CURRENT HIGHLIGHTS

Rheumatic heart disease control in Sudan: "Research for life" initiative

Sulafa K. M. Ali (1,2)

(1) Department of Paediatrics and Child Health, Faculty of Medicine, University of Khartoum, Khartoum, Sudan

(2) Sudan Heart Center, Khartoum, Sudan

Rheumatic heart disease (RHD) is the commonest cause of cardiac morbidity and mortality in young people in Sudan. A control program was initiated based on a framework (**SUR I CAAN**), standing for **SUR**veillance, **I**ntegration, **C**ollaboration, **A**wareness, **A**dvocacy and trai**N**ing. It utilised research funds to initiate sentinel sites for RHD control in rural endemic areas. Handheld echocardiographic screening of 12,000 subjects in five regions revealed a wide disparity in RHD prevalence ranging from 0.3/1,000 in Khartoum to 61/1,000 in North Kordofan. Training of health personnel and public awareness campaigns were conducted. We believe that RHD control is achievable using small funds targeted to endemic areas.

Rheumatic heart disease (RHD) is the most common totally preventable acquired heart disease affecting young people in Sudan and many developing countries. A control program was established in Sudan in 2012 and has recently adopted "**SUR I CAAN**" framework, standing for **SUR**veillance, **I**ntegration of RHD into Ministry of Health programs, **C**ollaboration with partners, public **A**wareness, **A**dvocacy and trai**N**ing of health personnel. A call for increasing health personnel awareness is highly needed, especially that new concepts are introduced into RHD control like subclinical (echocardiographic) carditis, which is now a major Jones' criterion, screening by echocardiography and emphasis on primary prevention [1].

The control program was based on charities and voluntary work through a National Committee that worked with the Ministry of Health [2]. There was no allocated funding and the committee had to raise funds in order to execute its programs. Collaboration with local organisations, namely the Sudan Heart Society and Sudan Association of Paediatricians as well as the Sudanese American Medical Association (SAMA) and many charities helped to fund some of the projects in Khartoum and other states.

A hospital-based registry showed that the disease is clustered in Kordofan, Darfur, and White Nile and to a lesser extent in Al Gazira, thereafter; we planned to initiate control sites in these areas.

Correspondence to:
Sulafa K. M. Ali
Professor of Paediatric Cardiology, Head of Rheumatic Heart Disease Working Group, Sudan Heart Society, Khartoum, Sudan; Department of Paediatrics and Child Health, Faculty of Medicine, University of Khartoum, Khartoum, Sudan.
Email: sulafaali2000@gmail.com

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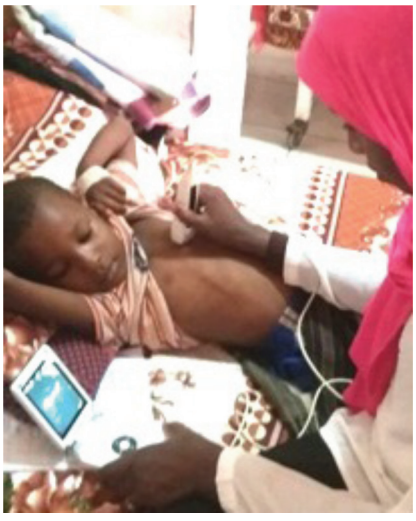

Photo 1 - Handheld echocardiography performed by a medical officer, Dr. Kawther Yousuf in Niyala Hospital as training before the screening program in Ottash camp.

Photo 2 - School children and teachers with officials of North Kordofan Ministry of Health holding posters showing RHD awareness messages: "*Painful Joints Destroy the Heart*."

Due to the lack of funding, we opted to submit research proposals in order to study the disease epidemiology and at the same time initiate training of health workers and public awareness campaigns: a policy that we like to call "a research for life" policy. We got the first ever funding of these projects from the Sudan Ministry of Higher Education (9,000 US Dollars) in 2015, which was used to conduct a handheld echocardiography screening study in Khartoum and Niyala (Photo 1) and also initiate health worker training and public awareness [3]. In Khartoum inner city schools, the prevalence was low (0.3/1,000) while in Niyala, it was found to be 19/1,000.

Then, North Kordofan Ministry of Health funded the second project (4,000 USD) that was conducted in 13 villages (Photo 2) and showed a strikingly high prevalence of RHD (61/1,000) in the region [4]. Subsequently, Kordofan

Photo 3 - School children in Al Managil-Gazira State, holding posters showing RHD awareness messages.

Photo 4 - Dr. Hassan Awadalla, Paediatric Cardiology Fellow and Dr. Magbola Abdullah from Rabak Hospital during handheld echocardiographic examination of a child in Kenana, White Nile State.

Government approved a centre for RHD Control (Kordofan RHD Control Center) that is equipped and will be opened in July 2018.

A third project was funded by SAMA and Miraglo, a US based charity (www.miraglofoundation.org) (10,000 USD), and was conducted in Al Managil-Gazira State (Photo 3) where a low prevalence of 2.3/1,000 was detected.

Photo 5 - Prof. Sulafa Ali (Author) conducting a training session for health personnel in Al Fashir, North Darfur.

The fourth project was funded by the Sudanese Children's Heart Society (www.sudankidsheart.org), and Al Asdigaa "*The Friends*" Charity in Rabak, White Nile (Photo 4) with a small fund of 2,000 USD. It showed that the echocardiographic prevalence of RHD was 31/1,000 (unpublished data).

Echocardiographic screening now reached 1,200 subjects in five States in Sudan, which showed clear clustering of the disease (Figure 1).

A proposal for initiation of training program was funded by the World Health Organization (WHO) Regional Office in Khartoum (10,000 USD, offered to the Sudanese Children's Heart

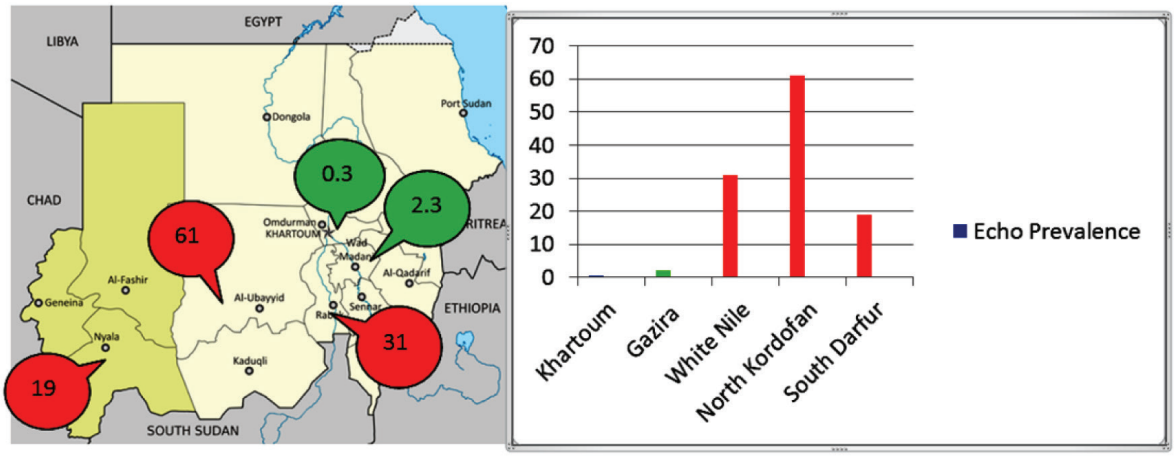

Figure 1 - The Sudan echocardiography map showing RHD prevalence (per 1,000) in five States (1,200 subjects).

Society). Through the Federal Ministry of Health, WHO fund was utilised to train medical assistants in North Darfur, North Kordofan, and White Nile states in 2017.

We are now targeting North Darfur where a training and awareness mission was carried by Prof. Sulafa Ali, Dr. Intisar Ibrahim and Dr. Najwa Salih in August 2017 (Photo 5).

A hospital-based study has shown a high burden and severe nature of RHD in Al Fashir [5]. We plan to start an echocardiographic screening project in the area, and started training of physicians on the handheld and standard echocardiography.

We believe that RHD can be controlled using small funds that are utilised in well-planned focused programs targeted to highly endemic areas.

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