Current Highlight

The control of rheumatic fever and rheumatic heart disease: a call to raise the awareness

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ABSTRACT

Although the incidence of rheumatic fever (RF) and rheumatic heart disease (RHD) has declined in the developed world and many developing countries, yet it is still high in many countries including Sudan. The decline of frequency of RF in these countries is largely due to improved medical services leading to wide use of antibiotics to treat bacterial pharyngitis. In many developing countries, the incidence is decreased due to development of integrated control programs.   Depending on secondary prophylaxis alone was shown to be ineffective, therefore, many countries, including Sudan initiated control programs that utilize both primary and secondary prevention together with increasing awareness and surveillance. The new program started in 2012 in Sudan in order to achieve its goal of reducing mortality of RHD by 25% in individual less than 25 years of age by year 2025. This article throws light on RF and RHD and its control program in Sudan.

Key words:

Rheumatic fever; Rheumatic heart disease; Prevention

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INTRODUCTION

Rheumatic fever is a multisystem disease that involves mainly the joints, the heart and the brain, but it may affect other organs as well. It takes place 2-3 weeks after an infection usually of upper respiratory tract, with Lancefield group A β haemolytic streptococcus [1].

Rheumatic heart disease (RHD)

Rheumatic heart disease is a term used to indicate cardiac involvement by the rheumatic process. Rheumatic heart disease could be acute (ARHD) or chronic (ChRHD) [1,2].

Acute rheumatic carditis

Acute rheumatic carditis is used when there is clinical evidence of valvitis with or without pericarditis with other signs of ARF [1,2]. The old theory that ARF causes histopathological pancarditis has been refuted recently by the finding that the rheumatic process doesn't involve the myocardium but rather affects the endocardium[1]. This fact is supported by the absence of clinical myocarditis.

Chronic or quiescent rheumatic heart disease:

It is used when there are signs of valvular disease of rheumatic origin in the absence of evidence of streptococcal infection [1,2].

Magnitude of the problem

In developing areas of the world, acute rheumatic fever (ARF) and rheumatic heart disease (RHD) are estimated to affect nearly 20 million people and are the leading causes of cardiovascular death during the first five decades of life [2]. RF can occur at any age, although most cases occur in children 5 to 15 years of age [2-5]. Worldwide, there are 470,000 new cases of RF and 233,000 deaths attributable to RF or RHD each year, most occur in developing countries and among indigenous groups [2,6].

Incidence of rheumatic fever

The incidence of ARF worldwide is 19 per 100,000 [7]. It is lower in US and other developed countries, at 2 to 14 cases per 100,000; this is probably due to improved hygienic standards and routine use of antibiotics for acute pharyngitis [8,9].

The attack rate of ARF after documented streptococcal infections in epidemics is fairly constant, about 3%. In non-epidemic situations it has been reported to be 0.3% among children.

Prevalence of rheumatic heart disease

Many of the differences observed between groups may be due to diagnostic criteria used or observer variation. In recent years the prevalence rates for rheumatic heart disease in USA among school children have been in the order of 7 to 16 per 10,000 as opposed to 60 to 90 per 10,000 among college students and military personnel [7].

Subclinical carditis (SCC)

Subclinical carditis is a pathological valvular regurgitation detected on echocardiography that is not evident clinically. SCC is relatively common following ARF. Although some studies suggested that SCC lesions may persist or deteriorate but no confident conclusion can be drawn about prognosis of SCC[10]. Many cases of SCC can pass undetected in low income countries due to lack of echocardiography facility. Some countries have conducted population – based echocardiographic screening surveys for RHD and has shown that the prevalence of SCC is several folds higher than that in clinical cases [11]. In a recent study about the outcome of SCC in India, follow up at a mean of 15 months revealed that SCC appeared to be non-progressive. Routine echocardiographic screening was recommended in populations at high risk of RHD [12].

With better definition of echocardiographic criteria for SCC that was recently published by the World Heart Federation Group, it is expected that guidelines will be developed for the management of SCC especially in highly endemic areas [13].

Prevalence of rheumatic fever and RHD in Sudan

Ibrahim-Khalil et al found that the prevalence of

rheumatic fever was 10/1000 for boys and 14/1000 for girls [14]. Sudan is considered to have a high incidence compared with 2.3 per 1000 in Saudi Arabia and 5.1 per 1000 in Egypt.

In Sudan, the Ministry of Health (MOH) annual report [15] revealed that the total number of patients seen with ARF in out-patients clinics was 36877, with 11976 seen in Khartoum State followed by Western States [Darfur and Kurdofan] (9170) while the least number was seen in River Nile State (195) patients. The same report showed that 509 cases of RHD were admitted to hospitals, including 176 children between 5 and 14 years of age. RHD caused 44 deaths in 2011 (9%).

Another report from Gaafar Ibn Auf Paediatric Cardiology clinic showed that total numbers of cases with ARF seen in 2011 were 81 patients while patients presented with RHD were 735, the majority were from Khartoum State but most of them were originally from Western States (Darfur and Kordofan) [16].

In the same hospital, RHD presented the most common cause of admission to cardiology ward (55% of admissions) and the most common cause of death due to cardiac disease. Furthermore, 95% of patients with RHD seen have severe forms of valve disease needing surgical intervention. Ninety percent of those with RHD do not have history of ARF indicating that the first episode passed unnoticed and 50% of patients were not compliant with prophylaxis. Many patients are seen for the first time with adverse echocardiographic characteristic such as an ejection fraction< 60% or an end-systolic diameter > 45 mm and severe pulmonary hypertension, which lead to adverse surgical outcome, similar to observations of other centres [17].

The global move towards RHD control

There is a recent reappraisal of the role of RHD control programs as RHD is devastating and can be controlled using simple community based approaches. The World Heart Federation (WHF) has a strong advocacy for RHD control and has recently published an important document detailing its perspectives. Sudan has actively contributed to RHD group of the WHF which has supported Sudan's activities [11,18]. The main features of the new global move are supporting the countries in endemic areas to initiate registry based control programs based on primary and secondary prevention and supporting research activities especially in streptococcal vaccine research [11].

RHD control programs in Sudan

Previous RHD control programs

In 1985, a World Health Organization (WHO) campaign involving 16 countries including Sudan, was conducted in collaboration with the Sudanese MOH. The campaign aimed at screening and raising awareness with emphasis on secondary prophylaxis. Screening of 13322 children was done and 146 cases of RHD were reported in Khartoum Town. In this campaign secondary prophylaxis coverage was found to be 72%. Phase II was planned to extend the program to other states, however more financial and technical support was needed in terms of logistics, surveillance and basic research; therefore this program stopped in 2000.

Lessons learned from the previous program

1. RHD control programs need to be modified to involve primary as well as secondary prevention.
2. More advocacy is needed, namely by involving local and international nongovernmental organizations (NGOs), the public and the patients.
3. More internal efforts and cooperation with regional organizations from countries with similarly high RHD prevalence are needed.

The new RHD control program

In 2012 a new program for RHD control was established based on awareness, surveillance, advocacy and prevention (ASAP), adopted from the Pan African Society of Cardiology (PASCAR) and the World Heart Federation, and was initiated by the

working Group on Paediatric Cardiology of the Sudan Heart Society in collaboration with the Sudanese Association of Paediatricians and the Ministry of Health.

Features of ASAP new program

1. Adoption of primary prevention based on clinical diagnosis of bacterial pharynitis for the first time in contrast to previous programs which only adopted secondary prevention.
2. Cooperation with African, Asian and other countries with similarly high prevalence of RHD and close links with the World Heart Federation.
3. More internal advocacy through national non-governmental organizations and scientific societies.

Objective of the new program (ASAP)

To decrease the mortality of RHD in Sudan by 25% by the year 2025 in patients less than 25 years of age. This objective, derived from the World Heart Federation objectives can be achieved by establishing awareness, surveillance, advocacy and prevention including both primary and secondary means [18].

Primary prevention

The program adopts a new policy for diagnosis of bacterial pharyngitis by clinical criteria (sore throat in the absence of runny nose in patients 4-18 years of age) and the treatment of these patients by a single intramuscular long acting benzathine penicillin. If the patient is allergic to penicillin he can be given erythromycin in the standard doses. Oral penicillin should only be used if there is a contraindication to intramuscular injection. If started, oral penicillin or amoxicillin should be given for a complete 10 days.

Secondary prevention

Patients diagnosed as ARF (by modified Jones criteria) should be given benzathine penicillin every 3 weeks up to 25 years of age (if no carditis) and for life (if there was rheumatic heart disease).

To conclude, this article is meant to raise the awareness among the medical personnel and to encourage them to apply ASAP policy in order to achieve its targeted goal. To ensure success in prevention of RHD, cooperation of all stakeholders is necessary.

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