Silent Aspiration of Esophageal Cooling Solution During Pulmonary Vein Isolation Using Hot Balloon

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An 82-year-old woman was referred for catheter ablation of atrial fibrillation. Individual pulmonary vein (PV) isolation using hot balloon (HB) was performed under conscious sedation with dexmedetomidine, fentanyl citrate and thiopental sodium. HB ablation was started from the left superior PV (LSPV) with real-time monitoring of PV potentials. Esophageal cooling was performed using iopamidol diluted 1:1 with saline. LSPV potential was successfully abolished by a single 180-s application with target temperature 70°C. In total, 60 mL diluted iopamidol was injected through gastric tube because the luminal esophageal temperature (LET) rose above 39°C during LSPV ablation. Shortly thereafter, we began left inferior PV (LIPV) isolation. The first application for LIPV was performed with a target temperature of 70°C for 150 s, with injection of 40 mL diluted iopamidol. The first application failed to abolish LIPV potentials. When we attempted to confirm occlusion of LIPV for the second application, we noted pooling of the contrast media outside of the LIPV. The contrast media remained pooled even after the balloon was deflated, and showed back and forth movements synchronized with breathing (Figure A; Supplemental Movie). Hemoptysis or hypoxemia were not observed. Bronchoscopy indicated no evidence of bleeding from the distal bronchus and computed tomography showed the pooling of contrast media at the left distal bronchus (Figure B). Clinically apparent aspiration pneumonia did not occur during or after the procedure.

Silent aspiration of cooling solution is one of the important complications of HB ablation, which cannot be perceived when saline on its own is used. Using non-ionic low osmotic contrast medium, the operators might be able to notice silent aspiration. For the prevention of aspiration, a sniffing or ramped position is preferable under conscious sedation, while insertion of a supraglottic airway device with general anesthesia might be much more effective.

Disclosures

The authors declare no conflicts of interest.

Supplementary Files

Supplementary Movie. Fluoroscopic image of pooled contrast media in the bronchus.

Please find supplementary file(s); http://dx.doi.org/10.1253/circj.CJ-19-0466

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Figure. (A) Fluoroscopy during the procedure and (B) computed tomography after the procedure. Blue arrows, aspirated diluted iopamidol in the bronchus; yellow arrowheads, diluted iopamidol in the esophagus.