

technique is must; and in that scenario echocardiography has an edge over other modalities. Moreover studies showed a good correlation of echocardiographic measurements with angiographic ones which is being supposed to be mandatory by surgeons. The aim of this work was to evaluate the reliability and strength of non-invasive assessment of the pulmonary anatomy by comparative study.

**Method:** 76 patients (mean age  $38 \pm 27$  mo) with only usual anatomy of TOF were included and echocardiography assessment was done for all. Alternate child was undergone either (multi-detector cardiac CT 64 slice (MDCT-group 1) or cardiac cath-angio (CCA-group 2) before total surgical repair (done in 24 patient till date) and parameters measured by each modality was compared. Parameters are 'Pulmonary artery index (PAI) according to Nakata' and 'McGoon', 'Z-value for the pulmonary artery branches' and 'pulmonary annulus Z score' (age adjusted 'z' score calculated using Detroit data).

**Result:** The results showed that in group 1, though there was some difference in measurement of RPA & LPA in pre-branching segment measured by echo and MDCT, a statistically significant correlation ( $r$  value 0.68,  $p$  value 0.0005) in the measurements of RPA & LPA and consequently the calculated Z value and the PAI between the two modalities was found; and similarly, group II patients demonstrated a statistically significant correlation ( $r$  value 0.56,  $p$  value 0.008) of measurements of RPA & LPA and consequently the calculated Z value and the PAI between the echocardiographic and CCA methods. The correlation between the echocardiographic and the MDCT measurements was stronger than those detected between the echocardiographic and angiographic measurements. And moreover in group 1 non-invasively obtained parameter correlated better with surgically found measurement than those obtained by CCA in group 2. The maximum difference between the echocardiography and surgery for the RPA & LPA was 2.4 mm and 2.0 mm and the mean difference was  $0.81 \pm 0.43$  and  $0.64 \pm 0.48$  mm respectively. Detection of associated cardiac anomalies, MAPCAs, coronary anomaly was not greater by CCA than MDCT also.

**Conclusion:** A 2-D echocardiography is accurate and precise in estimation of the pulmonary artery branches and thus surgical management of usual TOF, can be supplemented by non-invasive MDCT in selected cases for information about MAPCAs, associated anomalies, patient with poor echo-window etc. Invasive cardiac catheterization can easily be avoided along with its usual hazards like radiation and nephrotoxicity.

## Causes of Hemoptysis in Eisenmenger Syndrome – A CT Angiography Study

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**Background:** Hemoptysis is a common cause of morbidity in Eisenmenger syndrome, but the causes of hemoptysis are not well defined. We analyzed the clinical predictors and causes of hemoptysis in a cohort of patients with Eisenmenger syndrome using computerized tomographic pulmonary angiography (CTPA). **Methods:** Of the 95 patients of Eisenmenger syndrome studied (mean age  $23.7 \pm 7.7$  years; 57 male), 38 patients (40%) had presented with hemoptysis, and all of them underwent a CTPA within two weeks of index bleed.

**Results:** Patients with hemoptysis had a reduced 6 minute walk distance ( $356.2 \pm 92.5$  meters) as compared to patients without hemoptysis ( $395.1 \pm 126.9$  meters) ( $p = 0.03$ ). However, other baseline demographic characteristics including diagnosis, complexity of lesion, functional class, and symptoms did not differ among patients with and without hemoptysis. Of the 38 patients, 17 had a treatable cause of hemoptysis and received appropriate treatment. The identifiable causes included aortopulmonary collaterals, pulmonary thrombosis (2 patients), pulmonary tuberculosis (2 patients), pulmonary artery dissection (1 patient). Treating an identifiable cause reduced the risk of recurrence of hemoptysis by 0.46 (95% CI 0.28 – 0.64).

**Conclusion:** Hemoptysis remains a major cause of morbidity in patients with Eisenmenger syndrome. Hemoptysis occurs more frequently in patients with greater exercise limitation. CT pulmonary angiogram immediately following an episode of hemoptysis could identify a potentially treatable cause in nearly half of the patients and such treatment results in lesser recurrence of hemoptysis.

## Transcatheter device closure of VSD – A single centre experience

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**Introduction:** Ventricular septal defects are the most common congenital cardiac defects (30% of all CHD). Perimembranous defects account for 70% of these cases, while muscular defects account for 20%. Surgery is the standard therapy with low mortality and complications rate. It requires cardiopulmonary bypass with significant inflammatory response, surgical scar, limitations of activity following surgery. Transcatheter closure of VSDs has been introduced, advanced rapidly, with improvements in device designs. Aim of the work is to report the early results of transcatheter VSD closure in cardiology Unit, Children Hospital, Mansoura University.

**Methods:** 26 patients have undergone transcatheter closure of VSD, 15 were males and 11 were females, age ranges from 4 to 23 years. Patients should have significant left to right shunt through VSD (*Frequent chest infections, Effort intolerance, Cardiomegaly due to LA, LV dilatations and increased LV EDD > 2 SD*). Anatomy suitable for transcatheter closure: rim of  $\geq 5$  mm separating VSD from aortic valve, tricuspid valve.

All the patients were generally anesthetized using sevoflurane, 20 procedures were done under TEE, one with TTE and fluoroscopic guidance, Right and left heart catheterization were done according to standard protocols, Patients received 100 IU/Kg Heparin and 100mg/Kg Cephalosporin, Shunts and PVR were calculated.

**Results:** 13 cases had perimembranous VSD, one of them was associated with PDA, 4 cases with muscular outlet VSD, 5 cases with mid muscular VSD, 4 cases were residual following VSD surgical closure. For perimembranous VSD 7 ADO I, 6 PFM Nit occlude coil were used, for muscular outlet VSD 1 Amplatzer MVSD, 1 ADOI, 2 PFM Nit occlude coil were used, for mid muscular VSD 3 Amplatzer MVSD, 2 PFM Nit occlude coil, for residual s/p surgical VSDs 1 ADO II, 3 PFM Nit Occlude coil were used. One ADO I device embolized in perimembranous VSD which was retrieved successfully.

**Conclusion:** Transcatheter closure of VSD has encouraging results. Excellent closure rates on short term follow up with Low