RHEUMATIC FEVER AS AN AETIOLOGY OF HEART FAILURE

THESIS

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(Paediatrics)

BY

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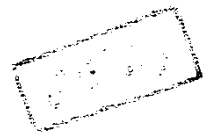

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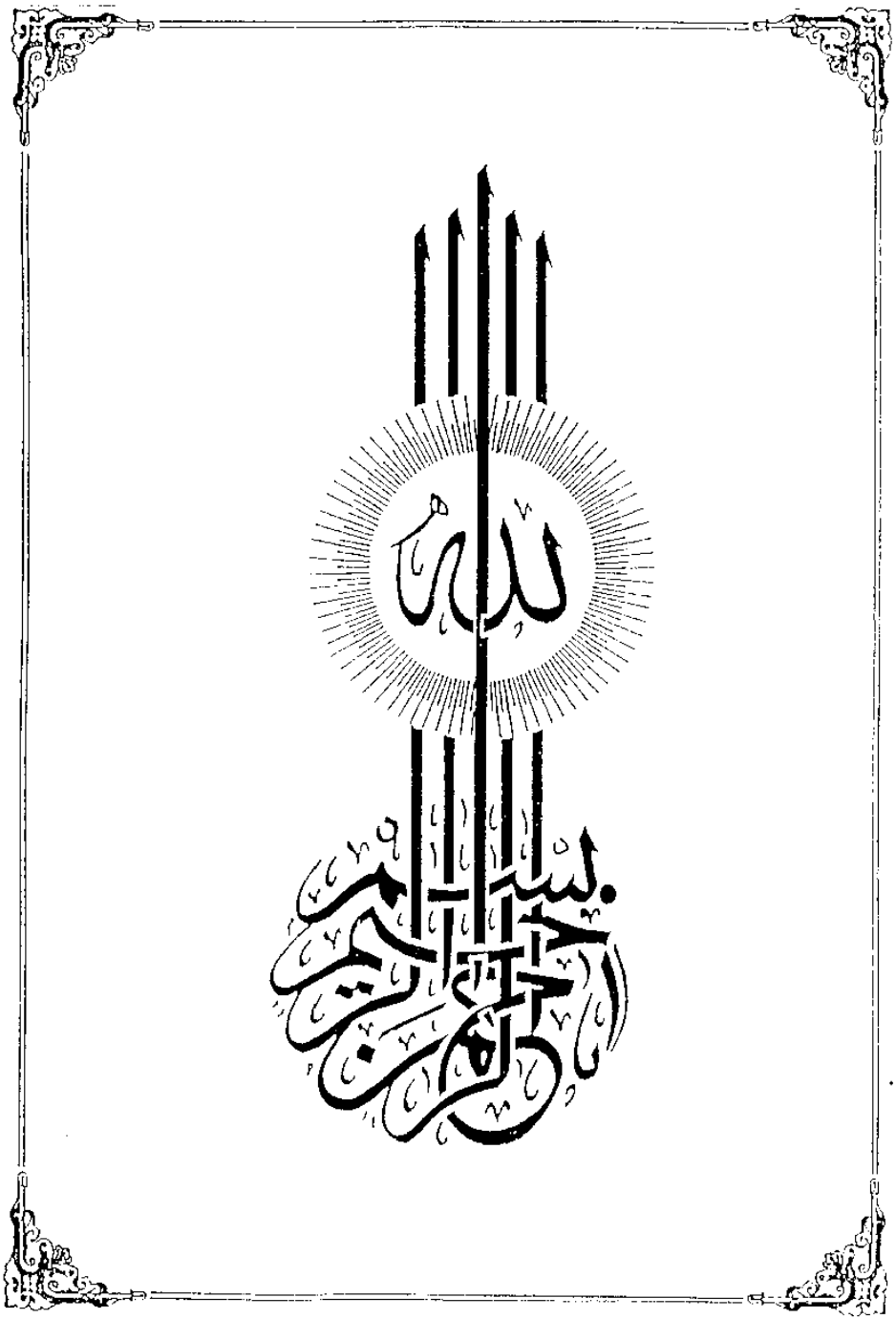

CONTENT

ABBREVIATIONS USED IN THIS WORK

A.H.A.	American Heart Associaiton
A.I.	Aortic incompetence
A.S.	Aortic stenosis
ASO	Antisterptolysin titre
ATPase	Adenosine triphosphatase
C-AMP	Cyclic adenosine monophosphate
COP	Cardiac output
D.C.	Direct current
ECG	Electrocardiogram
ESR	Erythrocyte sedimentation rate
H.D.	Heart disease
HLA	Histocompetability antigen
Ig	Immunoglobulin
M.I.	Mitral incompetence
M.S.	Mitral stenosis
P_aCO_2	Arterial pressure of carbon dioxide
P_aO_2	Arterial pressure of oxygen.
R.F.	Rheumatic fever
R.H.D.	Rheumatic heart disease
RNA	Ribonucleic acid
T.I.	Tricuspid incompetence
T.S.	Tricuspid stenosis

LIST OF TABLES

Introduction

INTRODUCTION AND AIM OF THE WORK

Rheumatic heart disease is a major child health problem in Egypt. In the age group above six years it presents itself with high morbidity, mortality and high disability. It is the commonest heart disease in our country. The ratio of rheumatic heart disease to congenital heart disese was 8:1 few decades before. This ratio is now reversed in the Western World with marked decrease in incidence of rheumatic fever (Abdin, 1981).

Disciscio and Taranta in 1980, reported that in Egypt, there was the highest reported mortality rate in the world of rheumatic heart disease (27.5/100,000) and one of the highest for acute rheumatic fever (10/100,000).

Although the incidence of rheumatic fever in developed countries has fallen sharply in recent years, the disease has not been eradicated and is always potentially serious because it may lead to permanent cardiac damage (Markowitz, 1983).

Rheumatic heart disease is the only significant complication of rheumatic fever. Approximately 33% of patients with rheumatic fever develop rheumatic heart disease and those patients usually had carditis. Permanent heart valve damage is the most important complication of the rheumatic process (Gotsman, 1985).

Congestive heart failure is one of the major complications of rheumatic heart disease in children and young adults, especially in patients with longstanding valvular affection (Spagnuolo and Feinstein, 1964).

The Aims of this Work are :

To study the prevalence of heart failure among rheumatic patients in the pediatric cardiology clinic, Ain Shams University.

To asses the nature and the severity of the underlying lesion.

To provide a rational basis for diagnosis.

Review of Literature

EPIDEMIOLOGY AND PREDISPOSING FACTORS

Many of the epidemiologic features of acute rheumatic fever are explicable in terms of the epidemiology of streptococcal sore throat. (Rammelkamp et al, 1952).

Acute R.F. develops 2 weeks after a group [A] hemolytic streptococcal infection of throat (Gotsman, 1985). However Markowitz, (1983) stated that not all cases of rheumatic fever (R.F.) have a history of a preceeding upper respiratory infection.

Approximately 3% of individuals with a well-documented streptococcal sore throat will develop acute R.F. (Rammelkamp et al, 1952).

A characteristic feature of the epidemiology of streptococcal pharyngitis and its non suppurative sequalae is the latent period, which in epidemics results in a lag before the peak incidence of acute R.F. The latent period is commonly between 7 and 35 days, within average of about 18 days. It may be as long as 2 to 6 months in patients with pure sydenham's chorea (Wannamaker and Kaplan, 1983).

Factors Affecting the Epidemiology of R.F :

A. Season :

In United States, the highest incidence of R.F. was found in late winter and spring months and lowest during summer (Markowitz, 1983). In Cairo, Abdin (1960) found new and active cases all through the year with increased tendency towards spirng and drop during summer. According to Kassem et al (1982) the incidenc of the initial attack of R.F. is highest in spring (31.9%) followed by winter (27.9%) then autumn (20.6%) and lowest in summer (19.6%).

B. Age:

Wannamaker, (1979) reported that R.F. like streptococcal infection occurs most commonly in children between 5 and 15 years of age with a peak incidence of first attack at 6-8 years of age.

Abdin (1960) in Cairo, reported the youngest case with rheumatic artheritis in a boy one year old and the youngest case with rheumatic carditis in a girl 19 months old .

In Egypt it was reported that the maximum age incidence was between 4 and 12 years (Kassem et al, 1982).

C. Sex

There is no striking sex difference in the overall incidence of R.F. except in chorea which is more common in females (Wannamaker, 1975). In our country the higher incidence of R.F. among females may be attributed to the fact that females in low socio economic classes, spend more time indoors under bad housing conditions with great liability to repeated streptococcal infection. (Kassem et al, 1982).

D. Race and Ethnic Group :

There are no valid data which show differences in susceptability on the basis of race or ethnic group. (Wilson, 1940).

Wannamaker; (1975) reported that no race is immune against R.F., however Chineese are said to have a lower incidence (Keith et al, 1958).

E. Climate and Geographical Factors :

Rheumatic fever is a world wide disease and its frequency appears to be influenced by climate and Geograpy (Markowitz and Kuttner, 1965). The disease has a high incidence in tropical and subtropical climates. Markowitz(1983). The incidence is high in a climate characterized by cold, dampness and sudden variability of temprature (Shefferman, 1965)

F. Socioeconomic Factors :

Socioeconomic conditions seem to be one of the most important factors as regards prevalence of R.F. because even in countries with high

standards of living there are relatively poor areas with a higher incidence of R.F. (Brownell and Bailen, 1973).

Over crowding, poor hygiene, substandard housing and inadequate medical care, all favour the spread of streptococcal infection and probably influence the attack rate of R.F. Of these factors overcrowding may be most significant. (Hutchinson, 1975).

The majority (84.9%) of the cases of R.F. studied by Kassem (1982) in Alexandria showed that most families were of low income, and so also by Kotby (1983). Epidemics are likely, where there is overcrowding and low standards of living, for instance in some areas undergoing rapid industrilization and urbanization. (Gotsman, 1985).

G. The role of the gentic factors:

Cheadle (1889) was the first to record that R.F. frequently occured in more than one member of the family. According to Willson, (1940), The incidence of R.F. is higher in realtives of rheumatic children who live in separate households than among relatives of non rheumuatic children. Mallen and Castello (1952) concluded that rheumatic suscaptability is based on a single autosomal recessive gene.

Disciascio and Taranta (1980) had reported that R.F. is more common in identical than in non identical twins.

Mourad (1982) showed a higher incidence among Egyptian patients with HLA - A_9 - A_{28} and B_5.

Stevenson and Cheeseman (1953, 1956)had found that although inheritance appeared to play an important role in R.F. it did not follow a mendelian pattern.

In the last few years serologic studies of genetic markers have been utilized to define the role of heridity in the development of acute R.F. the association of certain HLA antigens with the occurance of acute R.F. has been exmined by several groups .

The results had been somewhat contradictory with no consistent association. Neverless an increased prevalence of $HLAB_5$ – patients with acute R.F. was noted in many of these reports (Hafez et al, 1985).

Abdin and Eissa (1967) studied blood groups in rheumatic chorea and found the prevelance of blood group [B] in rheumatic chorea. They reported that rheumatic fever patients showed a high prevelance of blood group [O] and that females belonging to blood group [B] seem to have a peculliar susciptability to R.F.

H. Nutrition :

Coburn, 1960 had suggested that diet may play a sepecific role in the prevelance of R.F. and that substances such as phospholipids may