the ascending aorta, beginning at the aortic valve. The wire-like structure was also seen by duplex ultrasound of the carotid artery (Figure 1A), fluoroscopic imagine (Figure 1B), and computed tomography (Figure 1C).

During open heart surgery, prosthetic mitral valve endocarditis with multiple vegetations (Figure 1D and E) was confirmed. The wire-like structure was identified as a migrated temporary pacing wire of 20 cm length (TME series bipolar, Ospyka GmbH, Rheinfelden-Herten, Germany) (Figure 1F). This pacing wire was placed as a right atrial (initially located near the sinus node) temporary pacing wire at the patients first mitral valve operation. The ventriculare temporary pacing wire was removed postoperatively without any difficulties. The atrial temporary pacing lead needed to be cut subcutaneously due to an insurmountable resistance during the extraction attempt. This situation might be caused by a sub-sternal loop of the pacing wire either around native tissue or a sternal wire cerclage.

The tip of the wire was found in the aortic bulb (Figure 1G), the initially subcutaneous part was found in the right carotid artery. Owing to the primary location of the pacing wire near the sinus node, there are several potential ways of migration into the left heart system. A possible entrance for the tip of the pacing wire might be the right superior pulmonary vein or the roof of the left atrium (via the sinus transversus pericardii). If the initially subcutaneous part entered primary the left heart system, the most likely way would be a direct perforation of the left atrium. In any case, the contaminated pacing wire migrated via the left atrium and left ventricle into the right carotid artery. A direct perforation of the left ventricle or the aortic root is, in our opinion, unlikely, but cannot be excluded. A 20 mm vegetation of the aortic bulb and a perforation with damage to the non-coronary cusp of the aortic valve was also found. The wire was extracted and a replacement of the mitral and the aortic valve had to be performed. The patients’ postoperative recovery was prolonged; she required intensive care for 4 days. The intravenous treatment with vancomycin and rifampicin continued until she was discharged (after 45 days in total). In the follow-up 8 months later, there was no recurrence of endocarditis and there was a good echocardiographical function of both bioprostheses.

Comment

Temporary epicardial pacing wires are routinely used for the treatment of postoperative bradyarrhythmias after cardiac surgery and they usually get extracted before discharge.1,2 The safety and efficacy of these pacing leads in the cardiac surgical routine have been generally accepted. Complications of epicardial temporary pacing wires placed during cardiac surgical procedures are rare.3,4 Sometimes, as in this case, extraction of the pacing wire is not possible and the wire is shortened and left subcutaneously. In our patient, the MRSE contaminated wire had migrated through the left heart into the carotid artery and caused infective endocarditis of the prosthetic mitral valve and the (native) aortic valve.

References


CASE REPORT
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A common inferior pulmonary trunk detected by computed tomography affects atrial fibrillation ablation strategy

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Pulmonary veins (PV) display a variety of anomalies with a common trunk of the inferior pulmonary veins being the most infrequent. We report on a 65-year-old man who underwent an ablation procedure for atrial fibrillation (AF) exclusively based on electro-anatomical

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mapping. After recurrence of AF, a common trunk of the inferior PV was detected by computed tomography imaging resulting in a modified ablation approach. Due to a possible role of the common inferior trunk for the initiation of AF, a repeat procedure was performed by en bloc isolation of the common inferior trunk with the left superior PV. The right superior PV was ablated separately. Off antiarrhythmic medication, the patient has remained free of any arrhythmia during a 14 month follow-up.

Introduction

Pulmonary veins (PVs) display a variety of anomalies with a common trunk of the inferior PVs being the most infrequent. In larger series, the incidence of the common inferior trunk ranges from 0 to 0.9% in patients with atrial fibrillation (AF). We report on a patient with failed ablation of AF exclusively based on electro-anatomical mapping. A successful repeat procedure was performed after the detection of a common trunk of the inferior PVs by computed tomography (CT) imaging resulting in a modified ablation approach.

Case report

A 65-year-old man with a history of hypertension and drug refractory paroxysmal AF underwent catheter ablation. Based on CARTO-mapping circumferential ablation of the PVs with a common posterior line was carried out (Figure 1A). In addition, a touch-up Lasso-catheter ( Biosense Webster, Inc., Diamond Bar, CA, USA) guided isolation at the venoatrial junction was performed for all PVs except for the left inferior PV, which could not be probed. Because of recurrent episodes of AF, a repeat procedure was undertaken 8 months later. A multi-slice CT scan revealed a slightly enlarged left atrium with normally positioned left and right superior PVs and a common trunk of the inferior PVs. During the electrophysiological study, the CT image was integrated into the CARTO-map. All PVs showed reconnection to the atrium. Owing to a possible role of the common inferior trunk for the initiation of AF, the common inferior trunk was isolated en bloc with the left superior PV. The right superior PV was ablated separately (Figure 1B). Off antiarrhythmic medication, the patient has remained free of any arrhythmia during a 14 months follow-up, also supported by the results of a 6-day-Holter-monitoring. Anticoagulation was ceased 3 months after ablation.

Discussion

The presence of a common inferior trunk poses a problem for an ablation procedure of AF. As shown by the present case, this anomaly easily goes undetected by the use of electro-anatomical mapping alone. This may also be supported by the fact that all the reported cases in literature rely on either CT scan or MR imaging. It is possible that the catheter induced pressure exerted to the left atrial wall distorts the atrial shape thus preventing the delineation of this anomaly. However, there may be clues towards the presence of a common inferior trunk, namely the inability either to avoid a common posterior line during circumferential PV isolation or to probe the left inferior PV with a Lasso catheter because of a 90° rectangular take-off of this vein. However, it is possible that the repeat successful ablation is mainly due to the complete isolation of the superior PVs, especially the left superior PV, a common site for AF focal triggers. Nevertheless, the presence of a common inferior trunk suggests the need for its isolation either individually or combined with the left superior PV as shown in the present case.

Conflict of interest: none declared.

References