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EDITORIAL

Kidney tumor biopsy – an unmet need for personalized treatment

Editorial comment on: Nazzani S, Zaborra C, Biasoni D, et al. Renal tumor biopsy in patients with cT1b-T4-M0 disease susceptible to radical nephrectomy: analysis of safety, accuracy and clinical impact on definitive management

Biopsies of kidney tumors have been utilized for decades but have not reached a widespread use despite high specificity and sensitivity. In contrast, biopsies are generally used in patients with other urological malignancies as prostate, bladder, and upper tract cancers. The reason for the rare use of biopsies for kidney masses might be historical. Previously, renal tumors were large at the time of diagnosis and the only treatment option was surgery since systemic treatment was ineffective. After the introduction of targeted treatments and especially immunotherapies, prolonged survival and complete responses have been observed [1]. In addition, immunotherapy of sarcomatoid dedifferentiated renal cell carcinoma (RCC) has shown promising effects in these tumors that have a dismal prognosis [2].

It has been claimed that renal tumor biopsy is not necessary in patients with a contrast-enhancing renal mass for whom surgery is planned. However, even large contrast-enhancing renal masses can occasionally be benign. The proportion of renal masses with benign histology is inverse to tumor size, and at a tumor diameter of 2 cm the proportion between benign and malignant histology is roughly even. It was shown in a large multicenter study that benign histology in the nephrectomy specimens was significantly less common in centers where biopsies were performed compared with hospitals where regular biopsies were not performed (5% vs. 16%) [3]. This study showed that tumor biopsies reduced surgery for patients with benign histology with a decreased risk for short-term and long-term morbidity associated with surgery. Biopsies can also be useful in patients on surveillance, before ablative, i.e. minimally invasive therapy and during follow-up for patients on these treatment strategies. It is currently recommended that biopsies are obtained before any ablative treatment in order to reduce unnecessary treatment of benign tumors [4]. It might also be important to diagnose malignant histology, e.g. RCC, since prolonged waiting time for surgical can reduce overall survival [5]. Histological characterization by percutaneous biopsies of undefined retroperitoneal masses diagnosed by imaging seems to be especially valuable for decision-making in younger patients [6].

For more advanced or larger kidney tumors, the value of biopsies has been less evaluated. In this issue of *Scandinavian Journal of Urology*, Nazzani et al., present their results on renal tumor biopsy in patients with cT1b-T4-M0 RCC [7]. The authors conclude that renal tumor biopsy is a safe procedure that confirms the indication of nephrectomy in most tumors larger than 4 cm. However, around 15% of the patients exhibited non-RCC histology while in only 3% of the patients the biopsies were non-diagnostic. This preoperative histological information, combined with clinical information on patient characteristics, is useful since it can lead to alternative treatment decisions other than radical nephrectomy, including nephron sparing surgery, also in patients with large renal tumors. The knowledge of the presence of a retroperitoneal sarcoma will substantially change the surgical strategy and patients with sarcomatoid histological features can be offered inclusion in trials with neoadjuvant treatment.

In patients with metastatic disease, tumor biopsies are currently highly recommended since the knowledge of the malignant histology is significant for treatment planning and although cytoreductive nephrectomy remains an option, most patients with metastatic RCC will be offered systemic therapy as the primary treatment. Many guidelines recommend tumor biopsy for patients with metastatic disease since RCCs comprise different tumor types with different response to systemic treatments so the knowledge of the RCC type is of outmost value for the selection of treatment [4].

When only follow-up or palliative management are recommended for a patient, regardless results of a biopsy, as in comorbid and frail patients, renal biopsy is not indicated. Biopsies of cystic renal masses generally have a low diagnostic sensitivity and are not generally recommended, except in cysts when a solid pattern are present [8]. In general, the morbidity of renal biopsies is low. Although tumor seeding along the needle tract has been reported, this risk can be avoided using the coaxial technique, regarded as the safest method to avoid seeding [3]. Usually, core biopsies have a high specificity and sensitivity for the diagnosis of malignancy. In a meta-analysis sensitivity and specificity of diagnostic core biopsies for the diagnosis of malignancy were 99% and 93%, respectively [9]. In patients with a non-diagnostic biopsy a repeat biopsy has been reported to be diagnostic in a high proportion of cases [10].

In conclusion, a renal tumor biopsy is useful since it allows for a personalized treatment that for some patients will entail a more aggressive treatment and for some patients will entail less aggressive treatment strategies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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