شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
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HANAA ALY

Effect of Radiofrequency Current Application during Catheter Ablation on Heart Rate Variability in Patients with Supraventricular Tachycardia

Thesis

Submitted for Partial Fulfillment
of Master Degree in **Cardiology**

By

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Nashaat Lotfy Ramzy

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List of Abbreviations

Abb.	Full term
ABP	*Arterial blood pressure*
AF	*Atrial Fibrillation*
AP	*Accessory pathway*
APD	*Action postential duration*
ARB	*Angiotensen receptor blocker*
AVN	*Atrio-ventricular node*
AVNRT	*Atrioventricular nodal re-entry Tachycardia*
BB	*Beta blocker*
CAD	*Coronary artery disease*
CB	*Cryoballoon*
CHF	*Congestive heart failure*
CL	*Cycle length*
CS	*Coronary sinus*
DC	*Direct current*
EAM	*Electroanatomical mapping*
ECG	*Electrocardiogram*
HF	*High frequency*
HPS	*His–Purkinje system*
HR	*Heart rate*
HRV	*Heart rate variability*
LF	*Low frequency*
LV	*Left ventricle*
NASPE	*American Society of Pacing and Electrophysiology*
NOACs	*Novel oral anticoagulants*
OH	*Orthostatic hypotension*
PA-HSR	*Post ablation high sinus rate*

List of Abbreviations cont...

Abb.	Full term
NN intervals	*Interbeat intervals from which artifacts have been removed;*
PES	*Programmed electrical stimulation*
RF	*Rdiofrequency*
RFCA	*Radiofrequency current ablation*
rMSSD	*Root mean square of differences between successive NN intervals*
RR intervals	*Interbeat intervals between all successive heartbeats.*
SAN	*Sino-atrial node*
SDNN	*Standard deviation of NN intervals*
SVC	*Superior vena cava*
TCM	*Tachycardia induced cardiomyopathy*
TEE	*Transoesophageal Echo*
TI	*Triangular index*
ULF	*Ultra low frequency*
VLF	*Very low frequency*
LF	*low frequency*
WPW	*Wolff-Parkinson-White*

INTRODUCTION

The autonomic nervous system has a significant regulatory effect on heart function; in addition to heart rate, cardiac conduction properties, hemodynamics, the cellular properties of cardiac myocytes, and cardiac arrhythmogenesis are also affected by the autonomic nervous system ***(Shen et al., 2014)***.

Distinct effects of autonomic activation have been discussed in various clinical situations and specific types of arrhythmias ***(Chen et al., 2014; Latus et al., 2015).***

Heart rate variability (HRV) analysis is among the noninvasive methods that can be used to assess cardiac autonomic activity ***(Camm et al., 1996)***.

The utility of HRV measures for prediction of outcome or detection of changes in clinical status depends on their stability over time. HRV is influenced significantly by age, race, sex, physical fitness, clinical conditions, and drug treatment.

HRV testing is a low-cost, widely available, non-invasive method for assessing cardiac autonomic function. Although measurements are actually based on the RR interval (cardiac interbeat interval obtained from a continuous ECG recording and usually from the normal sinus to normal sinus [NN] intervals), Analysis of HRV patterns from continuous electrocardiograms (ECGs) permits the identification and

measurement of underlying physiologic rhythms. The strength of these rhythms is expressed by the magnitude of various frequency-domain HRV measures. When recordings of at least 24 hours are available, the predominant physiologic rhythm that accounts for the most HRV is the circadian rhythm, with relatively increased sympathetic activity associated with higher heart rates during the daytime and increased vagal activity associated with lower heart rates during the night ***(Buijs et al., 2006)***.

During normal sleep, there are also prominent physiologic rhythms associated with each approximately 90-minute sleep cycle, and there is evidence that these rhythms persist during wake time, possibly in association with neuroendocrine rhythms, but HRV measures have not found clinical applications at this point. The autonomic nervous system, which has a widespread impact on the heart, is expected to affect accessory pathway features in ventricular preexcitation. Sudden cardiac death may be the initial manifestation of ventricular preexcitation syndrome ***(Jackman et al., 1991; Timmermans et al., 1995).***

Holter monitoring, and invasive electrophysiological study (EPS) are being used for this purpose ***(Cantu and Goette, 2009; Czosek et al., 2011).***

The indications for catheter ablation of a cardiac arrhythmia generally revolve around the treatment of a

recurrent or persistent symptomatic arrhythmia which has been refractory to medical therapy or for which medical therapy is not tolerated or preferred.

Several studies have demonstrated an increase in heart rate (HR) and a decrease in HR variability (HRV) after radiofrequency catheter ablation (RFCA) of supra-ventricular tachycardia ***(Soejima et al., 1997)*.**

Recently, radiofrequency current ablation (RFCA) became the standard energy source in the management of patients with various types of tachyarrhythmia ***(Malik et al., 1996)***.

Aim of the Work

In this study, we aimed to assess the effect of RF catheter ablation on heart rate variability in patients with supraventricular tachycardia.