

Sudan University of Science
and Technology

College of Graduate Studies

**Evaluation of Cardiac
Valves of Rheumatic Heart
Disease Patients By Using
Ultrasound**

**تقويم صمامات القلب لدى
مرضى روماتيزم القلب
بإستخدام الموجات فوق
الصوتية**

A thesis Submitted for Partial Fulfillment of Requirements of
the

Award of M.Sc. Degree in Medical Diagnostic Ultrasound

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2015

الآية

قال تعالى

بسم الله الرحمن الرحيم

﴿قُلْ يَا عِبَادِ الَّذِينَ آمَنُوا اتَّقُوا رَبَّكُمُ لِلَّذِينَ
أَحْسَنُوا فِي هَذِهِ الدُّنْيَا حَسَنَةٌ وَأَرْضُ اللَّهِ وَاسِعَةٌ
إِنَّمَا يُؤَفِّى الصَّابِرُونَ أَجْرَهُمْ بِغَيْرِ حِسَابٍ﴾

(صدق الله العظيم)

(سورة الزمر 10)

Dedication

To My father

My mother

To

My husband

To my daughters and

son

To

My sisters

To

All my friends and

colleagues

Acknowledgments

Firstly, I thank my God whom enable me to realize the genuine meaning of success, ambitious, living my dreams come through and giving me great people whose directing my life to a good way. Special thanks to everyone participated in this work by any way either encourages, advising, or criticizing my research.

Secondly, my gratitude to my supervisors Dr. Elsafi Ahammed Abd Alla. He did not hesitate to devote his knowledge and time for me, and giving his positive arguments in the field of radiology and ultrasound. I like to express my special thanks to my co-supervisor Dr. Ala Mohammed Abd Elgyoum for his support from the begging, guidance, ultimate help and considerate.

I extend my sincere appreciation and thanks to Uz. Niamt Omar Babekir whom initiated the idea of this study and for her supporting, assistance and teaching me the elements of writing proposal.

I also grateful acknowledge the help of staff of Ribat National Hospital for their role in performing ultrasonography.

Finally, and thanks for everyone who help me.

Abstract

Rheumatic heart disease is cardiac inflammation and scarring triggered by an autoimmune reaction to infection with [group A streptococci](#). The aim of the research is to evaluate the valve of the heart and the severity of valvular lesion in rheumatic heart disease patients by ultrasound (echocardiography), in order to help in the treatment of the disease.

This study was prospective, descriptive and analytic study. The study followed the global protocol to achieve examination of the echocardiography. The heart ultrasound (echocardiography) was done by using direct adhesion technology with convex and sector transducers with frequency ranges between 2 to 4MH.

Data was analyzed using SPSS (Statistical Package for Social Science). The number of patients included in the study was (60) patients. The male patients were more than female in the sample (72.1% and 27.9%, respectively). The mean of their ages was 40years; the results shows high frequency of degenerative valve disease like mixed valves disease, isolated mitral stenosis, isolated aortic regurgitation and aortic stenosis.

Valvular changes in Rheumatic heart disease are detectable by conventional ultrasound only in very advanced stages of the disease. The study recommended using echocardiography routinely in the diagnosis and treatment units of rheumatic heart disease and follow up patients with rheumatic heart disease and it also recommended that the research could constitute a base for further research in this field.

المستخلص

أمراض القلب الروماتيزمية هي التهابات وتندب في القلب ناجمة عن رد فعل المناعة الذاتية للإصابة بنوع من البكتريا العقدية تسمى المجموعة (أ) العقديات. الهدف من هذا البحث هو تقييم صمامات القلب وشدة التندب فيها لدى المرضى الذين يعانون من أمراض القلب الروماتيزمية بواسطة الموجات فوق الصوتية للقلب (تخطيط صدى القلب) من أجل المساعدة في علاج هذا المرض.

هذه الدراسة هي دراسة مستقبلية، وصفية تحليلية. وتم استخدام البروتوكول العالمي لتحقيق فحص تخطيط صدى القلب. وقد تم استخدام تكنولوجيا الالتصاق المباشر بواسطة محولات محدبة وقطاعية مع نطاقات تردد بين 2 إلى 4MHz.

تم تحليل البيانات باستخدام الحزمة الإحصائية للعلوم الإجتماعية وكان عدد المرضى الذين شملتهم الدراسة (60) مريض. وكان عدد الذكور أكثر من الإناث في العينة (72.1% و 27.9% على التوالي). وكان متوسط أعمارهم حوالي 40 سنة. أظهرت النتائج عدد كبير من التغيرات في الصمامات مثل أمراض مختلطة للصمامات، و ضيق الصمام التاجي معزولة و ضيق صمام الأبهر.

تغيرات الصمامات في أمراض القلب الروماتيزمية لا يمكن اكتشافها بواسطة الموجات فوق الصوتية التقليدية إلا في مراحل متقدمة جدا من المرض. أوصت الدراسة باستخدام الموجات فوق الصوتية للقلب بشكل روتيني في وحدة تشخيص وعلاج أمراض القلب الروماتيزمية ومتابعة المرضى الذين يعانون من أمراض القلب الروماتيزمية وأوصت أيضا أن البحث يمكن أن يشكل قاعدة لإجراء مزيد من البحوث في هذا المجال.

TABLE OF CONTENTS

N o	Title	Pag e No.
1	Quran	i
2	Dedication	ii
3	Acknowledgement	iii
4	Abstract in English	iv
5	Abstract in Arabic	v
6	TABLE OF CONTENTS	vi
7	List of figures	ix
8	List of tables	xi
9	List of abbreviations	xii
10	CHAPTER ONE	1
11	1.1.Introduction	2
12	1.2. Hypotheses	6
13	1.3 Objectives	6
14	1.3.1. General objectives	6
15	1.3.2 Specific objectives:	6
16	CHAPTER TWO	7
17	Background and Literature Review	8
18	2.1 Anatomy of the heart:	8
19	2.1.1Right atrium	9
20	2.1.2 Right ventricle	10
21	2.1.3 Left atrium	10
22	2.1.4 Left ventricle	11
23	2.1.5 The blood supply to the heart	12
24	2.1.6 Nerve supply	14
25	2.2 The conducting system of the heart	14
26	2.3 Pathology of the heart:	15
27	2.3.1 Rheumatic disorders	17
28	2.3.2 Heart Valves Problems	17
29	2.3.3 Aortic stenosis and aortic insufficiency	18
30	2.3.4 Gross Findings	18
31	2.4 Sonographic Pathology	20
32	2.4.1 Indications:	20
33	2.4.1.1Trauma and Tamponade:	21
34	2.4.1.2 Cardiac Motion and Contractility:	22

35	2.4.1.3 Cardiac Arrest: Advanced cardiopulmonary life support	22
36	2.5 Sonographic Appearance	24
37	2.5.1 Basic principles of echocardiography	24
38	2.5.1.1 Equipment	24
39	2.5.1.2 Agents for contrast echocardiography	24
40	2.5.1.3 Patient Preparation	25
41	2.5.1.4 Contraindications	26
42	2.5.1.4 Transducer type	27
43	2.5.1.5 Technical Aspects of Doppler Echocardiography	27
44	2.5.1.6 Other Forms of Echocardiography (3-D echocardiography)	27
45	2.5.1.7 Complications	27
46	2.5.1.8 Scanning Technique and Normal Sonographic Findings	27
47	2.6 Previous Studies	32
48	CHAPTER THREE	38
49	3.0 Methodology	39
50	3.1 Study setting	39
51	3.2 Methods and materials	39
52	3.3. Study design	39
53	3.3.1. Study duration	39
54	3.3.2. Study variable	40
55	3.3.3. Study population	40
56	Inclusion Criteria:	40
57	3.4 Sample	41
58	3.5 Data collection and analysis	41
59	3.5.1. Primary data	41
60	3.5.2. Secondary data	42
61	3.6. Statistical analysis:	42
62	3.7. Validity, reliability and generalisability	42
63	3.8. Patient Preparation	42
64	3.9. Precaution	42
65	3.11. Patient Positioning	43
66	3.11. Coupling agents	43
67	3.12. Scanning guidelines and protocols	43
68	3.13. Heart Scanning Procedure	43
69	3.14. Ethical Consideration	44
70	3.15. Possible Outcomes (Revised)	45
71	CHAPTER FOUR	46
72	The Results	47
73	CHAPTER FIVE	60
74	5.1. Discussion	61
75	5.2. Conclusion	67

76	5.3. Recommendations	68
	References	69
	Appendix	75

LIST OF FIGURES

Figure No	Title	Page No.
Figure (2.1)	represents the blood circulation inside the heart chambers	8
Figure (2.2)	show the heart chambers, valves and arterial	9
Figure (2.3)	shows the Aortic portion and vascular layers	11
Figure (2.4)	The blood supply of the heart	14
Figure (2.5)	Schematic of the heart showing valves, arteries and veins	16
Figure (2.6)	Show a cross sectional diagram represent the heart valves.	16
Figure (2.7)	Show a post inflammatory mitral disease autopsy.	19
Figure (2.8)	Show a post-inflammatory aortic disease resection.	20
Figure (2.9)	Show a (A) in this image a large circular pericardial effusion (black) (B) This patient has a moderate amount of pericardial fluid (PE).	21
Figure (2.10)	Show split-screen image of B-and M-mode ultrasound. The subxiphoid view shows a patient in cardiac arrest. Here a flat line represents no cardiac activity	23
Figure (2.11)	This displays an ultrasound B/M-mode screen captured during simulated cardiac activity.	23
Figure (2.12)	show M-mode image across aortic valve	25
Figure (2.13)	A Color Doppler image across mitral valve shows evidence of mitral regurgitation; color Doppler scale shown on left indicates Nyquist limit.	26
Figure (2.14)	Show a drawing illustrating and sonographic long axis parasternal view of the left ventricle (LV), aorta (Ao), mitral valve (MV closed) and interventricular septum (S).	29
Figure	Show split screen shows a long axis parasternal view	29

(2.15)	of the heart. It displays the change in left ventricular (LV) size during systole and	
Figure (2.16)	(A) Short Axis view of left ventricle (LV) at the mitral valve, (B) Short axis parasternal image at papillary muscle mid-section (PM) of the left ventricle. (C) The cardiac walls are labeled.	30
Figure (2.17)	Subxiphoid view of the heart.	31
Figure (2.18)	This is a phased array sector image displaying all four heart chambers.	31
Figure (2.19)	Transesophageal Echocardiography	34
Figure (4.1)	Distribution of age	61
Figure (4.2)	Distribution of sex	62
Figure (4.3)	Distribution of onset of RHD	63
Figure (4.4)	Distribution of hypertension and diabetes	64
Figure (4.5)	Distribution of patients weight	65
Figure (4.6)	Distribution of patients high	66
Figure (4.7)	Distribution of smoking	67
Figure (4.8)	Aortic valve echocardiography Findings	68
Figure (4.9)	Mitral valve echocardiography Findings	69
Figure (4.10)	Distribution of tricuspid valve echocardiography Findings	70
Figure (4.11)	Distribution of pulmonary valve echocardiography Findings	71
Figure (4.12)	Distribution of final echocardiography Findings	72
Figure (5.1)	echocardiography of 48 years old male patients, show mitral valve stenosis	77
Figure (5.2)	echocardiography of 78 years old male patients shows mitral stenosis:	77
Figure (5.3)	Echocardiography of 67 years old female patients shows mitral regurgitation.	77
Figure (5.4)	Echocardiography of 48 years old male patients shows tricuspid valve regurgitation.	78
Figure(5.5)	Echocardiography of 82 years old male patients shows critical aortic stenosis.	78
Figure (5.6)	Echocardiography of 60 years old female patients shows Aortic root and ascending aorta dilatation.	78
Figure (5.7)	Echocardiography of 78 years old male patients shows tricuspid valve regurgitation.	79
Figure (5.8)	Echocardiography of 43 years old female patients shows stenotic pulmonary valve.	79

LIST OF TABLES

Table No	Title	Page No.
Table4.1.	Distribution of age	61
Table4.2	. Distribution of sex	62
Table4.3.	Distribution of onset of RHD	63
Table4.4.	Distribution of hypertension and diabetes	64
Table4.5	. Distribution of patients weight	65
Table4.6.	Distribution of patients high	66
Table4.7.	Distribution of smoking	67
Table4.8.	Distribution of aortic valve echocardiography Findings	68
Table4.9.	Distribution of Mitral valve echocardiography Findings	69
Table4.10.	Distribution of tricuspid valve echocardiography Findings	70
Table4.11.	Distribution of pulmonary valve echocardiography Findings	71
Table4.12.	Distribution of final echocardiography Findings	72

LIST OF ABBREVIATIONS

Abbreviations	Full Title
TTE	Transthoracic echocardiography
ASE	American Society of Echocardiography
CRT	Cardiac resynchronization therapy
DTI	Doppler tissue imaging
EAE	European Association of Echocardiography
EF	Ejection fraction
IBS	Integrated backscatter
IVPG	Intraventricular pressure gradient
LV	Left ventricle
RV	Right ventricle
SR	Strain rate
STE	Speckle-tracking echocardiography
3D	Three-dimensional
2D	Two-dimensional
ARF	Acute rheumatic fever
TEE	Transesophageal echocardiography
IV	Intravenous
ECG	<u>Electrocardiogram</u>
MV	Mitral Valve
TV	Tricuspid Valve
PV	Pulmonary Valve
AV	Aortic Valve
SPSS	Statistical Package for Social Science