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MR imaging-guided percutaneous cryotherapy of renal tumors. Our initial experience in 10 patients

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Purpose: To evaluate the initial clinical experience of magnetic resonance (MR) imaging-guided percutaneous cryotherapy of renal tumors in 10 patients

Materials & Methods: Ten renal tumors (diameter range, 2.0-4.5 cm; mean, 3.25 cm) in 10 patients were treated with equal sessions of cryoablation. The study complied with the Health Insurance Portability and Accountability Act. Written informed consent was obtained from each patient. There were seven men and three women with an average age of 66 years (range, 43-86 years). Of 10 masses, 8 were renal cell carcinoma, 1 was a transitional cell carcinoma, and one was an angiomyolipoma. By using a 0.5-T open MR imaging system and general anesthesia in patients, one to five (mean, 2.4) needlelike cryoprobes were placed and lesions were ablated by using real-time MR imaging for intraprocedural monitoring of ice balls. Tumors were considered successfully ablated if they demonstrated no contrast enhancement at follow-up computed tomography or MR imaging (mean, 16 months; range, 4-31 months).

Results: Eight of 10 tumors were successfully ablated, seven of which required only one treatment session. Two complications occurred in a total of 10 cryoablations: one hemorrhage, which required a blood transfusion, and one abscess, which was treated successfully with percutaneous catheter drainage.

Conclusion: MR imaging-guided percutaneous cryotherapy of renal tumors shows promise for the treatment of selected small renal tumors, and MR imaging can be used to monitor the treatment intraprocedurally. This technique may prove useful for ablation of renal tumors completely in one session, but long-term follow-up is needed.