

## When is freezing harmful?

**To the Editor** We read with interest an article by Kasper et al<sup>1</sup> describing complications following cryoballoon ablation in a patient with atrial fibrillation (AF). This technique is widely used, and the success rate as well as safety are comparable to those of standard radiofrequency ablation for AF. One of prerequisites for safe cryoballoon ablation is not to achieve too low temperatures because this may cause damage to the lungs and esophagus. The generally accepted temperature limit is  $-55^{\circ}\text{C}$  or, more liberal,  $-60^{\circ}\text{C}$ . Temperatures below  $-60^{\circ}\text{C}$  are usually achieved when cryoballoon is positioned too distally, inside the pulmonary vein, which may cause collateral damage. Thus, it is not surprising that such a complication occurred in the described patient. This case report reminds us that any medical procedure should be performed according to the instruction.

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### REFERENCES

- 1 Kasper Ł, Gross-Sondej I, Machalica B, et al. Hemoptysis and lung disease as a manifestation of pulmonary vein stenosis after cryoballoon catheter ablation for atrial fibrillation. *Pol Arch Med Wewn.* 2016; 126: 94-96.
- 2 Su W, Kowal R, Kowalski M, et al. Best practice guide for cryoballoon ablation in atrial fibrillation: the compilation experience of over 3000 procedures. *Heart Rhythm.* 2015; 12: 1658-1666.

**Authors' reply** Pulmonary vein stenosis is a rather rare complication of cryoballoon ablation (0.17% according to Andrade et al),<sup>1</sup> but it is observed much more frequently after radiofrequency catheter ablation and ranges from 3% to even 42%, depending on the method of venous stenosis assessment and the ablation technique used.<sup>2</sup> A growing number of performed procedures, regardless of their type, translates into a higher number of observed complications. The aim of our article was to attract the attention of pulmonologists to pulmonary vein stenosis as a potential cause of hemoptysis and lung infiltrations and prompt radiologists to search for even a mild degree of pulmonary vein stenosis in chest computed tomography in symptomatic patients. It will shorten the time to diagnosis and markedly reduce costs, allowing to avoid invasive procedures such as video-assisted thoracoscopy.

We would like to thank you for your interest in our article.

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### REFERENCES

- 1 Andrade JG, Khairy P, Guerra PG, et al. Efficacy and safety of cryoballoon ablation for atrial fibrillation: a systematic review of published studies. *Heart Rhythm.* 2011; 8: 1444-1451.
- 2 Staad EB, Rossillo A, Saad CP, et al. Pulmonary vein stenosis after catheter ablation of atrial fibrillation: emergency of a new clinical syndrome. *Ann Internal Med.* 2003; 138: 634-639.