it is unlikely that the biopsy findings will alter definitive treatment selection, as histologic predictors of treatment response have yet to be identified. Future improvements in the yield from renal tumor biopsies may be provided through the analysis of molecular biomarkers in addition to conventional histologic tumor features. This may be of most benefit to patients considering active surveillance, as the finding of adverse molecular biomarker expression may affect treatment decisions. Although several molecular biomarkers have shown independent significance in predicting disease progression following treatment, the correlation between biomarker expression on biopsy samples and whole-tissue sections is currently unknown [8]. However, as these potential improvements in renal mass biopsies are made, they may be quickly supplanted by advances in noninvasive imaging techniques.

New insight into the natural history of small renal tumors is leading to a paradigm shift in their evaluation and treatment. While partial nephrectomy remains the standard of care in the management of small renal tumors, the introduction and acceptance of ablative and observational treatment strategies will surely increase the use of percutaneous biopsies. However, the true impact of percutaneous biopsies on primary treatment algorithms remains undetermined, limiting the use of percutaneous biopsies to select patients.

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