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PO3-36

GADOLINIUM DELAYED-ENHANCEMENT MRI TO ASSESS THE EXTENSION OF RESIDUAL CRYO-BALLOON CATHETER INDUCED LESION AT THE LEFT-ATRIUM-PV JUNCTION LEVEL IN PATIENTS TREATED FOR PAROXYSMAL ATRIAL FIBRILLATION

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Introduction: Pulmonary veins isolation (PVI) with cryo balloon (CB) is a new approach in the treatment of paroxysmal atrial fibrillation (PAF). Delayed - enhancement (DE) cardiovascular MRI has been used to identify left atrial (LA) scar caused by RF. However the characteristics of CB induced lesion haven't been yet described. We sought to quantify LA and PV scar after complete PVI with CB.

Methods: DE cardiovascular MRI was done 199±97 days after completed CB PVI to detect scar in the LA and PV wall. We evaluated the presence or absence of DE at the antrum, ostium and at the PV wall. Definition of normal and injured tissue was based on a bimodal distribution of pixel intensities. The first mode of lower pixel intensities was defined as normal tissue (non DE). Scars were defined at three derivations (lower, medium and high DE) above the normal tissue mean pixel intensity. The extent of injury was evaluated at each slice and measured manually.

Results: 44 PV of 11 patients with PAF without structural heart disease were analyzed. 3 common trunk (CT), 8 left superior (LS) PV; 8 left inferior (LI); 11 right superior (RS) PV; 11 right inferior (RI) and 3 right middle PV. All PV were treated with the Artic Front Cryocath 28 mm catheter-balloon. The mean number of cryo balloon applications per PV was 3.2. DE was observed in 17 (39%) PV of 9 (82%) patients. High DE was observed at the ostium level in three CT and at PV wall in two of them. Medium DE was observed at the ostium and PV wall of two LI PV. Four LI PV and two LS PV showed low DE at the ostium; four right interpulmonary ridge showed low DE; two RI PV showed DE at the ostium and PV wall.

Conclusions: Our study showed DE in limited number of PV ostium and wall, possibly related with: small LA/CB contact area at the PV-LA junction; LA and PV wall thickness; as well as the histological characteristics of the cryo-induced tissue lesion. This observation could explain the lower success rate with the CB in persistent AF, where bigger antral lesion is needed.

PO3-37

ANATOMICAL VERSUS SELECTIVE GANGLIONIC PLEXI ABLATION FOR ATRIAL FIBRILLATION

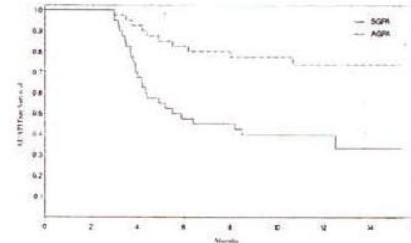
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Introduction: Selective ganglionated plexi ablation guided by high-frequency stimulation has been proposed for the treatment of paroxysmal atrial fibrillation (AF), but the efficacy of the method is not established.

Methods: Eighty patients with paroxysmal AF (age 53±9 years) were randomized to undergo selective ganglionated plexi ablation or regional left atrial ablation at the anatomical sites of ganglionated plexi. For selective ganglionated plexi ablation (n=40), ablation targets were the sites where vagal reflexes were evoked by high-frequency stimulation. Vagal reflexes were defined as prolongation of the R-R interval by >50% and a concomitant decrease in blood pressure (>20 mm Hg) during AF. End-point

of the procedure was failure to reproduce vagal reflexes with repeated high-frequency stimulation. For anatomical ablation, lesions were delivered at the sites of ganglionated plexi cluster. **Results:** At 13.1±1.9 months, 42.5% of patients with selective ganglionated plexi and 77.5% of patients with anatomical ablation were free of symptomatic PAF (P=0.02). Parasympathetic denervation was more prominent in patients with anatomical than selective ganglionated plexi ablation, and in patients free of AF compared to these with AF recurrence immediately after ablation but this trend was reversed at 6 months.

Conclusions: Selective ganglionated plexi ablation directed by high-frequency stimulation does not eliminate paroxysmal AF in the majority of patients. An anatomical approach for regional ablation at the sites of ganglionated plexi confers better results



PO3-38

PERSISTENT IATROGENIC ATRIAL SEPTAL DEFECT AFTER PULMONARY VEIN ISOLATION BY CRYOBALLOON-AN UNDER-RECOGNIZED COMPLICATION

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Introduction: Persistent iatrogenic atrial septal defect (iASD) is a known complication after transseptal puncture for pulmonary vein isolation (PVI) with radiofrequency. It is especially common with single transseptal puncture and additional advancement of a second electrophysiologic catheter. The incidence of persistent iASD after transseptal puncture with a large 12-F sheath used for PVI by cryoballoon has not been studied.

Methods: Thirteen patients (9M, mean age 54.9±13.0) with paroxysmal (10) or persistent (3) atrial fibrillation (AF) underwent PVI with cryoballoon. Transesophageal echocardiography (TEE) was performed 1 day before the procedure. Single transseptal puncture was performed with a BRK-1 shaped Brockenbrough needle and an 8-F Mullin sheath, followed by tracking of a 12-F steerable sheath across the interatrial septum. PVI was performed with a 28mm cryoballoon. The incidence of persistent iASD was evaluated by TEE performed at 6 and 9 months after the procedure.

Results: Of all pulmonary veins, 85% (44/52) were successfully isolated. With a median follow-up of 14 months, nine (69%) patients were free of AF recurrence. At 6 months, 5 (38%) patients had persistent iASD with left to right shunt, but not right to left shunt. The mean size of iASD was 5.5±2.4mm. At 9 months, 1 patient had closure of the iASD. No patient died or suffered clinically from cerebral or cardiac embolism.

Conclusions: There is a high incidence of persistent iASD after PVI by cryoballoon at 9 month follow-up. Regular surveillance for this under-recognized complication is needed. Down-sizing the large transseptal sheath and cryoballoon catheter is highly preferable to reduce this complication.