DEMOGRAPHIC ANALYSIS OF PATIENTS' DATA ATTENDING AN URBAN RHEUMATIC FEVER CLINIC IN CAIRO

Thesis

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بسم ٱللَّهِ ٱلرَّحمَٰنِ ٱلرَّحِيمِ

To my parents,to my aunt Aisha
I owe them all that I have become and all that I ever will be

To my sister Omaima who is always living in my heart

To my family

For their love,devotion and support

Abstract

Direct contact with oral or respiratory secretions transmits the organism, and crowding enhances transmission. Patients remain infected for weeks after symptomatic resolution of pharyngitis and may serve as a reservoir for infecting others. Penicillin treatment shortens the clinical course of streptococcal pharyngitis and more importantly prevents the major sequelae.

Penicillin remains the antibiotic of choice. Intramuscular penicillin is preferred as it is more effective than oral penicillin and results in better compliance. A recent Cochrane meta-analysis confirmed that injections every two or three weeks were more effective than injections every four weeks. The evidence, however, is based on poor quality trials

Key Words :

Demographic analysis – aortic regurge – mitral regurge .

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List of abbreviations

AHA	**:** American heart association
Anti-DNase B	**:** Anti-deoxyribonuclease B
APR	**:** Acute phase reactants
AR	**:** Aortic regurge
ARF	**:** Acute rheumatic fever
ASOT	**:** Anti-streptolysin O titer
AS	**:** Aortic stenosis
AV	**:** Aortic valve
BMV	**:** Balloon mitral valvuloplasty
BPG	**:** Benzathine penicillin G
CHF	**:** Congestive heart failure
COX-2	**:** Cyclo-oxygenase 2
CRP	**:** C-reactive protein
CSPM	**:** Center for social and preventive medicine
ECG	**:** Electrocardiogram
Echo	**:** Echocardiography
ESR	**:** Erythrocyte sedimentation rate
FH	**:** Familial hypercholesterolemia
GAS	**:** Group A streptococcus
GABHS	**:** Group A beta hemolytic streptococci
HLA	**:** Human leukocytic antigen
IgA	**:** Immunoglobulin A
IVIG	**:** Intravenous immunoglobulin
LAP	**:** Long acting penicillin
MR	**:** Mitral regurge
MS	**:** Mitral stenosis
MVP	**:** Mitral valve prolapse
MV	**:** Mitral valve
NSAIDs	**:** Non-steroidal anti-inflammatory drugs
PANDAS	**:** Pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection
PSRA	**:** Poststreptococcal reactive arthritis
RF	**:** Rheumatic fever
RHD	**:** Rheumatic heart disease
SLE	**:** Systemic lupus erythematosus
URT	**:** Upper respiratory tract
WHO	**:** World health organization

Introduction

And

Aim of the work

INTRODUCTION

Acute Rheumatic fever (RF) and rheumatic heart disease (RHD) are nonsuppurative complications of Group A streptococcal pharyngitis due to a delayed immune response. Although RF and RHD are rare in developed countries, they are still major public health problems among children and young adults in developing countries. [*KrishnaKumar ,et al. 1999*] .

The economic effects of the disability and premature death caused by these diseases are felt at both the individual and national levels through higher direct and indirect health-care costs.

RF develops in children and adolescents following pharyngitis with GABHS (ie, *Streptococcus pyogenes*). The organisms attach to the epithelial cells of the upper respiratory tract and produce a battery of enzymes, which allows them to damage and invade human tissues. After an incubation period of 2-4 days, the invading organisms elicit an acute inflammatory response, with 3-5 days of sore throat, fever, malaise, headache, and elevated leukocyte count. In a small percent of patients, infection leads to RF several weeks after the sore throat has resolved. Only infections of the pharynx initiate or reactivate RF. [*Pickering ,2000*].

Direct contact with oral or respiratory secretions transmits the organism, and crowding enhances transmission. Patients remain infected for weeks after symptomatic resolution of pharyngitis and may serve as a reservoir for infecting others. Penicillin treatment shortens the clinical course of streptococcal pharyngitis and more importantly prevents the major sequelae. [*Robertson,e tal, 2005*] .

In 1944,the Jones criteria were formulated to assist disease identification,these criteria with some modification, remain in use today [*Parillo & Parillo 2005*]

They have been periodically revised by the American Heart Association in collaboration with other groups. [*Ferrieri ,2002*].

Two major criteria, or one major and two minor criteria, when there is also evidence of a previous strep infection, support the diagnosis of rheumatic fever.[*Steven & Parrillo , 2007*] .

- Major criteria include:
  - Carditis: This occurs in as many as 40% of patients and may include cardiomegaly, new murmur, congestive heart failure, and pericarditis
  - Migratory polyarthritis: This condition occurs in 75% of patients and is polyarticular, fleeting, and involves the large joints.
  - Subcutaneous nodules (ie, Aschoff bodies): These nodules occur in 10% of patients and are edematous, fragmented collagen fibers. They are firm, painless nodules on the extensor surfaces of the wrists, elbows, and knees.
  - Erythema marginatum: This condition occurs in about 5% of patients. The rash is serpiginous and long lasting.
  - Chorea (also known as Sydenham chorea and "St Vitus dance"): This characteristic movement disorder occurs in 5-10% of cases. Sydenham chorea consists of rapid, purposeless movements of the face and upper extremities. Onset may be delayed for several months and may cease when the patient is asleep.

- Minor criteria
  - Clinical findings include arthralgia, fever, and
  - Laboratory findings include elevated acute-phase reactants (eg, erythrocyte sedimentation rate, C reactive protein), a prolonged PR interval, and supporting evidence of antecedent group A streptococcal infections (ie, positive throat culture or rapid streptococcal screen and an elevated or rising streptococcal antibody titer). [*Olgunturk ,et al,2005*]

Acute RHD often produces a pancarditis, characterized by endocarditis, myocarditis, and pericarditis. Endocarditis is manifested as mitral and aortic valve insufficiency. Severe scarring of the valves develops during a period of months to years after an episode of acute RF, and recurrent episodes may cause progressive damage to the valves. The mitral valve is affected most commonly and severely (65-70% of patients); the aortic valve is affected second most commonly (25%). The tricuspid valve is deformed in only 10%

of patients, almost always in association with mitral and aortic lesions, and the pulmonary valve rarely is affected. Severe valve insufficiency during the acute phase may result in congestive heart failure (CHF) and even death (1% of patients). Whether myocardial dysfunction during acute RF is related primarily to myocarditis or is secondary to CHF from severe valve insufficiency is not known. When pericarditis is present, it rarely affects cardiac function or results in constrictive pericarditis. Chronic manifestations occur in adults with previous RHD from residual and progressive valve deformity. RHD is responsible for 99% of mitral valve stenosis in adults, and it may be associated with atrial fibrillation from chronic mitral valve disease and atrial enlargement [*Carapetis,et al, 2005*] .

Prevention of recurrent attacks of rheumatic fever is the most cost effective way of preventing rheumatic heart disease [*Martin,et al.,1994*].

Penicillin remains the antibiotic of choice. Intramuscular penicillin is preferred as it is more effective than oral penicillin and results in better compliance. A recent Cochrane meta-analysis confirmed that injections every two or three weeks were more effective than injections every four weeks. The evidence, however, is based on poor quality trials [*Manyemba & Mayosi 2002*].

Prospective data from New Zealand showed that few, if any, recurrences occurred among patients who adhered to a regimen of every four weeks. [*Spinetto, 2003*]. The study concluded that injections every four weeks can be prescribed for most patients, and injections every three weeks are recommended in a few highly motivated patients who have severe cardiac lesions and have shown good compliance with the four weekly injections. [*Spinetto, 2003*]. WHO recommendations for the duration of secondary prophylaxis are for at least five years after a diagnosis of acute rheumatic fever or until the age of 18 years without proved carditis, for 10 years in a patient with mild mitral regurgitation or until 25 years of age, and lifelong for severe valve disease and after valve surgery [*WHO,2001*].

Although few patients receive lifelong antistreptococcal prophylaxis, no general consensus exists as to when prophylaxis can be safely discontinued . In developing countries, the large number of surgical procedures on young persons with rheumatic heart disease has been described as "attempting to mop up the water on the floor while leaving the faucet open" [*Veaocy , 1994*].

Aim of the work.

The aim of this work is demographic analysis of data collected from patients attending regularly an urban rheumatic fever clinic to identify the incidence of the disease among different age groups ,sex predilection ,geographic distribution among different governrates ,various modes of presentation based on modified Jones criteria ,patterns of cardiac affection ,course of the disease ,complications (recurrence among those receiving proper prophylaxis ,heart failure and infective endocarditis) and compliance with different modes of prophylaxis (intramuscular LAP,oral penicillin ,erythromycin and sulfadiazine).

Epidemiology

Epidemiology of group A streptococcal infection

Beta-haemolytic streptococci can be divided into a number of serological groups on the basis of their cell-wall polysaccharide antigen. Those in serological group A (*Streptococcus pyogenes*) can be further subdivided into more than 130 distinct M types, and are responsible for the vast majority of infections in humans [*Shulman ,et al 2000*]

In both developing and developed countries, pharyngitis and skin infection (impetigo) are the most common infections caused by group A streptococci. Group A streptococci are the most common bacterial cause of pharyngitis, with a peak incidence in children 5–15 years of age [*Kaplan,1996*]

Streptococcal pharyngitis is less frequent among children in the first three years of life and among adults. It has been estimated that most children develop at least one episode of pharyngitis per year, 15–20% of which are caused by group A streptococci and nearly 80% by viral pathogens . [*Bisno , 1996*]

The incidence of pharyngeal beta-haemolytic streptococcal infections can vary between countries and within the same country, depending upon season, age group, socioeconomic conditions, environmental factors and the quality of health care .[*Pruksakorn et al, 2000*]

In Egypt, the incidence of streptococcal pharyngitis is 31 per 100 child –years, and between 0.4% and 1.0% of schoolchildren have clinical evidence of cardiac valvular damage probably due to acute rheumatic fever [*El Kholy,et al.,1980*]

Surveys of healthy schoolchildren 6–10 years of age, for example, found anti-streptolysin-O titres >200 Todd units in 15–70% of the children . [*Taranta & Markowitz, 1989*]

Other studies reported beta-haemolytic streptococci carrier rates of 10–50% for asymptomatic schoolchildren [*WHO,1988*]. In temperate countries, 50–60% of streptococci isolated from asymptomatic children belong to serological group A, while streptococci in serological groups C and G together occur in less than 30% of the children. Conversely, in many tropical countries,