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Heart Rhythm

Heart Rhythm 2009 Jul 31;6(7):962-9. Epub 2009 Mar 31.

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Cryoenergy is being increasingly used for atrial fibrillation (AF) ablation, but the thermal effect of cryoenergy on the esophagus remains undefined.

This study examines the esophageal effects of cryoenergy used during AF ablation.

Catheter ablation was performed using a cryoballoon catheter in 67 AF patients (Cryoballoon group), and a spot cryocatheter to complete irrigated radiofrequency lesion sets at segments in close proximity to the esophagus in 7 AF patients (Cryo-Focal group). A temperature probe monitored the luminal esophageal temperature (LET) in all patients; LET changes did not guide therapy. Post-procedural endoscopy was performed on 35 of 67 (52%) Cryoballoon and all Cryo-Focal patients.

Significant LET decreases (>1 degrees C) occurred in 62 of 67 (93%) Cryoballoon patients. LET continued to decrease after termination of cryoablation before recovering to normal. Temperature decreases were more pronounced during ablation at the inferior (3.1 degrees C) than superior pulmonary veins (1.5 degrees C); the lowest observed temperature was 0 degrees C. Post-

procedural endoscopy showed esophageal ulcerations in 6 of 35 (17%) patients. There were no atrial-esophageal fistulas, and all ulcers had healed on follow-up endoscopy. Patients with and without ulceration differed with respect to mean LET nadir, cumulative LET decrease, and number of LETs <30 degrees C. In the Cryo-Focal group, 6 +/- 2 spot cryolesions per patient resulted in 1.3 +/- 1 LET decreases per patient, and an absolute nadir of 32.5 degrees C. Cryoballoon ablation can cause significant LET decreases, resulting in reversible esophageal ulcerations in 17% of patients. No ulcerations occurred with adjunctive spot cryoablation at regions near the esophagus during radiofrequency ablation procedures.

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