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

Thesis

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بسم الله الرحمن الرحيم

{لاَ يُكَلِّفُ اللّهُ نَفْساً إِلاَّ وُسْعَهَا لَهَا مَا كَسَبَتْ وَعَلَيْهَا مَا اكْتَسَبَتْ رَبَّنَا لاَ تُؤَاخِذْنَا إِن نَّسِينَا أَوْ أَخْطَأْنَا رَبَّنَا وَلاَ تَحْمِلْ عَلَيْنَا إِصْراً كَمَا حَمَلْتَهُ عَلَى الَّذِينَ مِن قَبْلِنَا رَبَّنَا وَلاَ تُحَمِّلْنَا مَا لاَ طَاقَةَ لَنَا بِهِ وَاعْفُ عَنَّا وَاغْفِرْ لَنَا وَارْحَمْنَا أَنتَ مَوْلاَنَا فَانصُرْنَا عَلَى الْقَوْمِ الْكَافِرِينَ }

البقرة286

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 ***)***.

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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 Adminitration

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` complains 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 deathes 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