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Minimal radiation exposure transcatheter patent ductus arteriosus closure using only venous access: A novel technique

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Objective: The transcatheter closure of patent ductus arteriosus (PDA), as well as other pediatric cardiac interventions has raised the concerns regarding radiation exposure, particularly relevant while treating children. The purpose of this study is to show how to perform the transcatheter closure of PDA in children while giving less ionized radiation exposure and to prove that the amount of radiation can be reduced by using pressure trace during catheter manipulation. This is a prospective analysis of feasibility, safety and advantages of doing PDA device closure using only venous access under minimal radiation.

Background: Taking an arterial access for transcatheter device closure has been a standard practice but has some inherent complications. The use of radiation or fluoroscopy is necessary but it has some ill effects on tissues, especially in children because of their greater sensitivity compared to adults and also for health care providers inside catheterization laboratory for continuous exposure.

Method: As per our departmental policy, we decided to go for PDA device closure only through venous access in the beginning of March 2016 till date. We decided to reduce the radiation time during the procedure by different techniques; most important was entry into right ventricle and sometime till pulmonary artery under pressure tracing guidance. Echocardiography was used for patient selection and assessment for sizing of device and procedural outcome.

Result: 112 out of 145 patients underwent PDA device closure from March 2016 over 10 months with only venous access and under minimal radiation technique, weighing 3.8-42 kg with half of them <10 kg. Fluoroscopic time ranged from 0.04 to 2.12 minutes. Twelve patients had difficulty in entering right ventricle from right atrium and required fluoroscopic guidance. Immediate closure was achieved in 105 patients. Two syndromic babies had mild flow acceleration across left pulmonary artery and two patients had small intra-device shunt at 3 months of follow up.

Conclusion: PDA device closure can be comfortably done without an arterial access. Patients can be exposed to significant less radiation if catheter manipulation was done under pressure tracing compared to conventional procedure of fluoroscopic guidance.

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Prevalence of rheumatic and congenital heart diseases in school children of Andhra Pradesh, South India

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Objective: To determine the prevalence of rheumatic heart disease (RHD) and congenital heart disease (CHD) using clinical and echocardiographic criteria in rural and urban school children of Andhra Pradesh, South India.

Materials & Methods: A total of 4213 school children between 5 and 16 years of age were screened. 1177 were from rural schools and 3036 from urban schools. Prevalence of RHD and CHD was estimated.

Results: Clinically, RHD was present in 3 (prevalence 0.7/1000). Using echocardiography RHD was detected in 32 (7.6/1000), 11 (7.3/1000) from rural and 21 (7/1000) from urban schools. (P=0.000, OR=0.093 and CI=0.023-0.317). Total prevalence of RHD is 8.3/1000. Clinically CHD was present in 39 (9.2/1000) children, rural 9 (7.6/1000) and urban 30 (9.9/1000). Using echocardiogram CHD was detected in 44 (10.4/1000) children, rural 11 (9.3/1000) and urban 33 (10.8/1000).

Conclusion: RHD was detected several fold using echocardiographic screening than by clinical examination alone. Longitudinal follow-up of children with echocardiographically diagnosed subclinical RHD is needed.

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