POTENTIAL PREDICTORS OF ATRIAL FIBRILLATION RECURRENCE SECONDARY TO SUBSTRATE ELECTROPHYSIOLOGICAL AND STRUCTURAL REMODELLING IN PATIENTS HAVING 3D GUIDED CATHETER ABLATION AND ELECTRICAL CARDIOVERSION

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Abstract

Introduction : The pathogenesis of atrial fibrillation (AF) remains incompletely understood and management remains difficult and complex task. There is growing research work aiming at identifying role of different variables in predicting AF recurrence following treatment with the different currently available therapeutic options.

Aim : This study sought to explore the predictor role of some variables, especially the role of C-reactive protein (CRP) and estimated glomerular filtration rate (eGFR), for recurrence of AF in patients with paroxysmal atrial fibrillation (AF) treated by electrical cardioversion (CV) and antiarrhythmic drugs (AAD) as well as in patients treated by catheter ablation.

Methods: 120 paroxysmal AF patients with structurally normal heart by echocardiography divided into 3 groups each contain 40 consecutive patients according to the planned therapeutic intervention CV and AAD, radiofrequency(RF) PVI and cryoballoon PVI were studied for potential predictors of AF recurrence, especially CRP and eGFR. Pretreatment assay was calculated and all patients were followed up for 12 months following treatment for incidence of AF recurrence.

Results:patients with high levels of CRP showed consistent higher risk of AF recurrence over 12 months period follow up when RF PVI (83.3% with high CRP versus 17.7% with normal CRP) as well as AADs and electrical CV (94.4% with high CRP versus 54.6% with normal CRP)treatment regimens were followed (p values <0.001 and 0.005) respectively. However, this risk was insignificant in patients treated with cryoballoon PVI (28.6% versus 24.2%, p= 0.81). Low eGFR were associated with a borderline risk of AF recurrence in patients treated with AADs and electrical CV (91.7% versus 64.3%, p= 0.076). Yet, in those treated with RF PVI(18.2% versus 31%) or cryoballoon PVI(44.4% versus 19.4%) low GFR estimate was not associated with significant risk.

Conclusion: Pretreatment assessment of inflammatory variables including CRP level and eGFR should be conducted in paroxysmal AF patients before choosing the treatment modality in an aim of identifying higher risk patients for AF recurrence after treatment. Doing so might guide choice of treatment modality in terms of AF freedom achievement and risk benefit analysis.

Keywords: Atrial Fibrillation, Recurrence, inflammatory markers, CRP, eGFR, Radiofrequency, cryoballoon, pulmonary vein isolation, antiarrhythmic drugs, electrical cardioversion

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Conclusion: Pretreatment assessment of inflammatory variables including CRP level and eGFR should be conducted in paroxysmal AF patients before treatment for better patient stratification and treatment choice selection.

Keywords: Atrial Fibrillation, Recurrence, inflammatory markers, CRP, eGFR, Radiofrequency, cryoballoon, pulmonary vein isolation, antiarrhythmic drugs, electrical cardioversion

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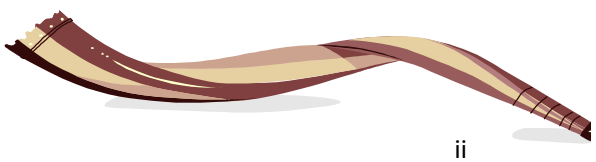

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Contents

List of Abbreviations

A

AAD	=	Anti Arrhythmic Drugs
ACC	=	American College of Cardiology
ACEI	=	Angiotensin Converting Enzyme Inhibitor
ACT	=	Activated Clotting Time
AF	=	Atrial Fibrillation
AFL	=	Atrial flutter
AHA	=	American Heart Association
APC	=	Atrial Premature Complexes
aPTT	=	activated Partial Thromboplastin Time
ARB	=	Angiotensin Receptor Blocker

B

bpm	=	beat per minute

C

CAD	=	Coronary Artery Diseases
CB	=	CryoBalloon
CCS-SAF	=	Canadian Cardiology Society Severity in Atrial Fibrillation
CFAE	=	Complex Fractionated Atrial Electrograms
CKD	=	Chronic Kidney Disease
CMAP	=	Compound Motor Action Potential
COPD	=	Chronic Obstructive Pulmonary Diseases
COR	=	Class Of Recommendation
CPVA	=	Circumferential Pulmonary Vein Ablation
CRP	=	C-Reactive Protein
CV	=	Cardioversion
CVD	=	CardioVascular Diseases

CVS	=	CerebroVascular Stroke

𝔈

EAM	=	Electro Anatomical Mapping
ECAS	=	European Cardiac Arrhythmia Society
ECG	=	ElectroCardioGram
eGFR	=	estimated Glomerular Filtration Rate
EGM	=	ElectroGraM
EHRA	=	European Heart Rhythm Association
EF	=	Ejection Fraction
EP	=	ElectroPhysiology
ESC	=	European Society of Cardiology
ESRD	=	End Stage Renal Disease

𝔊

GP	=	Ganglionated Plexi

ℌ

HF	=	Heart Failure
HFS	=	High Frequency Stimulation
HIFU	=	High Intensity Focused Ultrasound
Hs-CRP	=	High sensitive C-Reactive Protein

𝔍

ICE	=	IntraCardiac Echocardiography
IHD	=	Ischemic Heart Disease
IL-1	=	Interleukin-1
IL-6	=	Interleukin-6
INR	=	International Normalized Ratio

L

LAA	=	Left Atrium Appendage
LALA	=	Left Atrium Linear Ablation
LIPV	=	Left Inferior Pulmonary Vein
LMWH	=	Low Molecular Weight Heparin
LOE	=	Level Of Evidence
LSPV	=	Left Superior Pulmonary Vein
LV	=	Left Ventricle
LVEDD	=	Left Ventricle End Diastolic Diameter
LVEF	=	Left Ventricle Ejection Fraction
LVESD	=	Left Ventricle End Systolic Diameter
LVH	=	Left Ventricular Hypertrophy

M

MDRD	=	Modification of Diet in Renal Disease
MI	=	Myocardial Infarction
MRI	=	Magnetic Resonance Imaging

N

NOAC	=	New Oral AntiCoagulant

O

OAC	=	Oral Anticoagulant
OSAS	=	Obstructive Sleep Apnea Syndrome

P

PAD	=	Peripheral Arterial Disease
PCS	=	Proximal Coronary Sinus
PN	=	Phrenic Nerve
PNP	=	Phrenic Nerve Palsy
PUFA	=	Poly Unsaturated Fatty Acids

PV	=	Pulmonary Vein
PVI	=	Pulmonary Vein Isolation
PVs	=	Pulmonary Veins

Q

QOL	=	Quality Of Life

R

RAAS	=	Renin Angiotensin Aldosterone System
RF	=	RadioFrequency

S

SaO2	=	Arterial Oxygen Saturation
SD	=	Standard Deviation
SVC	=	Superior Vena Cava

T

TE	=	ThromboEmbolism
TEE	=	Trans Esophageal Echocardiography
TIA	=	Transient Ischemic Attack
TS	=	Trans Septal

U

UFH	=	UnFractionated Heparin

V

VKA	=	Vitamin K Antagonist

W

WACA	=	Wide Area Circumferential Ablation

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