



Rare Complication Post Atrial Fibrillation Cryoablation

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Abstract

Cryoablation is one of the available techniques for AF ablation and is considered non inferior to radiofrequency ablation. Some of the known complications of cryoablation include phrenic nerve damage, esophageal injury, pulmonary vein stenosis, cardiac tamponade, and stroke. We present a case of pulmonary hemorrhage secondary to bronchial injury post AF cryoablation which was managed conservatively. This case highlights the importance of suspecting bronchial injury in cases of oxygen desaturation and hemoptysis post procedure and to confirm the diagnosis by CT chest. Conservative management with close follow up is usually satisfactory in most of the cases except in catastrophic cases of atrio-bronchial fistula.

Keywords: Atrial fibrillation; Cryoablation; CT chest; Atrio-bronchial fistula

Introduction

Atrial Fibrillation (AF) cryoablation is a very common technique used nowadays for ablation of AF which is non inferior to Radiofrequency ablation of AF [1]. As any ablation procedure, AF cryoablation is not free of any complications. The most common complications are pericardial effusion/tamponade, embolic events, Atrioesophageal Fistula (AEF), Phrenic Nerve Palsy (PNP) and vascular access problems. Although vascular complications are the most frequent complication of the procedure, however electrophysiologists should be aware of rare and life-threatening complications and their management [2].

Here we present a rare but potentially serious complication of AF cryoablation and the best way of management.

Case Presentation

A 65 years old patient with previous history of hypertension and paroxysmal AF underwent AF cryoablation under conscious sedation. The procedure was performed smoothly with no immediate complications with uninterrupted Apixaban. Transseptal puncture was performed followed by pulmonary vein isolation with cryoablation at the ostia of the 4 pulmonary veins with a minimum temperature of -47°C at the right lower pulmonary vein. The patient was discharged the same day following the procedure. Twenty-four hours after the procedure, the patient developed acute shortness of breath and hemoptysis and attended the emergency department. On admission, the patient was hemodynamically stable but with low oxygen saturations. Chest X-ray was performed which demonstrated right-sided homogenous opacity, CT chest was also performed which revealed right-sided pulmonary hemorrhage (Figure 1 and 2). The patient was managed with low flow oxygen and intravenous antibiotics. Within 72 h, oxygen saturation was back to normal and repeat chest X-ray revealed a decrease in the opacity. The patient was discharged safely and after 3 months is well with no arrhythmia recurrence or other symptom.

Discussion

Bronchial injury is one of the most common causes of hemoptysis post AF cryoablation. Although the exact incidence is not known, small single-centre studies have reported rates of 1.7% and 3.6% [3]. Presentations vary from cough, production of blood tinged sputum or frank hemoptysis. Onset of symptoms can be variable. Patients may become symptomatic during the procedure, on postoperative day or even few days later [4].

Bronchial injuries usually result from extremely low nadir temperatures (-60°C or lower) and deep seating of the cryoballoon leading to collateral thermal injury of the bronchial tree due to close proximity of the pulmonary veins to the lung bronchi [5,6].

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Figure 1: Chest X-ray AP view showing heterogenous opacity in the right lung field.



Figure 2: CT Chest showing localized right sided pulmonary haemorrhage.

Diagnosis is usually confirmed by CT chest showing consolidation suggestive of pulmonary hemorrhage and Bronchoscopy revealing bronchial wall erosion up to hematoma formation [5,6].

There is no definitive recommendation for management of hemoptysis due to bronchial injury. However, protamine might be given if severe hemoptysis occurred during the procedure. Conservative management with close follow up is usually satisfactory in most of the cases except in catastrophic cases of atrio-bronchial fistula [3]. Although the date regarding the prognosis is very limited, however most of the patients usually recover well without any long term sequela [6,7].

Conclusion

Pulmonary hemorrhage is a rare but potentially serious complication of AF cryoablation and it should be suspected in cases of oxygen desaturation and hemoptysis post procedure. Low temperature during freezing and deep balloon inflation inside the pulmonary veins is the most common risk factors for pulmonary hemorrhage post-AF cryoablation [4]. Conservative management with close follow up is usually satisfactory in most of the cases except in catastrophic cases of atrio-bronchial fistula [3].

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