

DISCUSSION

Rheumatic fever (RF) and rheumatic heart disease (RHD) are a major public health concern for many developing countries. Annually, there are 400,000 deaths and hundreds of thousands of children die due to rheumatic fever (RF) and rheumatic heart diseases. The prevalence of rheumatic heart disease in children in Egypt is about 5 per 1000.^(19, 34)

RF and RHD have a negative impact on the society by increasing stress on the child and the child's parents and siblings. It decreases the capacity of the most productive age groups, as well as limiting future capacity of young people. Acute RF and RHD lead to increased absence from school and drop-out, and lost wages due to parental absenteeism from work. The patient and his family bear these costs, which are shared to some extent to society as a whole. Moreover, long term use of penicillin injection is not easy for poor populations.⁽³⁵⁾

Proportion of male RF patients in this study were slightly more than females which was in contrast to findings of several other studies where female patients were more.^(36, 37)

In our study, we found that Chronic rheumatic heart disease was detected in 51.5% of the cases, while RF in 48.5% of the cases, which was near to the results of a recent study done in Sohag university hospital.⁽³⁶⁾

According to our work, mitral valve involvement was found in 83% of the cases of whom 49% was combined with aortic valve lesion. The commonest clinical finding is the presence of mitral regurgitation with or without aortic regurgitation.

These findings were in consistence with a study done in India, in which clinically mitral valve involvement occurs in 90 to 95 per cent of whom in 20 to 25 per cent, it is associated with aortic valve disease as well.^(38, 39) Tricuspid valve involvement in acute RF is uncommon and the pulmonary valve involvement very rare.⁽³⁹⁾

In the present study, regarding the type of treatment it was found that 88 % of the patients received medical treatment (as long acting penicillin, antihypertensive and diuretics) while only 12% of patients had medical and surgical treatment.

In contrast to our study Karen et al⁽⁴⁰⁾, found that 70 % of children had cardiac surgical procedure, and approximately 30 % were currently taking medications.

So more children did surgical interventions than our study and this may be due to using large sample size and difference in community health care services and severity of RHD.

Our study were designed to investigate the role and extent of socioeconomic and environmental risk factors among RHD patients, we found a trend towards increased risk of RHD in association with overcrowding and unemployment.

Overcrowding

A previous study in Soweto, South Africa found a higher prevalence of RHD among suburban dwellers, usually the lower socioeconomic class, who also tended to live in overcrowded residences, while a survey in Congo Kinshasa, found that children from

overcrowded suburban families had a higher prevalence of RHD irrespective of income and social classes of their parents^(41, 42) More recently, Jaine et al, in an ecological study in New Zealand assessed 1249 cases of ARF diagnosed between 1996 and 2005 found a positive and significant association between ARF and overcrowding, although this study was limited by its design ⁽⁴³⁾, (it was not case controlled making it impossible to draw conclusions on their findings).

Our study highlights the importance of overcrowding in the occurrence of RHD, especially in the developing world where rapid urbanization and poor housing predisposes suburban dwellers to overcrowding and consequently ARF and RHD.

Socioeconomic and Environmental Risk Factors for RHD

If we look back at the history of RF/RHD from the early years of the 1900's when rheumatic fever was devastating, it becomes very clear that the incidence started to drop early before the onset of antibiotics .

"A combination of low socio-economic status, overcrowding, poor sanitary conditions, poor nutrition and the absence of medical services all helped in bringing about the high prevalence of RF/RHD. With improvement of some or all of these factors this high prevalence started to decline even before the mass introduction of penicillin in 1948. After penicillin a precipitous fall of the incidence of RF/RHD occurred." said by Khaled A. Sorour⁽⁴⁴⁾ in his study done in Kasr Al-Aini School of Medicine, Cairo University, Egypt.

Our results comes to agree to this opinion as we found a statistical significant relationship between low family income and the occurrence and severity of rheumatic fever, also we found a statistical significant relationship between low social class and the occurrence and severity of rheumatic fever.

Also we found that nearly 60% of our cases had sewage system and good ventilation system, which means that about 40% of the patients live in poor sanitary condition.

We also found that most of our cases comes from villages and suburban areas where all previous risk factors (overcrowding , bad ventilation ,bad sanitation, low family income and low social class) are present .

Unhygienic living results in persistent GABHS in the environment. Since GABHS spreads by droplet dissemination, overcrowding causes cross infection from person to person. Low socio-economic status may undermine nutrition and seriously limit access to medical treatment. Poor nutritional status is believed to contribute to a decreased immune response. The result is not only endemic RF but also a more severe or virulent disease.⁽³⁹⁾

On the other hand, many studies ^(37, 45) found no significant difference in income between cases and controls at the multivariate level. This absence of a difference could be due to the fact that in developing countries, income is generally low across the board, and a threshold might not have been reached where difference in social classes leads to a difference in disease risk factors.

This is consistent with findings by Steer et al, who in a systemic review of RHD prevalence in developing countries and the role of environmental factors, assessed 24 studies conducted between 1976 and 1999, and concluded that a threshold level where

higher socio-economic status is associated with reduced prevalence of RHD has not been reached in developing countries. Therefore, differences in prevalence between socio-economic groups in one area cannot be detected.⁽⁴⁶⁾

Dobson et al in a well designed case controlled study of socioeconomic and environmental risk factors for RHD in 80 cases and 80 controls in Fiji, found a trend toward increased risk of RHD in association with poor-quality housing and lower socioeconomic status. This study was however limited by a small sample size which is consistent with our study.⁽⁴⁷⁾

According to our study most of the mothers(61%) and a large proportion of the fathers(46%) of our patients were illiterate, which has a great impact on the awareness, care giving by the parents ,seeking medical advice and compliance to treatment .

A case control study in Bangladesh reported several risk factors which might also play a role. They identified education of mothers and recurrent RF episodes as factors contributing to RHD.⁽⁴⁸⁾

Many studies reported that Most RF patients are the offspring of mothers with little or no education as Education is expected to enable mothers to provide quality care efficiently.⁽⁴⁵⁾

SUMMERY

Rheumatic fever is a systemic disease affecting the peri-arteriolar connective tissue and can occur after an untreated GABHS pharyngeal infection. In acute rheumatic fever, these lesions can be found in any layer of the heart and is hence called pancarditis.

In Egypt, RHD is a significant health problem, with an estimated prevalence of 5.1 per 1000 school child. The impact of disease is aggravated by low public awareness, the lack of appropriate and early diagnosis and the low socioeconomic status of affected families. Poor transport facilities, overburdened clinics and overcrowding also add to the problem.

Although rheumatic fever (RF) and its most important sequel, rheumatic heart disease (RHD), are worldwide problems, they are most prevalent in developing countries. In these countries, RF accounts for up to 60% of all cardiovascular disease in children and young adults, and it has the potential to undermine national productivity, since young adults are the most productive segment of the population in these countries.

Impact of RHD problems are many like health burden on, psychological and social burden, financial burden, schooling achievement this is because poor health generally imposes cost on the society and individuals in terms of reduced ability to enjoy life, earn a living or to work effectively.

The aim of our work is to assess the socioeconomic state among children with Rheumatic fever/Rheumatic Heart Disease (RHD).

Our study was a cross-sectional study was carried on 200 children who were diagnosed to have RF/ RHD attending the cardiology clinic at the Alexandria university children hospital for assessment ,follow up and management.

All patients were subjected to:

A designed interview questionnaire involving:

- Personal information.
- Heart disease related data.
- Family medical history.
- Socioeconomic data.

The present study showed that,

- The provider of information of the studied cases was either the parents or patient himself in most cases it was the mother.
- Chronic rheumatic heart disease was detected in 51.5% of the cases, while RF in 48.5% of the cases.
- Most of the patients have a mild uncomplicated RHD.

Summary

- Regarding the type of treatment, 88% of the patients received medical treatment only while 12% of patients had medical and surgical treatment. The family history of RHD was positive in 27.0% of the patients.
- Mitral valve involvement was found in 83% of the cases of whom 49% was combined with aortic valve lesion. The commonest clinical finding is the presence of mitral regurgitation with or without aortic regurgitation.
- Proportion of male RF patients in this study were slightly more than females.
- In many cases the extent of the activity performed was not matched with the extent of activity allowed by the doctor according to their medical condition.
- Most of the cases live in Alexandria government, however 42.5% live in other governments and receive medical services in Alexandria university hospital.
- A large proportion of cases (54.5%) are from government schools which are known to be more crowded than nongovernmental schools.
- Our data shows that most cases (68%) are found in smaller capacity schools.
- 33% of the patients are working, mostly as part-timer (85%).
- Most cases were from nuclear families(74%).
- The mean income of the father is 750 LE.
- The mean of monthly income per capita is 132 LE. Which is much lower than the minimal income by law which is 1200 LE.
- 46% of the fathers and 61% of the mothers are illiterate.
- We found that nearly 60% of our cases had sewage system and good ventilation system.
- Most of our cases comes from villages and suburban areas.

CONCLUSIONS

The present work spots light on the socioeconomic state as a risk factor in rheumatic fever and rheumatic heart disease.

From our results we conclude the following:

- Most of RF and RHD patients live in overcrowded areas, either at home or in school.
- We found a statistical significant relationship between low family income and the occurrence and severity of rheumatic fever.
- We found a statistical significant relationship between low social class and the occurrence and severity of rheumatic fever and rheumatic heart disease.
- Poor sanitary condition and ventilation system are considered a risk factors for RHD.
- RF and RHD are prevalent in the patients comes from villages and suburban areas.
- Lack of adequate education of the mother is considered a risk factor for RF and RHD.
- Unemployment is another risk factor for the occurrence of both diseases, due to its impact on the provision of adequate health care for the children by the family.