Primary Prevention of Acute Rheumatic Fever

F Jaiyesimi*

Summary

Jaiyesimi F. Primary Prevention of Acute Rheumatic Fever. *Nigerian Journal of Paediatrics* **1981; 8: 90.** Levels of health consciousness among, and health facilities available to 40 children with rheumatic heart disease were evaluated. Seventy-five per cent of the patients had health facilities located within 15 kilometres of their homes while the rest had such facilities located within 60 kilometres. However, adequate health facilities were available to only 55% of them. Ninety-five per cent of the patients belonged to the low or middle socio-economic classes, and their levels of health consciousness were generally low. It is suggested that strategies for primary prevention of acute rheumatic fever and rheumatic heart disease should take cognisance of these suboptimal socio-economic conditions. Thus, such strategies should include health education, campaigns aimed at facilitating early recognition of pharyngitis, improvement in health facilities, and a programme of penicillin therapy for all cases of pharyngitis in children susceptible to acute rheumatic fever.

Introduction

EFFECTIVE prevention of acute rheumatic fever and rheumatic heart disease depends on the prevention or early detection and treatment of Group A streptococcal pharyngitis.[1][2] It is however, difficult to prevent streptococcal infection because there is no effective vaccine against streptococci.[3] Early recognition and treatment therefore remain the only practical option. The two most important pre-requisites for such a therapeutic strategy are, first, a high level of health-consciousness by patients who have pharyngitis and, secondly, provision of adequate health facilities for prompt treatment of the condition.

University College Hospital, Ibadan

Department of Paediatrics
* Reader

The present study assesses these pre-requisites in the western part of Nigeria, and also examines the implications of the findings with regards to the primary prevention of acute rheumatic fever.

Materials and Methods

The study involved 40 randomly selected children with rheumatic heart disease. They were all resident in the western state of Nigeria and attending the paediatric cardiac clinic, University College Hospital, (UCH), Ibadan. For the purpose of the study, information was obtained on four items. These included the type of health facility routinely available to each patient, ascertained by direct questioning as well as by cross-checking with data published by the western

State Ministry of Health,[4] and the proximity of the facility to the patient's home. The level of health consciousness was assessed from the time lapse between the onset of the illness and the first hospital attendance. And, in view of its relevance to the epidemiology of acute rheumatic fever,[5] the socio-economic background of each patient was determined using the criteria shown in Table I.

TABLE I

Socio-economic Classes of 40 Patients with Rheumatic Heart Disease

Social Class	Description	No. of patients	% of Total
I	University graduates, large-scale business executives and equivalents	1	2.5
II	Diploma-level professionals, medium-scale businessmen and equivalents	1	2.5
III	Secondary school graduates, upper cadre clerks and equivalents	4	10.0
IV	Modern school graduates, lower cadre clerks and equivalents	2	5.0
V	Primary school graduates, office messengers and equivalents	15	37.5
VI	Illiterate rural farmers and unskilled urban workers	17	42.5
Total		40	100.0

Results

Twenty-two (55%) of the 40 patients normally had access to the UCH while 16(40%) had access to health facilities in general hospitals; these latter facilities were judged to be generally inadequate. Meagre facilities of rural health centres were available to the remaining 2 patients. These health institutions were located within 15 kilometres of the homes of 30 (75%) of the 40 patients (Table II). However, 20 of these 30 patients were from Ibadan while the remaining 10 were from other major urban centres; this pattern was typical of the overall catchment areas of UCH. Three

patients (7.5%) presented in hospital within a few days of the onset of their illness (Table III), but 23 others (57.5%) presented between one and nine months. Fourteen (61%) of these 23 patients lived outside Ibadan.

TABLE II

Distance of Health Institution to Patients' Homes

Distance (km)	No. of patients	% of Total
Within 15	30	75.0
16–30	5	12.5
31–45	4	10.0
46–60	1	2.5
Total	40	100.0

TABLE III

Time Interval between Onset of Illness and First Hospital Visit by 40 Children with Rheumatic Heart Disease

Interval	No. of patients	% of Total
Less than 1 week	3	7.5
1–4 wk	14	35.0
1–3 mon	10	25.0
3–6 mon	5	12.5
over 6 mon	8	20.0
Total	40	100.0

Two patients were children of senior government officials while the remaining 38 (95%) came from either low or middle socio-economic background (Table I). Two of the 3 patients who reported sick promptly, were children of parents with no formal education. However, 20 (83%) of the 24 patients who delayed for 1 week to 3 months, and all the 13 who delayed for more than 3 months, came from social classes V and VI.

Discussion

The incidence of acute rheumatic fever in developed countries has declined significantly in recent decades as a result of general improvement in living standards and early treatment of streptococcal pharyngitis.[3 5 6 7] Indeed, the incidence is currently so low that emphasis has now shifted to precise recognition of streptococcal pharyngitis and avoidance of unnecessary penicillin therapy. Recently, it has even been suggested that penicillin therapy should be withheld until a positive throat culture was obtained,[8] the exceptions being patients with scarlet fever, family or past history of rheumatic fever,[9] and pharyngitis occurring during an epidemic of rheumatic fever.[10] Since these measures have succeeded in developed countries, there may be a temptation to adopt them in the developing ones where rheumatic heart disease remains a major health problem.[11-14]

The present study concerned hospital patients drawn mainly from major urban centres. The findings, especially in respect of available health facilities, may therefore be over-estimates of what actually obtain amongst the generality of Nigerians. Nonetheless, the study has shown that practically all the patients were from poor homes, the level of health-consciousness was low, and only about half of them normally had access to fairly adequate health facilities. These factors could thwart attempts at primary prevention of rheumatic fever in Nigeria if the conventional criteria for the recognition of streptococcal infection (Table IV) and prevention strategies[1] were to be adopted. For instance, it would be futile, from personal experience, to expect to see erysipelas or scarlet fever before making a diagnosis of streptococcal pharyngitis because both diseases are rare in Nigeria. It is equally futile to rely on laboratory facilities which are unavailable to about half the patients. Perhaps, the greatest problem is the low level of health-consciousness because, if patients with pharyngitis do not report promptly at health centres, early treatment

TABLE IV

Criteria for the recognition of Group A streptococcal Infection (World Health Organization)

1. Scarlet fever

2. Pharyngitis with or without tonsillitis, but with fever and enlarged regional lymph nodes; or positive throat culture.

3. Complications of upper respiratory diseases that are frequently due to streptococci, e.g. otitis media, mastoiditis, erysipelas.

4. Upper respiratory tract infections in individuals living in close contact with patients with streptococcal disease.

5. Symptoms suggestive of streptococcal disease in known rheumatics or their family contacts.

of streptococcal pharyngitis will be impossible. It would therefore be necessary to adopt preventive strategies which will meet the peculiar demands of developing nations.

There is a need to increase the level of health consciousness in the community. Measures designed to increase national literacy rate should be supplemented by health education campaigns which could be conducted by all categories of health workers, most especially those involved in the national basic health service programme.[15] Such health campaigns should aim particularly at school children and nursing mothers who usually constitute a very receptive audience. Recognition of pharyngitis by parents and health auxiliaries could be facilitated by the use of posters that depict its common features, such posters being displayed at health centres, schools, and other public places.

A modified therapeutic strategy is also needed. The scarcity of laboratory facilities implies that a positive throat culture should not be a prerequisite for drug therapy. Fortunately, penicillin therapy of streptococcal pharyngitis is cheap, effectively prevents rheumatic fever,[2 3] and is rarely associated with any serious side effects.[16] Furthermore, penicillin is usually available even in rural health centres. Under these circumstances, it may be simpler, and cheaper in the long run, to prescribe penicillin for every case of pharyngitis in children who are susceptible to acute

rheumatic fever. The cost of the penicillin wastage which is inherent in such a therapeutic strategy will be small compared with the immense economic and human loss attributable to rheumatic heart disease.

References

1. World Health Organization. Prevention of rheumatic fever. *WHO Tech Rep Ser* 1966; **No. 342.**
2. Fejfar Z, Strasser T, Hatano S, Ikeme A and Masinoni R. Cardiovascular diseases: care and prevention. *WHO Chronicle* 1974; **28:** 55–64.
3. Strasser T and Rotta J. The control of rheumatic fever and rheumatic heart disease: an outline of WHO activities. *WHO Chronicle* 1973; **27:** 49–54.
4. Ministry of Health, Western State of Nigeria. *Annual Statistical Bulletin* 1974, Ibadan: 15–32.
5. Bywaters GLS. Rheumatic fever and chorea. *In* Copeman WSC, ed. Textbook of Rheumatic Diseases. Edinburgh: E & S Livingstone, 1970: 200–48.
6. Mayer FE, Doyle EF, Herrera L and Brownwell KD. Declining severity of first attacks of rheumatic fever. *Am J Dis Child* 1963; **105:** 146–52.
7. Massell BF, Amezcua J and Pelargonio S. Evolving picture of rheumatic fever. Data from 40 years at the House of the Good Samaritan. *JAMA* 1964; **188:** 287–94.
8. Bisno AL. Therapeutic strategies for the prevention of rheumatic fever. *Ann Int Med* 1977; **86:** 494-6.
9. Pantell RH. Cost-effectiveness of pharyngitis management and prevention of rheumatic fever. *Ann Int Med* 1977; **86:** 497–9.
10. Tompkins RK, Burnes DC and Cable WE. An analysis of the cost-effectiveness of pharyngitis management and acute rheumatic fever prevention. *Ann Int Med* 1977; **86:** 481–92.
11. D'Arbela PG. Rheumatic heart disease and infective pericarditis: the problem in cardiological practice in Africa. *In* Akinkugbe OO, ed. Cardiovascular Disease in Africa. Lagos: Ciba Geigy, 1976: 266–74.
12. Vijayaraghavan G, Cherian G, Krishnaswami S, Sukumar IP and John S. Rheumatic aortic stenosis in patients presenting with combined aortic and mitral stenosis. *Br Heart J* 1977; **39:** 294–8.
13. Kassem AS, Badre EL, Din MK, and EL Azzouni O. Evolution of valvular disease in rheumatic Egyptian children. *Abstracts of World Congress of Paediatric Cardiology,* 1980; London: Abst **No. 136.**
14. Prakash SK, Ahuja SK, Bhargava M and Sachdav S. Mitral stenosis in Indian children—a serious problem. *Abstracts of World Congress of Paediatric Cardiology* 1980. London: Abst **No. 138.**
15. Ministry of Health, Federal Republic of Nigeria. A Projection for the Implementation of the Basic Health Services Programme, Lagos, 1976: 20–8.
16. Simmonds J, Hodges S, Nicol F and Barnett D. Anaphylaxis after oral penicillin. *Br Med J* 1978; **2:** 1404.