ASSESSMENT OF LEFT ATRIAL STRUCTURE USING MULTI MODALITY IMAGING

Hubert Cochet, MD, PhD
IHU Liryc
CHU de Bordeaux / Université de Bordeaux / INSERM U1045
Bordeaux, France
DISCLOSURES

NONE
INTRODUCTION
CURRENT ROLE OF CT/MRI IN AF

Detection of structural heart disease

Suksaranjit P. J Am Coll Cardiol Cardiovasc Imaging 2015
INTRODUCTION
CURRENT ROLE OF CT/MRI IN AF

Detection of structural heart disease
Anatomy of LA and PVs
INTRODUCTION
CURRENT ROLE OF CT/MRI IN AF

Detection of structural heart disease
Anatomy of LA and PVs
Ruling out thrombus before ablation
INTRODUCTION
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Detection of structural heart disease
Anatomy of LA and PVs
Ruling out thrombus before ablation
Measurement of LA volume
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Detection of structural heart disease
Anatomy of LA and PVs
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Detection of complications
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Measurement of LA volume
Detection of complications

FUTURE ROLE
ASSESSMENT OF THE STRUCTURAL SUBSTRATE
STROKE RISK STRATIFICATION
SELECTION OF ABLATION CANDIDATES
PROCEDURAL GUIDANCE AND ABLATION TARGETING
ASSESSING LA STRUCTURE ON MRI
ATRIAL FIBROSIS

Platonov PG. JACC 2011
ATRIAL FIBROSIS ON MRI
LGE IMAGING

LGE IMAGING
RELATIONSHIP WITH AF DRIVERS

Jadidi et al. JACC. 2013

Cochet et al. JACC EP. 2017
MRI-BASED PERSONALIZED MODELING

MRI-BASED PERSONALIZED MODELING

ASSESSING LA STRUCTURE ON MRI POST ABLATION SCAR

PAROXYSMAL AF

Al Jefairi et al. Circ Arrhythm Electrophysiol. 2017
ASSESSING LA STRUCTURE ON MRI POST ABLATION SCAR

PERSISTENT AF

Cochet et al. J Cardiovasc Electrophysiol. 2013
ASSESSING LA STRUCTURE ON MRI
EX VIVO IMAGING

CONTROL SHEEP

AF SHEEP

LA

PVs

LAA

LA

PVs

LAA

LA

Ao

LA

Ao

LA

1cm

1cm

Cros C et al. Submitted
ASSESSING LA STRUCTURE ON MRI
EX VIVO IMAGING
ASSESSING LA STRUCTURE ON CT
ASSESSING LA STRUCTURE ON CT
DETAILED ANATOMY
ASSESSING LA STRUCTURE ON CT
DETAILED ANATOMY

PHRENIC

ESOPHAGUS

MARSHALL VEIN
ASSESSING LA STRUCTURE ON CT
DETAILED ANATOMY
ASSESSING LA STRUCTURE ON CT BEYOND VOLUME: LA SHAPE

**STEP 1:** Extraction of remodeling information vs. controls.

**STEP 2:** Prediction of post-ablation recurrence from group-wise shape statistics.
ASSESSING LA STRUCTURE ON CT
STRUCTURAL SUBSTRATE = FAT


CT FAT MAPPING

FAT vs. VOLTAGE

INTRAMURAL vs. EPICARDIAL FAT

Frontera A. HRS 2015
CONCLUSION

MRI

Baseline fibrosis

Post-ablation car

Microstructural changes (ex vivo)

CT

Detailed anatomy

Atrial shape

Atrial fat

PRESENT
SIMPLE MARKERS DERIVED FROM ECHOCARDIOGRAPHY (VOLUME, DIMENSION...)

FUTURE
TISSUE CHARACTERIZATION TO ASSESS ARRHYTHMOGENIC SUBSTRATE