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Short Communication

Evaluation of the policy of secondary prevention against rheumatic fever among Egyptian children

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ABSTRACT

Objective: We evaluated the effectiveness of long acting penicillin (LAP) as a 2-weekly regimen in winter and a 3-weekly regimen in summer for prevention of streptococcal colonization and also studied the common complaints of patients during the period of compliance for LAP administration. We also attempted to determine the incidence of relapses or recurrence of rheumatic fever (RF) after the onset of first episode of RF.

Patients & methods: 210 rheumatic patients with good compliance to LAP (for at least one year) were included in the study. Demographic, clinical information, patients' complaints and echocardiographic data of rheumatic patients were collected both retrospectively and prospectively. Anti-streptolysin O titre (ASOT) and throat swab culture were done at the end of the study (on Day 14 in the 2-weekly regimen and on Day 21 in the 3-weekly regimen).

Results: The age of onset of rheumatic fever was mostly between 5 and 15 years and the youngest patient was 2 years old. Subclinical carditis (SCC) was present in 79 (37%) of all the patients in the study population. Only 7 patients (3.3%) had a relapse within 2 years of the acute episode of RF. At the end of the study, ASOT was found to be high only in 11 patients (5.2%) and throat swab cultures were found negative in all patients

Conclusion: LAP regimen is fairly effective in eradicating streptococcal colonization. The incidence of relapse of RF within 2 years of the acute episode of RF is relatively low.

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1. Introduction

Rheumatic fever (RF) and rheumatic heart disease (RHD) cause 40% of all cardiovascular diseases in developing countries.

Disability and death from RHD are mainly caused by recurrent attacks.¹ However, pilot studies conducted during the last five decades in developed and developing countries revealed that the prevention and control of RF and RHD is possible.

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Rheumatic fever is a multisystem, immunologically mediated inflammatory disease, that occurs as a delayed sequel to group A streptococcal (GAS) infection.²

People with a history of RF are at a high risk of recurrent attacks and of developing RHD following streptococcal throat infection. Giving penicillin to these people can prevent recurrent attacks of RF and subsequent RHD. However, there is no agreement on the most effective method of giving penicillin.³

Secondary prophylaxis with benzathine penicillin G (BPG) is the only scientifically proven strategy to control RHD. It is recommended to apply a 2-weekly LAP regimen in the first few years after the acute episode of RF especially in high risk communities. This can then be followed by a 2-weekly LAP regimen in winter and a 3-weekly regimen in summers in the subsequent years. Decisions to stop secondary prophylaxis should be based on regular clinical assessment.

In this study, we aim to evaluate the effectiveness of long acting penicillin (LAP) as a 2-weekly regimen in winter and a 3-weekly regimen in summer for the prevention of streptococcal colonization of the throat. Also, we attempted to assess patients' complaints during the period of compliance for LAP injections administration and to determine if the second rheumatic presentation is related to the initial presentation or not.

2. Patients and methods

It is a cross-sectional observational (retrospective and prospective) study conducted after seeking approval from the local institutional review board and human subjects' protection. Written consent was obtained from patients and their parents.

Our study spanned over one year period and included 210 patients who were diagnosed previously with rheumatic fever according to Jones criteria. All patients reported good compliance to LAP regimen and regularly attended rheumatic fever outpatient clinic for a period of at least one year retrospective to our study. This was confirmed through a specific follow-up card maintained for each patient in Rheumatic Fever Clinic, Cairo University, Children Hospital.

Inclusion criteria:

1. Patients receiving LAP according to their weight (the regimen of secondary prevention of RF was 600,000 units LAP for patients weighing 25 kg or less and 1.2 million units for patients weighing more than 25 kg) every 2 weeks in winter and 3 weeks in summer,⁴ regardless of age
2. Patient exhibiting good compliance with LAP treatment (for at least one year).

Exclusion criteria:

1. Patients who developed penicillin allergy during prophylaxis
2. Patients who refused to continue prophylaxis with LAP
3. Patients on oral penicillin.

Our study had both retrospective and prospective components.

2.1. Retrospective component

It was taken through an organized filing system for each patient in rheumatic fever clinic and it includes: complaint at initial attack, history of relapses or recurrence, investigations done at initial attack (ESR, CRP, ASOT and Echocardiography) and echocardiography follow up every 3 months. All cases of relapses were diagnosed in rheumatic fever clinic. The patients were admitted immediately to Cairo University, Children Hospital and were subsequently investigated by one of the eminent professor of pediatric cardiology who performed an echocardiography to document the echocardiographic criteria of relapses. According to the protocol of rheumatic fever clinic any case of relapse has to be admitted to Cairo University, Children Hospital in order to be fully investigated (full labs and echocardiographic imaging).

2.2. Prospective component

Any recent complaint and extensively present medical history. Anti-streptolysin O titer (ASO Latex test): The plasmatic ASO Latex test kit for qualitative and semi-quantitative estimation of anti-streptolysin O antibody in human serum was used. Throat swab culture was done to isolate and identify group A β hemolytic streptococci. ASOT and throat swab culture were done at the end of the study (on day 14 in the 2-weekly regimen and on day 21 in the 3-weekly regimen prior to receiving the LAP injection) and sensitivity test was also done for positive culture.

2.3. Echocardiography

Imaging echocardiogram was performed every 3 months and at the end of the study using standardized protocol with M-mode, 2-dimensional and pulsed, continuous-wave using general electric medical echocardiographic machine-model: lived 7 Pro, GE Vingmed ultrasound AS-N190, Horton–Norway equipped with 3 & 7 MHz transducers.

2.4. Statistical methods

Statistical analysis was conducted using Statistical Package for Social Science (SPSS) program version 15 (Chicago, Illinois, USA). Data was summarized as number and percentage.

3. Results

Our study included 210 patients with a history of RF (120 on 2-weekly regimen and 90 patient on 3-weekly regimen). It included 100 males and 110 females with male to female ratio of 1:1.1. In our patient cohort, the mean age of onset of RF was 8.0 ± 2.4 years (2–15 years) and the mean patient age was 11.5 ± 2.8 years (4–19 years). **Table 1** shows the age of onset of rheumatic fever of the patients under study. Presenting clinical symptoms of RF included-polyarthritis in 143 patients (68%), Carditis (clinical and subclinical carditis diagnosed by echocardiography) in 130 patients (61%), chorea in 14 patients (6.6%), and Erythema marginatum and subcutaneous nodules in 1 patient (0.5%) each. 102 out of 210 (48.5%) patients were

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