

*Evaluation of the policy of secondary prevention
against rheumatic fever of Egyptian children in Cairo
University.*

Thesis

Submitted in partial fulfillment of
Master Degree in pediatrics

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2009

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

{ لَا يُكَلِّفُ اللَّهُ نَفْسًا إِلَّا وُسْعَهَا لَهَا مَا كَسَبَتْ
وَعَلَيْهَا مَا اكْتَسَبَتْ رَبَّنَا لَا تُؤَاخِذْنَا إِنْ نَسِينَا
أَوْ أَخْطَأْنَا رَبَّنَا وَلَا تَحْمِلْ عَلَيْنَا إَصْرًا كَمَا
حَمَلْتَهُ عَلَى الَّذِينَ مِنْ قَبْلِنَا رَبَّنَا وَلَا تُحَمِّلْنَا
مَا لَا طَاقَةَ لَنَا بِهِ وَاعْفُ عَنَّا وَاعْفِرْ لَنَا
وَارْحَمْنَا أَنْتَ مَوْلَانَا فَانصُرْنَا عَلَى الْقَوْمِ
الكَافِرِينَ }

Abstract

Rheumatic Heart Disease (RHD) is the most frequent of heart disease in children worldwide. People with a history of rheumatic fever (RF) are at a higher risk of recurrent attacks and of developing RHD following a streptococcal throat infection .Giving penicillin to these people can prevent recurrent attacks of RF and subsequent RHD.Aim: to evaluate the policy of secondary prevention of RF as regards the effectiveness of LAP, Whether there are relapses of RF or not, the effectiveness of giving LAP as a 2-weekly regimen in winter and a 3-weekly regimen in summer for prevention of streptococcal colonization of the throat, the patients`complains during the period of compliant LAP injections .methods: 210 rheumatic patients, good compliant to long acting penicillin (LAP) regimen ,attending regularly to Rheumatic fever outpatient clinic from May 2007 to August 2008 .Demographic and clinical data were collected, documented and were undergone analytical study. Also,we had done ASOT and throat culture to them.Results: **7** cases of relapses (**3** with polyarthritis, **1** with monoarthritis, **1** with carditis, **2** with chorea) , but in all of them the relapses occur within the 2 years after the acute episode of RF, ASOT done in our study , after compliant LAP regimens , was high in **5.2 %** only , all throat cultures swabbed from the studied cases were negative.Conclusion: the effectiveness of our regimen of LAP in eradication of streptococcal colonization in the throat, but,it is recommended to apply the 2 weekly LAP regimen in the first few years after the acute episode of RF especially in high risk communities .Then during the subsequent years ,a 2-weekly LAP regimen in winter and a 3-weekly regimen in summer ,that is appeared to be very effective .

Key Words : (Rheumatic fever, rheumatic heart disease, secondary prevention).

Acknowledgement

First and foremost, may all thanks and praise be to GOD, the most merciful. Without his blessing, this work would never have existed.

My deepest thanks and sincere gratitude to **Prof. Dr. Hala Salah El Din Mahmoud Hamza**, Professor of Pediatrics, Faculty of Medicine, Cairo University, for her continuous encouragement, her valuable support and professional experience. It has been an honor and privilege to work under generous supervision.

I am deeply indebted, and I wish to express my sincere gratitude and respect to **Prof. Dr. Soha Mahmoud Abdel Dayem**, Professor of Pediatrics, National Research Centre, for her enthusiastic encouragement, step by step advice, ceaseless effort, without her efforts, this work could not have come to light.

I owe special appreciation to **Prof. Dr. Sohier Fathy Helal**, Professor of Clinical Pathology, Faculty of Medicine, Cairo University, for her great help, support thorough the work and valuable advice.

My gratitude to **Dr. Amira Esmat**, Assistant Professor of pediatric, Cairo University, for her guidance and help in manuscript writing. My deepest thanks to **Dr. Azza Mohamed Ahmed**, Assistant Professor of Pediatrics, National Research Centre, for her continuous encouragement. Also, I would like to thank **Dr. Sanaa El Awady**, Assistant Consultant of Clinical Pathology, Cairo University, for her efforts in laboratory results & for her great support thorough the work.

Finally, I am so grateful to **my family** for their loving, kindness and encouragement throughout this work which I dedicate to them.

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Abbreviations

AHA	: America Heart Association
ANeurA	: Antineuronal Antibodies
AR	: Aortic Regurgitation
ASOT	: Antistreptolysin – O Titres
AV	: Aortic Value
BID	: Two Times Daily Administration
BPG	: Benzathine Penicillin – G
CHF	: Congestive Heart Failure
CNS	: Central Nervous System
CRP	: C-Reactive Protein
CT	: Computed Tomography
DALYs	: Disability – Adjusted Life Years
EC	: Echocardiography
ECG	: Electrocardiogram
ESR	: Erthrocyte Sedimentation Rate
GABHS	: Group A β -Haemolytic Streptococcus
GAS	: Group A Streptococcus
HLA	: Human Leukocyte Antigen
ICAM	: Intercellular Adhesion Molecule
IM	: Intramuscular
IV	: Intravenous
LA	: Left Atrium
LAA	: Left Atrial Appendage
LV	: Left Ventricle
LVEDD	: Left Ventricular End Diastolic Diameter
MR	: Mitral Regurgitation
MRI	: Magnetic Resonance Imaging

MS	: Mitral Stenosis
MV	: Mitral Value
NSAID	: Non Steroidal Anti-Inflammatory Drugs
PANDAS	: Pediatric Autoimmune Neuropsychiatric Disorders Associated with Streptococcal Infections
PV	: Pulmonary Value
QD	: Once Daily Administration
QID	: Four Times Daily Administration
RF	: Rheumatic Fever
RHD	: Rheumatic Heart Disease
RV	: Right Ventricle
SCC	: Subclinical Rheumatic Carditis
SLE	: Systemic Lupus Erythematosus
TD	: Three Times Daily Administration
TDI	: Tissue Doppler Imaging
TV	: Tricuspid Value
UK	: United Kingdom
UNICEF	: United Nations International Children's Emergency Fund
URT	: Upper Respiratory Tract
US	: United States
WHO	: World Health Organization

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Introduction & Aim of the work

INTRODUCTION AND AIM OF WORK

Rheumatic fever and rheumatic heart disease remain a significant cause of cardiovascular morbidity and mortality in countries around the globe (**Kaplan, 2005**). Despite a documented decrease in the incidence of acute RF and a similar documented decrease in the prevalence of RHD in industrialized countries during the past five decades, these non-suppurative cardiovascular sequel of group A streptococcal pharyngitis remain medical and public health problems in both industrialized and industrializing countries even at the beginning of the 21st century. The most devastating effects are on children and young adults in their most productive years (**WHO, 2004**).

Molecular mimicry between streptococcal and human proteins has been proposed as the triggering factor leading to autoimmunity and tissue damage in rheumatic heart disease. Despite the widespread application of Jones' criteria, carditis is either underdiagnosed or overdiagnosed. Endocarditis leading to mitral and/or aortic regurgitation influences morbidity and mortality of rheumatic heart disease, whilst myocarditis and pericarditis are less significant in determining adverse outcomes in the long-term. Strategy available for disease control remains mainly secondary prophylaxis with the long-acting penicillin G-benzathine (**De Rosa G et al.,2006**).

Rheumatic fever is an autoimmune consequence of infection with GABHS . It causes an acute generalized inflammatory response and an illness that selectively affects the heart , joints , brain and skin. Despite

the dramatic nature of an acute episode , ARF leaves no lasting damage to the brain , joints or skin . However, damage to the heart valves, particularly the mitral and aortic valves , may persist after an acute episode has resolved . This involvement of the cardiac valves is known as RHD . People who have had ARF previously are much more likely to have subsequent episodes , and these recurrences may cause further damage to the cardiac valves (*Jonathan R Carapetis et al .,2007*).

Rheumatic fever causes 25—40% of all cardiovascular diseases in developing countries. Disability and death from rheumatic heart disease are mainly caused by recurrent attacks (*Dundaroz et al., 2001*).

The fact that penicillin has failed to eradicate this disease process is irrefutable proof of the need for more laboratory, epidemiological, and clinical research (*Kaplan, 2005*).

In our study, we have aimed to evaluate the policy of secondary prevention of RF in the Rheumatic fever outpatient clinic in Cairo University Children Hospital as regards:

- ** The effectiveness of long acting penicillin(LAP) , Whether there are relapses or recurrent episodes of RF during the period of compliant LAP injections or not.
- ** The effectiveness of a 2-weekly regimen in winter and 3-weekly regimen in summer for prevention of streptococcal colonization of the throat.
- ** The patients`complaints during the period of compliant LAP injections.

Review of Literature

EPIDIMIOLOGY

Acute rheumatic fever (ARF) is a serious public health problem in developing countries. At the end of 20th century, after an apparent decline, ARF constituted a major challenge for developed and developing countries (*Khriesat et al., 2003*).

A recent review of the global burden of GABHS-related disease estimated that there are at least 15.6 million people with RHD , another 1.9 million with a history of ARF but no carditis , 470 000 new cases of ARF each year , and over 230 000 deaths due to RHD annually . Almost all cases and deaths occur in developing countries (*Carapetis et al .,2007*).

The prevalence of RHD has been estimated in surveys, mainly of school-age children. *Table (1)* explores examples of reported prevalence of RHD in school children.

Table (1): Examples of reported prevalence of RHD in schoolchildren (WHO, 2004).

WHO Region (country, city)	Year	Rate(per 1000 population)
Africa		
Kenya (Nairobi)	1994	2.7
Zambia (Lusaka)	1986	12.5
Ethiopia (Addis Ababa)	1999	6.4
Americas		
Cuba (Havana, Santiago, P. del Rio)	1987	0.2-2.9
Bolivia (La Paz)	1986-1990	7.9
Eastern Mediterranean		
Morocco	1989	3.3-10.5
Egypt (Cairo)	1986-1990	5.1