Usefulness of Echocardiographic-Fluoroscopic Fusion Imaging in children with Congenital Heart Diseases

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Introduction

Transesophageal echocardiography (TEE) has become indispensable in Cat-Lab to guide some percutaneous interventions as a complimentary imaging for fluoroscopy. However the two imaging modalities are presented separately and differently making complicated the interpretation of the anatomic spatial relationships. Echonavigator® is an innovative software enabling fusion between fluoroscopic and echocardiographic image on the same screen.

Aims: To assess the feasibility of Echonavigator to guide interventional procedure, and to present our initial clinical experience using this software.

Résultats

51 children were included (mean age 8 years, mean weight 25 kg). 36 patients underwent atrial septal defect closure, 10 ventricular septal defect closure, 3 aortic valve dilatation and 2 right ventricular outflow tract revalvulation.

Image fusions were successfully obtained in all patients during all steps of procedure. No complication related to TEE probe was observed. Markers were successfully positioned in the all target zones and automatically projected to the fusion screen.

Methods

Children with congenital heart disease (CHD) underwent interventional catheterization needing guidance by TEE from December 2015 to December 2017 were included. TEE was realized using X7-2t TEE probe connected to an echocardiographic system (EPIC). Fluoroscopy was realized using Allura Xper FD/10 system (Philips Healthcare). Image fusion was attempted in all patients using Echonavigator. Markers were positioned on the target zone on echocardiographic images and projected to the merged screen.

Conclusion

Echonavigator system is feasible and safe to guide interventional catheterization in children with CHD. It enables better appreciation of anatomical relationships and improves confidence of interventionist.