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Title: Echocardiographic profile of children with Rheumatic Heart Disease at Tertiary Cardiac Center of Nepal

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Background & Aims: Rheumatic heart disease (RHD) is a chronic valvular disease which is thought to be a sequela of repeated episodes of acute rheumatic fever. RHD is the commonest cause of acquired heart disease in developing countries where it is the leading cause of cardiovascular death and disability in children and young adults. Currently about 3.4 million individuals (0.4% of the global population) living with RHD. Estimated 305, 000 deaths in 2015, and more than one million premature deaths was caused by RHD.¹

Methods: This was a retrospective descriptive study done in Pediatrics unit of Cardiology department, at the Shahid Gangalal National Heart center, Kathmandu which is the national referral hospital of Nepal. Our hospital is a cardiac based super-specialized center where majority of the patients are referred from around the country. We reviewed all consecutive transthoracic echocardiography diagnosis from the registry book from January 2018 to December 2018. The name, echocardiography number and address of patient aged ≤ 15 years with a diagnosis of initial RHD were noted. All the demographic data and detailed echocardiography report of these patients were collected from computer database using name and echocardiography number.

Results: During the study period, a total of 9482 echocardiography were done in pediatric unit, out of which 133 initial cases of RHD were found (1.4%). Among them, 67 patients (50.4%) were male and 66 patients were female (49.6%). The study population age ranged between 5 to 15 years, with a mean (SD) of 11.4 (± 2.5) years. The youngest child is 5 years old. The majority of reported patients were in the age group of 13-15 years (39.8%), followed by 10-12 years (39.1%), 7-9 years (15.0%), and 4-6 years (6%) age group. No case was seen in 1-3 years age group.

The mitral valve was involved in all patient except one (99.2%), while 73 cases (41.5%) had isolated mitral valve lesions. Ninety-nine percentage of patients who had aortic valve disease had associated mitral valve disease (98.8%). Monovalvular and combined valvular dysfunctions were observed in the spectrum of RHD. There were eight types of valvular dysfunction detected according to the valve affected. Majority of patients had more than one valvular dysfunction. The most prevalent valvular dysfunction was mitral regurgitation (MR) with aortic regurgitation (AR) (60.1%) followed by isolated mitral regurgitation (MR) (26.3%). The least common valvular dysfunction was isolated AR (0.8%).

The commonest detected complication was pulmonary hypertension (57.9%) and increasing observed with advancing age. Pulmonary hypertension was common in female compared to male (31.6% versus 26.3%). Severe pulmonary hypertension was found in 11.3% of patient and was more frequently associated with isolated MS and combined valvular dysfunction associated with MS. Echocardiographic evidence of infective endocarditis was seen in 5.3% of patients, and was exclusively seen on mitral valve only. Four children had congenital heart disease giving a prevalence of 3% which all were newly diagnosed. Other complication was pericardial effusion which was noted in 8 patients (6%).

Conclusions: This study provides important insights into the still large and complex burden of RHD in children with initial diagnosis, our results suggest the importance of considering children in their early adolescence in RHD screening programs since they present with a higher prevalence and particularly severe valve dysfunctions.