Methods: Prospective observational study of patients referenced to AF catheter ablation. Before the procedure, CMR with LA angiography was performed, in order to characterize LA anatomy, volume and ejection fraction. Atrial fibrosis was analysed in post-processing with clinical data blinding; qualitative (presence of late enhancement in each atrial wall and in the peri-ostial regions) and quantitative (mass of fibrotic tissue) evaluation was performed.
Results: Twenty-eight patients were enrolled (82% male; age 52±13 years), 25% of whom with paroxysmal AF and 75% with persistent AF. Patients had moderate atrial fibrosis (fibrotic tissue mass 2.6±1.2%). The amount of atrial fibrosis correlated with the degree of LA dilation (R=0,41; p=0,031) in a population with LA volume of 107±30 mL. Furthermore, there was a positive correlation with age (R=0.46; p=0.013). The mass of fibrotic tissue, the number of LA walls with fibrosis and the number of pulmonary veins with peri-ostial fibrosis were similar in patients with paroxysmal or persistent AF. However, posterior wall fibrosis was significantly more common in patients with persistent AF (93% vs. 50%; OR=14.0; 95% CI 1.06-185.5; p=0.022).
Conclusions: LA fibrosis, determined by late enhancement, although not very significant in this population of patients referenced to catheter ablation, tends to be related to atrial dilation and to progress with age. However, the clinical subtype of AF seems to depend more on the distribution of fibrosis, particularly on the involvement of the posterior wall, than on its amount. This finding could have implications in the planning of the ablation strategy in these patients.

P378 Non-invasive identification of epicardial ventricular tachycardia substrate by contrast-enhanced cardiac magnetic resonance

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Background: Epicardial (Ep) location of ventricular tachycardia (VT) is a limitation for ablation procedure. Heterogeneous tissue (HT) characterization by ceMRI can identify the VT substrate (S)
Hypothesis: We hypothesized that characterization of HT in the subepicardial layer could identify VT-EpS.
Methods: A transmural myocardial infarction was created in 15 pigs. Myocardial scar was characterized 4 weeks later with gadolinium ceMRI. The ventricular wall was divided in 2 layers of equal thickness and the average of the subendocardium and subepicardium signal intensity (SI) was projected over 3D endocardial and epicardial shells respectively. The SI was color coded, thus defining three different areas: 1) healthy tissue defined by SI < SI peak in normal myocardium, 2) core scar defined by SI greater than minimal SI in core scar and 3) heterogeneous tissue (HT) in between those extremes. A SI channel was defined as a corridor of HT differentiated by a lower SI from the surrounding scar. Scar endocardial and epicardial electroanatomic voltage mapping (VM) was performed immediately after ceMRI.
Results: VM identified endocardial conduction channels (CC) in 14 of 15 pigs and epicardial CC in 10. MRI-based SI mapping identified 13 SI channels in the endocardium and 7 in the epicardium. Fourteen sustained monomorphic VT were induced (median VTCL 278 ms, range 220-380 ms). In 8 VT middiastolic electrograms (MDE) were recorded in the endocardium, in 5 in the epicardium. Comparison of voltage and SI epicardial maps showed that MDE were recorded at SI channels sites in 4 VT.

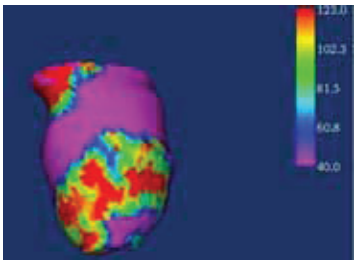

Figure 1. Epicardial SI channels in 3D shell

Conclusions: MRI-based SI mapping could be helpful for epicardial VT substrate identification.

P379 Usefulness of electroanatomic mapping using intracardiac echography for image-integration in ablation of ventricular arrhythmias

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Background: Electroanatomical (EA) mapping ablation of Arrhythmias requires a point-by-point reconstruction of virtual anatomy and substantial fluoroscopy exposure. The use of two-dimensional intracardiac echocardiography (ICE) as imaging integration tool in computer-assisted EA mapping could increase accuracy and reduce procedural time and radiation exposure, particularly in Ventricular Arrhythmias (VA) ablation.
Materials and methods: 35 consecutive patients (26 men, mean age 59+15 years) affected by either Idiopathic VA (19 RVOT, 3 LVOT, 1 Aortic Cusp, 1 Fascicular VT) or structural heart diseases (HD) (1 ARVD, 1 dilated idiopathic cardiomyopathy and 9 post-MI cardiopathy) were submitted to ablation of VA using a 3D mapping system providing image-integration with echo data. The ICE probe with a location sensor tracked by the mapping system was positioned in the right chambers. The endocardial contours traced on gated images of the RV and LV were used to generate a 3D anatomy, then mapping and ablation were performed using the standard techniques. Procedural and Fluoroscopy time in both groups were compared with gender and age matched control groups who underwent a standard EA mapping procedure.
Results: Fourty procedures (including 5 Redo) were performed. Mean time required to create 3D echo maps of both ventricles was 20±5 min. Ablation procedure was acutely successful in 34/35 patients. No ICE related complication was observed. Major complication were observed in 2 cases: cardiac tamponade (1) and complete AV block (1). When compared with EA mapping alone, the ICE-EA mapping induced a significant reduction of the fluoro time in both groups (see table).

		ICE	Standard	P
Idiopathic VA	Procedural time (min)	152.7±39	173.4±34	0.14
	Fluoro time (min)	15.2±6	21.9±9	0.04
Structural HD VA	Procedural time (min)	173.9±48	180.4±40	0.18
	Fluoro time (min)	20.1±5	26.7±7	0.002

Conclusions: ICE imaging combined with EA mapping is safe and feasible during VA ablation. The use of ICE image integration mapping allowed easier navigation and reduced fluoroscopy and procedural time.

P380 Echocardiographic evidence of diminished contractility and delayed activation of right ventricle wall in patients with Brugada syndrome

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There is continuing controversy whether Brugada syndrome (BS) is a purely electrical disease or a right ventricle (RV) myocardial disease. We sought to describe RV regional function using speckle tracking (ST) and tissue Doppler imaging (TD). We included 48 BS patients (pts) and 18 controls. We used ST to estimate RV outflow tract (RVOT) shortening in parastenal short-axis view of the great vessels, longitudinal strain (Long.S) and time to peak of strain (TPS) for RV wall in apical view. With TD we measured peak systolic velocity (S wave) of tricuspid annulus (TA) and also interventricular dyssynchrony which was calculated as time from QRS to onset of S wave of the TA – time from QRS to onset of S wave of lateral mitral annulus (TTL). A 12-lead ECG was done to identify a type 1 pattern (coved ST elevation of more than 2mm in 2 right precordial leads).
Results comparing pts and controls are displayed below. RVOT shortening in pts with type 1 ECG(n=10) was -17.9±4.8 versus -21.5±5.1 (p=0.04) in non-type 1 ECG pts (n=38).

Results

	RVOT shortening	RV free wall Long.S	RV free wall TPS (ms)	S wave of TA (cm/s)	TTL (ms)
Controls (n=18)	–33.5±6.8	–32.1±4.9	350.9±39.1	15.9±3.0	11.8±11.1
BS pts (n=48)	–20.7±4.2	–26.8±4.4	380.1±35.2	14.1±2.5	35.9±14.3
p value	<0.0001	<0.0001	0.007	0.02	<0.0001

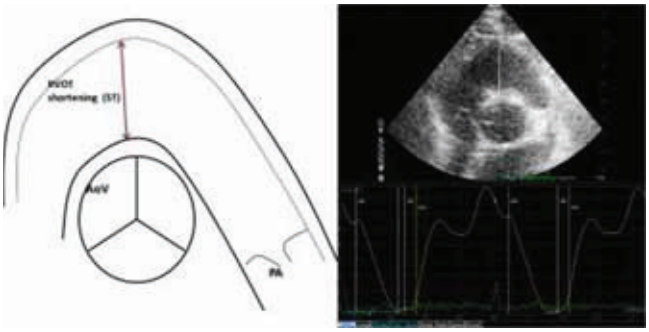

Figure 1. How to measure RVOT shortening by ST

Conclusions: BS pts have significantly impaired Long.S and RVOT shortening as well as delayed activation of RV wall. A type 1 ECG pattern is associated with