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PUBLICATION SUMMARY — RENAL

Percutaneous Cryoablation of Renal Lesions with Radiographic Ice Ball Involvement of the Renal Sinus: Analysis of Hemorrhagic and Collecting System Complications

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OVERVIEW

- Computed Tomography (CT)-guided percutaneous cryoablation of renal masses with iceball overlap of the renal sinus resulted in no cases of collecting system injury or serious hemorrhagic complications
- Tumor location is an important factor when cryoablation is being considered as an option for the treatment of small renal cellcarcinoma (RCC). Central tumors involving or approaching the renal sinus pose a greater degree of technical difficulty because of concern of damage to vital structures
- Complications associated with radiofrequency ablation (RFA) near or in the renal sinus have been reported in numerous studies
- Centrally located lesions have been associated with a higher complication rate and higher recurrence rate after RFA, specifically with regard to collecting system injury and hemorrhage
- CT-guided imaging allows full evaluation of the location, extent of the radiographic iceball and visualization in detail of cryoablation zone proximity to the renal sinus

OBJECTIVES

- This is a retrospective review to determine the incidence of collecting system and hemorrhagic complications resulting from CT-guided percutaneous cryoablation of renal tumors in which the radiographic iceball abuts or involves the renal sinus

METHODS

- 107 patients (mean age 64 years) with renal masses suspicious of being RCC underwent 129 CT-guided percutaneous cryoablation procedures in a single institution from November 2005 to July 2009
- Radiographic iceballs that abutted or overlapped the renal sinus were classified as central; other lesions were classified as noncentral
- Hydrodissection was performed (n=14, 21%) to create space between the bowel and lesion using real-time CT fluoroscopic guidance
- Freeze, thaw, freeze cycle was initiated for 10, 8, 10 minutes and post procedural diagnostic CT was performed to access the ice ball and to detect complications
- Medical records and follow-up images were retrospectively reviewed for hemorrhage requiring intervention and for evidence of collecting system injury
- The mean follow-up period was 9.3 months (range 0-45 months)

RESULTS AND CONCLUSIONS

- The radiographic iceball was classified as central in 67 cases (52%). The mean sinus involvement was 6.2 mm (range 0–19 mm) for the central ablations, with 32% of the cases (41 ice balls) overlapping the renal sinus by ≥ 6 mm (mean 9.4 mm)
- Mean tumor size for central ablations was 2.5 cm ± 0.9 compared with 1.9 cm ± 0.8 for noncentral ablations ($p<0.001$)
- The mean number of cryoprobes used for central ablations was 2.5 compared with 1.8 for noncentral ablations ($p<0.001$)
- No cases of collecting system injury were identified for any ablation
- One hemorrhagic complication requiring intervention occurred in a noncentral ablation
- Recurrence rate was 6%. There was no significant difference between central and noncentral ablations with respect to recurrence

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