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Percutaneous radiofrequency ablation of small renal masses does not significantly reduce renal volume in hereditary renal cell tumour patients

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Aim of the study: Patients affected by hereditary renal cell tumour syndromes (i.e. Von Hippel – Lindau (VHL) syndrome, hereditary papillary renal tumour syndrome) are characterized by high incidence of small renal masses. Differently from non – hereditary small renal masses, percutaneous radiofrequency (RF) can be considered a first – line therapy in these patients, due to its lower impact on healthy renal parenchyma, compared to surgery. The aim of our study was to objectify the effect of RF by a comparison of pre and post – procedural, MRI determined, renal volumes.

Materials and methods: We considered 18 small renal masses, diagnosed in 7 different patients attending our multidisciplinary centre for hereditary renal cell tumours care at Molinette Hospital in Turin. 6 patients were affected by VHL syndrome, 1 was affected by hereditary papillary tumour syndrome. Preoperative imaging was obtained with renal MRI. In case of synchronous lesions, each renal mass was considered separately for the volumetric analysis. Post – operative imaging was also obtained with renal MRI. We did not include in our analysis cases of re – treatment of persistent disease foci after the first RF. **Results:** The median (IQR) age of the patients was 37 (31 – 45) years. 7 lesions were unique at diagnosis, while 11 presented as synchronous to one or two other lesions, either in the same or contralateral kidney. The median (IQR) maximum diameter of the lesions was 20 (10.25 – 23.75) mm. The median (IQR) volume of the lesions was 2.08 (0.57 – 4.38) cm³. RF ablation of the lesions was achieved through US – guided, percutaneous approach in all cases. In 1 case, a trans – hepatic approach was needed due to the unfavourable position of the tumour. First post – operative imaging with renal MRI was obtained after a median time of 93 days. The ablation was complete in 16 cases (89%). In 2 cases, post – operative imaging revealed persistent disease, which was successfully treated with a subsequent re – do RF. No major post – operative complications were recorded. In 2 cases, a Clavien I complication (post – procedural flank pain) was noticed. The median (IQR) maximum diameter of the scar resulting from the RF was 20.5 (17 – 27.75) mm, while its median (IQR) volume was 1.88 (1.46 – 6.20) cm³. The median (IQR) pre – operative renal volume was 157.3 (150.8 – 200.2) cm³; the median (IQR) post – operative renal volume was 152.0 (147.7 – 200.9) cm³. The comparative analysis showed no significant difference between pre and post – operative renal volume ($p=0.84$). Moreover, also the volume of the post – operative scar did not differ significantly from that of the original lesion ($p=0.41$).

Discussion: Percutaneous RF did not cause a significant renal volume reduction when performed for the treatment of small renal masses in patients affected by hereditary renal cell tumours.

referral center between June 2011 and February 2018. The resulting imagings were reviewed by our institutional multidisciplinary team with particular interest in cases of recurrences along the needle tract of the cryoprobe.

Results: During the study period, 110 patients were treated using Perc-17 probes (Galil Medical). 56 masses were histologically-proven malign RCC, 36 were benign lesions, in 8 cases biopsies were non-diagnostic and in 10 cases biopsy was avoided. Mean follow-up of the entire cohort was 31,04 months (IQR:12,5–39,8). 2 cases of needle tract seeding were identified during the follow-up. Case 1: A 47-yo male presenting asymptomatic haematuria. CT scan revealed a 35 mm right complex cystic mass. Open NSS was performed without cystic rupture and a diagnosis of pT1a R0 Fuhrman G1 ccRCC was given. 2 years later the patient developed a 18 mm contrast-enhanced cyst, and underwent cryoablation treatment. No biopsy was performed to prevent the risk of cystic rupture. After 12 months, MRI revealed an intramuscular recurrence along the needle tract, which was surgically removed. A diagnosis of undifferentiated RCC was given. Patient developed metastatic disease in 3 months and despite additional treatment, the tumour induced death 6 months later. Case 2: A 72-yo male with solitary kidney for previous right RN (pRCC, type 1, 2002), diagnosed with left renal recurrence and treated with open NSS (2007, pRCC). In October 2017 the patient underwent cryoablative treatment for an inferior polar 14 mm mass. At 3 months follow-up CEUS and MRI demonstrated 3 solid lesions into perinephric fat, and lumbar muscle consistent with recurrences. Biopsy was obtained with a 20-gauge needle and sample was consistent with pRCC. Patient refused further surgical treatment. In January 2018, he underwent a percutaneous cryoablative treatment of the recurrences in an effort to preserve renal function. To date, no recurrence was detected.

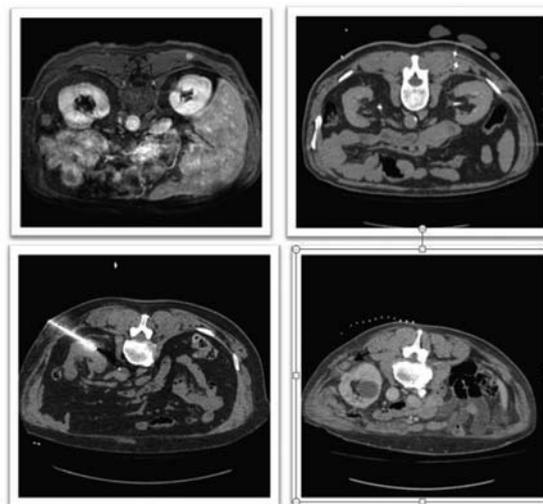


Fig. 1a Case 1. CT scan during renal cryoablation showing the probe passed through the right flank. Patient was placed in prone position during the procedure. **Fig. 1b** Case 1. RMN at 12 months after percutaneous cryoablation demonstrating a recurrent tumour mass in the right flank musculature along the the cryoprobe tracts. The mass was biopsied with evidence of undifferentiated renal cell carcinoma. **Fig. 2a** Case 2. CT scan during renal cryoablation showing the probe passed through the right flank. Patient was placed in prone position during the procedure. **Fig. 2b** Case 2. CT scan at 14 months after percutaneous cryoablation demonstrating 2 nodules of tumor seeding in the right flank musculature along the cryoprobe tracts. The mass was biopsied with evidence of papillary renal cell carcinoma.

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A case series of neoplastic seeding after cryoablative treatment for renal masses

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Aim of the study: To report incidence of tumor cell seeding in patients with small renal masses who underwent percutaneous cryoablative treatment.

Materials and methods: We retrospectively reviewed data stored in a prospectively maintained database of patients who underwent CT-guided percutaneous cryoablative treatment of SRMs in our tertiary

Discussion: Over the recent years, use of cryoablation for the treatment of small renal tumor is increasing and it is likely that this will rise further. This article's objective is absolutely not to deter clinicians from using cryoablation to treat SRMs. Cryoablation is helping patients and surgeons to avoid the concrete risks produced by surgery and anesthesia for unnecessary intervention. Nevertheless, unfortunately, tumor seeding seem not anecdotal as previously stated. Finally, we emphasize the importance of careful inspection of the perinephric fat, the posterior abdominal wall, the subcutaneous fat and other tissues along the ablation probe tract during oncological surveillance in order to treat possible cases of tumor seeding as early as possible.