

**SYSTEMATIC REVIEW OF THE TREATMENT
OF ACUTE STREPTOCOCCAL THROAT
INFECTION IN THE PREVENTION OF
RHEUMATIC FEVER**

Essay

*Submitted for partial fulfillment of the Master degree
in Otorhinolaryngology*

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Abbreviations

APR	A cute Phase Reactant
ARF	A cute Rheumatic Fever
ARI	A cute Respiratory Infection
ASO	A nti Streptolysin O
CI	C onfidence Interval
CPR	C linical Prediction rule
CRFSG ..	C ombined Rheumatic Fever Study Groups
CRP	C - reactive protein
ESR	E rythrocyte Sedimentation Rate
GAS	G roup A Streptococci
ISFC ...	I nternational Society and Federation of Cardiology
RHD	R heumatic Heart Disease
RR	R isk Ratio
WHO	W orld Health Organization

Introduction

Rheumatic fever is a systemic illness that may occur following group A beta-hemolytic streptococcal pharyngitis in children. Rheumatic fever and its most serious complications, rheumatic heart disease, are medical problems that result from an autoimmune response; however, the exact pathogenesis remains unclear (**Thomas et al., 2006**).

Over the past century, as living conditions have become more hygienic and less crowded, and nutrition and access to medical care have improved, acute rheumatic fever (ARF) and rheumatic heart disease (RHD) have become rare in the developed countries (**Carapetis et al., 2005**).

In contrast, in developing areas of the world, acute rheumatic fever and rheumatic heart disease are the leading causes of cardiovascular death during the first 5 decades of life (**Gerber et al., 2009**).

In most of Europe, all cases of pharyngitis and tonsillitis are treated with antibiotics without identification of the causal agent despite the fact that only about 20% of the cases are caused by group A beta-hemolytic streptococci, and may lead to rheumatic fever (**Olivier, 2000**).

There are no proven treatments that alter the natural history of rheumatic fever. Therefore, prevention is the key for reducing the burden of the disease in the community (**Cilliers et al., 2003**).

Two broad strategies for prevention are applicable; the first is primary prevention, which involves the detection of symptomatic group A streptococcal sore throat in susceptible individuals in the community and treatment of them with a course of oral or parenteral penicillin (**Robertson et al., 2005**).

The second strategy is the secondary prevention, which is achieved by periodic administration of penicillin to individuals who have had previous episodes of rheumatic fever or have rheumatic heart disease for

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preventing recurrent group A streptococcal sore throats (**Manyemba and Mayosi, 2002**).

Aim of the Work

The aim of the work is to run a systematic review on streptococcal throat infection in relation to rheumatic fever in order to find evidence to assist medical practitioners in providing a rational approach in:

- 1- Diagnosis of streptococcal throat infection.
- 2- Treatment of streptococcal throat infection.
- 3- Primary and secondary prevention of rheumatic fever.
- 4- Role of tonsillectomy in the treatment of streptococcal throat infection and in prevention of rheumatic fever.

CHAPTER (1)

Epidemiology of Rheumatic Fever

The occurrence and spread of streptococcal organism is influenced by the age of the patient, seasonality, and socioeconomic conditions. A superimposed genetic predisposition also probably exists **(Guilherme et al., 1991 and Olmez, 1993)**.

Supporting evidence for an underlying immunological susceptibility for developing acute rheumatic fever is the higher antibody response noted in rheumatic patients compared to non-rheumatic subjects following the administration of influenza vaccine and the finding of isologous red blood cells in these patients **(Barrett, 1984)**.

According to WHO, at least 15.6 million people have rheumatic heart disease (RHD), about 0.5 million individuals acquire acute rheumatic fever (ARF) every year, 300.000 of these individuals develop RHD. 233.000 deaths annually are directly attributable to ARF or

RHD. However, these estimates based on conservative assumptions, so the true disease burden is likely to be substantially higher. Furthermore, the overall quality of epidemiological data from developing countries is poor, particularly with respect to research documenting the incidence of ARF **(Carapetis, 2004)**.

In developing countries, it remains an endemic disease with the annual incidence ranging from 100 to 200 per 100.000 school-aged children **(Olivier, 2000)**.

The prevalence of rheumatic heart disease in children aged 5-14 years is highest in Africa (5-7 per 1000), the pacific and indigenous populations of Australia and New Zealand (3-5 per 1000), and south-central Asia (2.2 per 1000), and lowest in developed countries (usually 0.5 per 1000) **(Carapetis, 2004)**.

Acute rheumatic fever is a rare disease in the very young; only 5% of first episodes arise in children younger than age 5 years and