

**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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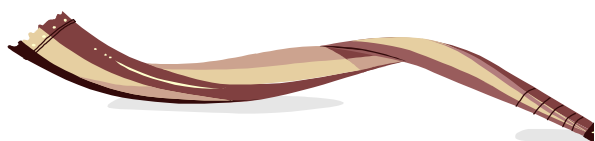
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Contents

Abstract.....	i
Acknowledgement.....	ii
List of contents.....	iii
List of abbreviations.....	iv
List of tables.....	viii
List of figures.....	ix
Introduction.....	1
Aim of the work.....	5
<u>Review of literature</u>	
Definition and classification of atrial fibrillation.....	7
Epidemiology and implications of atrial fibrillation.....	14
Pathophysiology of atrial fibrillation.....	19
Current therapeutic measures of atrial fibrillation	26
Recurrence of atrial fibrillation following treatment and potential predictors of recurrence.....	48
Methodology.....	86
Results.....,.....	110
Discussion.....	128
Limitations.....	142
Summary.....	145
Conclusion and recommendations.....	149
References.....	153
Arabic summary.....	

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
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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

£

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

I

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
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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
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R

RAAS	=	Renin Angiotensin Aldosterone System
RF	=	RadioFrequency

S

SaO ₂	=	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
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V

VKA	=	Vitamin K Antagonist
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W

WACA	=	Wide Area Circumferential Ablation
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LIST OF TABLES

Table		Page
1	AF classification based on duration according to 2014 AHA/ACC/HRS guideline for the management of patients with AF ⁽¹²⁾	12
2	Different scores(CCS-SAF) and (EHRA score) for quantifying AF severity of symptoms ^(36,37)	13
3	Comparison of the CHADS2 and CHA2DS2-VASc Risk Stratifications Score For Subjects With Non-valvular AF ⁽¹²⁾	27
4	Clinical characteristics comprising the HAS-BLED bleeding risk score ⁽²⁾	29
5	Anticoagulation strategies pre, during and post ablation ⁽⁴²⁾	31
6	Recommendations regarding AF catheter ablation in the latest American ⁽¹⁸⁾ and European ⁽²⁾ Guidelines on management of AF.	33
7	Complications associated with AF ablation ⁽¹¹⁾	44-45
8	GFR estimation equations	67
9	EHRA score for quantifying severity of atrial fibrillation symptoms ⁽²⁾	90
10	Characteristics of study population and study groups	112
11	Multivariate analysis of studied clinical predictors of AF recurrence.	114
12	Risk of AF recurrence with RF PVI or cryoballoon treatment as opposed to electrical CV and medical treatment.	126

LIST OF FIGURES

Fig.		Page
1	Atrial tachycardias. Diagram summarizing types of atrial tachycardias often encountered in patients with a history of AF, including those seen after catheter or surgical ablation procedures. P-wave morphologies are shown for common types of atrial flutter; however, the P-wave morphology is not always a reliable guide to the reentry circuit location or the distinction between common atrial flutter and other macroreentrant atrial tachycardias. *Exceptions to P-wave morphology and rate are common in scarred atria. AF: atrial fibrillation; bpm: beats per minute; and ECG: electrocardiogram ^(33,34)	9
2	Different types of AF. AF = atrial fibrillation; CV = cardioversion. The arrhythmia tends to progress from paroxysmal (self-terminating, usually <48 hours) to persistent (non-self-terminating or requiring cardioversion), long-standing persistent (lasting longer than 1 year) and eventually to permanent (accepted) AF. First-onset AF may be the first of recurrent attacks or already be deemed permanent ⁽²⁾	11
3	Egypt's estimated population pyramids for the years 2015 and 2020. ⁽⁶⁷⁾	14
4	Structure and mechanisms of atrial fibrillation. (A) Schematic drawing of the left and right atria as viewed from the posterior. The extension of muscular fibers onto the PVs can be appreciated. Shown in yellow are the four major LA autonomic ganglionic plexi and axons (superior left, inferior left, anterior right, and inferior right). Shown in blue is the coronary sinus, which is enveloped by muscular fibers, which have connections to the atria. Also shown in blue is the vein and ligament of Marshall, which travels from the coronary sinus to the region between the left superior PV and the LA appendage. (B) Large and small reentrant wavelets that play a role in initiating and sustaining AF. (C) Common locations of PV (red) and the common sites of origin of non-PV triggers (shown in green). (D) Composite of the anatomic and arrhythmic mechanisms of AF ⁽¹⁰⁷⁻¹⁰⁹⁾	20
5	Focal triggers leading to initiation of reentry, Schematic drawing which illustrates the manner in which focal triggers lead to initiation of reentry (rotors). Eventually, atrial remodeling leads to additional focal triggers and perpetuation of reentry ⁽¹¹⁰⁾	22
6	Macro reentrant source of AF. (A) Isochrone map of optical activity from the LAA, which shows a vortex rotating clockwise. (B) Optical signals and corresponding fast Fourier transform (FFTs) from sites marked 1 to 3 on isochrone map ⁽¹¹³⁾	23

Fig.		Page
7	The common pattern of the superficial myocardial fibers of the left atrium (posterior aspect). A main circular fascicle (a, a', a'' and a''') runs peripherally around the area of the openings of the pulmonary veins. An interatrial fascicle (b) runs between the right (RA) and the left (LA) atrium. Some fibers (c) descend from the left atrium into the left part (a') of the main circular fascicle. Circular fibers leaving the main fascicle turn around the openings of the pulmonary veins, forming sphincter-like structures; other fibers extend over the veins as myocardial sleeves. Loops of fibers coming from the atrium are seen over the right superior pulmonary vein (RSPV) and returning to the atrium. Oblique, vertical (e), and transverse (f, f') fascicles of fibers are also seen on the posterior atrial surface. LA: left atrium; RA: Right atrium; SVC: superior vena cava; IVC: inferior vena cava; RSPV: Right superior pulmonary vein; LSPV: left superior pulmonary vein; RIPV: right inferior pulmonary vein; LIPV: left inferior pulmonary vein ⁽¹⁰⁷⁾	24
8	The management cascade of patients with atrial fibrillation. EHRA: European Heart Rhythm Association; TE: Thrombo-embolism; ACEI: Angiotensin Converting Enzyme Inhibitor; ARB: Angiotensin Receptor Blocker; PUFA: Poly Unsaturated Fatty Acid ⁽²⁾	26
9	Clinical flowchart for the use of oral anticoagulation for stroke prevention in AF ⁽¹³⁾	28
10	Antiarrhythmic drugs and/or left atrial ablation for rhythm control in AF. AF = atrial fibrillation; HF = heart failure. a Usually pulmonary vein isolation is appropriate. b More extensive left atrial ablation may be needed. c Caution with coronary heart disease. d Not recommended with left ventricular hypertrophy. Heart failure due to AF = tachycardiomyopathy ⁽¹³⁾	32
11	Schematic of common lesion sets employed in AF ablation. (A) Circumferential ablation lesions, which are created in a circumferential fashion around the right and the left PVs. The primary endpoint of this ablation strategy is the electrical isolation of the PV musculature. (B) Some of the most common sites of linear ablation lesions. These include a "roof line" connecting the lesions encircling the left and/or right PVs, a "mitral isthmus" line connecting the mitral valve and the lesion encircling the left PVs at the level of the left inferior PV, and an anterior linear lesion connecting either the "roof line" or the left or right circumferential lesion to the mitral annulus anteriorly. Also shown is a linear lesion created at the cavotricuspid isthmus. This lesion is generally placed in patients who have experienced cavotricuspid isthmus dependent atrial flutter clinically or have it induced during EP testing. (C) Similar to B but also shows the	35

Fig.		Page
	addition of additional linear ablation lesions between the superior and inferior PVs resulting in a figure of 8 lesion set. Also shown is an encircling lesion of the superior vena cava directed at electrical isolation of the superior vena cava. SVC isolation is performed if focal firing from the SVC can be demonstrated. A subset of operators empirically isolates the SVC. (D) Some of the most common sites of ablation lesions when complex fractionated electrograms are targeted ⁽¹¹⁾	
12	Schematic depiction of different ablation techniques targeting the lateral PVs. (a) Focal or direct ablation (red dot) of an active trigger within the lateral superior PV (LSPV). (b) Segmental ostial isolation of an active trigger in the LSPV. (c) “One-by-one” linear ablation of the PVs with (left inferior PV, LIPV) or without the endpoint of complete electrical disconnection (LSPV) as proven by a simultaneous recording from a circular PV mapping catheter. (d) Simultaneous isolation of the ipsilateral PVs by a long “point -by-point” lesion encircling the antrum area of the lateral PVs. LAA, left atrial appendage, RF, radio frequency ⁽¹⁵⁴⁾	36
13	A: Circumferential pulmonary vein isolation by encircling each vein individually. B: Pulmonary vein isolation by wide area circumferential ablation (WACA) of ipsilateral veins ⁽¹⁵⁹⁾	37
14	Decapolar Circular Mapping Catheter (CMC) is situated in the left inferior PV ostium during SR after partial completion of a circumferential ablation lesion set. Other channels displayed are the distal electrode pair of the ablation catheter (Abl) and electrode pairs in the proximal coronary sinus (CS 7,8) and high right atrium (RA 7,8). A, Left atrial (large arrow) and PV potentials (small arrow) with earliest conduction breakthrough at CMC 7. B, Progressive delay between the left atrial electrograms and PV potentials. C, Left atrial potentials persist after conduction block into the left inferior PV ⁽¹⁶⁸⁾	38
15	A decapolar CMC is situated in the left inferior PV ostium during SR after a circumferential ablation lesion set resulted in apparent left atrium to left inferior PV conduction block. Other channels displayed are electrode pairs in the proximal coronary sinus (CS 7,8) and high right atrium (RA 7,8). Pacing from CMC 1 to 2 results in local capture of PV potentials (small arrow) without conduction to the left atrium (large arrow) ⁽¹⁶⁸⁾	38
16	Steps of deployment of cryoballoon (Medtronic Arctic Front® Cryoballoon) in LSPV followed by injection of contrast to ensure proper sealing at the PV ostium ⁽¹⁶⁹⁾	40
17	(A) The Laser Balloon, (B) The balloon is inserted into the right inferior pulmonary vein in RAO 30° projection, (C) the endoscopic view into the right inferior pulmonary vein showing a circumferential ring of myocardium. Ant, anterior;	40

Fig.		Page
	CS, coronary sinus; LA, left atrium; PC, pacing catheter; Post, posterior; SC, spiral catheter; TS, transseptal sheath; TP, temperature probe; RAO, right anterior oblique ⁽¹⁷⁰⁾	
18	Complication rates for cryoballoon atrial fibrillation ablation. A: Device-related complications. B: Procedure-related complications. C: Energy-related complications. For comparison, three studies reporting complications with radiofrequency (RF) ablation are depicted: a multicenter survey ⁽¹⁷⁸⁾ , a meta-analysis ⁽²⁰²⁾ and a high-volume single center ⁽²⁰³⁾ LA = left atrium; NR = not reported; PNP = phrenic nerve palsy; PVS = pulmonary vein stenosis	47
19	Prevalence of pulmonary vein reconnection in patients undergoing repeat procedure in different observational studies	72
20	(A) 6 pores irrigation catheter versus (B) 56 pores irrigation catheter.	74
21	An example of a steerable sheath (Agilis, St Jude Medical, St Paul, MN)	75
22	Positioning of the ablation catheter in the pulmonary vein. Intracardiac echocardiography (ICE) catheter is placed in the left superior pulmonary vein along with a 4 -mm tip Blazer radiofrequency ablation catheter. The catheter can be seen within the lumen of the vein. The tip of the ablation catheter casts an echogenic shadow and allows precise location and apposition along the vessel wall. (A to D) Demonstrating catheter movement to the 12, 3, 6 and 9 o'clock positions	76
23	Three-dimensional electroanatomical map of the left atrium with the circumferential ablation lesion points (red points) around ipsilateral pulmonary veins and additional lesions between left superior and inferior pulmonary vein created by a novel ablation catheter, which measures in real-time contact force and direction of the catheter tip. The amount of contact force applied for each ablation lesion is displayed in this 'force map' with a specific colour	78
24	Multiple used biphasic external defibrillator in our study for cardioversion (a) ZOLL M series defibrillator (ZOLL M Series®, ZOLL; Inc., USA) , (b) NIHON KOHDEN Cardiolife biphasic defibrillator (Cardiolife, NIHON KOHDION; Inc., Tokyo, Japan), (c) Cardioserve biphasic electrocardioversion device produced by GE Medical system-IT GmbH Germany 2005 and (d) LIFEPAK external biphasic defibrillator (LIFEPAK 12, Medtronic, Inc., Minneapolis,MN,USA)	96
25	(a) Irrigated tip ablation catheter (Thermocool® catheter, Biosense Webster) used for RF PVI, (b) Irrigated tip ablation catheter with pressure sensing (Thermocool®SmartTouch®catheter, Biosense	99

Fig.		Page
	Webster) used for RF PVI. RF PVI: radiofrequency pulmonary vein isolation.	
26	3D maps of LA of 2 patients of group B created by CARTO 3 EAM system (CARTO3®, Biosense Webster, Diamond Bar, CA, USA) with RF PVI done around both Right and Left ipsilateral PV. LA: left atrium, EAM: electroanatomical mapping, RF PVI: radiofrequency pulmonary vein isolation	100
27	Example of complete entrance block during isolation of RSPV. Note the disappearance of all PVP's by the end of tracing. RSPV: right superior pulmonary vein, PVP's: pulmonary vein potentials.	101
28	(Top) Oesophageal temperature monitoring system used (Sensitherm, St. Jude Medical Inc.). (Bottom) Fluoroscopic illustration of a quadripolar catheter positioned in SVC for Phrenic pacing during RIPV cryoballoon PVI in RAO view. SVC: superior vena cava, RIPV: right inferior pulmonary vein, PVI: pulmonary vein isolation; RAO: right anterior oblique.	103
29	Schematic illustration of steps of Cryoballoon PVI. (a) advancement of the deflated cryoballoon through the steerable sheath into LA over a guiding circular mapping catheter. (b) inflation of cryoballoon within LA. (c) advancement of the inflated balloon over the guiding catheter to gain proper PV occlusion confirmed with contrast venography. (d) application of cryo freezing energy.	105
30	Intracardiac tracing showing RSPV entrance block during cryoballoon PVI. Note for ongoing phrenic pacing using a quadripolar catheter placed at SVC with evident CMAP. RSPV: right superior pulmonary vein, PVI: pulmonary vein isolation, SVC: superior vena cava, CMAP: compound motor action potential.	106
31	Relationship between CRP and AF recurrence in whole studied population	114
32	Relationship between CRP and AF recurrence in patients treated with electrical CV and medical treatment	115
33	Relationship between CRP and AF recurrence in patients treated with RF PVI	116
34	Relationship between CRP and AF recurrence in patients treated with cryoballoon PVI	117
35	Relationship between eGFR and AF recurrence in whole studied population	117
36	Relationship between eGFR and AF recurrence in patients treated with electrical CV and medical treatment	118
37	Relationship between eGFR and AF recurrence in patients treated with RF PVI	119
38	Relationship between eGFR and AF recurrence in patients treated	119