Conclusions: In conclusion, ICE use and high operator volume are significant predictors of improved out come in ASD/PFO closure.

TCT-101

Long-term Outcomes of Percutaneous Left Ventricular Pseudoaneurysm Closure

Robert Kumar1, Chad Kliger2, Itzhak Kronzon2, Leandro C. Maranã1, Isabel R. Zamora1
1Lenox Hill Heart and Vascular Institute, New York, NY, 2Lenox Hill Heart and Vascular Institute-North Shore LIJ Health System, New York, NY, 3Hospital Universitario Virgen de la Victoria, Malaga, Spain

Background: Left ventricular pseudoaneurysms (LVPA)s may occur as sequelae of cardiac surgery, myocardial infarction (MI), or endocarditis, and may result in congestive heart failure (CHF) or rupture with sudden death. Percutaneous closure of LVPA has been reported, but long-term outcomes are unknown.

Methods: We reviewed all patients who underwent percutaneous LVPA closure at our center from 09/2008 to 02/2013. All patients had a pre-procedural helical CTA. LVPA size was measured on CTA in 3 perpendicular planes (x,y, and z), with x-plane being the largest diameter and y-plane being the largest perpendicular diameter. Clinical followup was obtained in all patients with assessment of survival and CHF. Followup CTA studies were reviewed to assess residual LVPA flow.

Results: 15 LVPA closures were performed in 14 patients (mean age 72; male 71%; mean x-plane diameter was 34±0.14cm). Percutaneous access was transapical in 10, retrograde aortic in 2, and direct chest wall puncture in 2 cases. The LVPA ostium was closed with Amplatzer devices in all cases. Large LVPA sacs were filled with embolectomy coils in 3 patients and thrombin injection in 1 patient. 12 of 14 patients were alive at mean followup of 717±467 days. 1 patient had persistent LVPA flow requiring a second closure at day 447. He had attempted surgical repair of an LVPA to bronchial fistula and died intraproactively at day 448. 1 patient died of progressive CHF at day 741 after CTA at day 642 had shown no residual LVPA flow. 8 of 12 patients with heart failure had improvement of ≥ 1 NYHA class (mean change -0.8±1.3). 7 patients had followup CTAs ≥ 3 months post procedure (mean 24 ± 17 months). 6 of 7 followup CTAs had no residual flow into the LVPA. 1 patient had residual LVPA flow after 2 closure procedures.

Conclusions: Percutaneous LVPA closure can be performed safely with durable long-term results. The majority of patients with heart failure symptoms improve after closure. Followup CTA imaging demonstrates effective exclusion of LVPA flow in most cases.

TCT-102

Efficacy and Safety of Balloon Pulmonary Angioplasty for Non-operable Chronic Thromboembolic Pulmonary Hypertension in Comparison to Pulmonary Endarterectomy for Operable Patients

Yu Taniguchi1, Noraki Emoto1, Hiroto Kinutani1, Hiromasa Onaka2, Toshiko Shinke1, Ken-ichi Hirata1
1Kobe University Graduate School of Medicine, Kobe-city, Hyogo

Background: Pulmonary thromboendarterectomy (PTEA) has been a standard therapy for the treatment of Chronic Thromboembolic Pulmonary Hypertension (CTEPH), however, up to 40% of patients are considered non-operative due to distal types of thromboembolism or comorbidities, resulting in poor prognosis. Therefore, we performed balloon pulmonary angioplasty (BPA) for non-operative patients, and evaluated the efficacy of BPA in comparison with PEA.

Methods: We treated 46 CTEPH patients from November 2001 to May 2013. Operable 21 patients underwent PEA (56.8 ± 14.7 years old, San-Diego class I/II, III/IV) and 25 non-operable patients, with mean pulmonary artery pressure (mPAP) ≥ 25mmHg in spite of under medical therapy, were performed BPA (67.8 ± 10.3 years old, San-Diego class I/II, III/IV, V/VI). BPA was repeated in 1 to 6 sessions to every patient depending on their severity. We evaluated hemodynamics by Swan-Ganz catheter at baseline and post procedure.

Results: PEA significantly improved hemodynamics in operable patients (Table). In non-operative patients, even BPA dramatically improved hemodynamic parameters such as a significant increase in cardiac output (CO) and decrease in pulmonary vascular resistance (PVR), which were accompanied with improved 6-minute walk distance (6MWD) and WHO-Fc as observed in PEA for operable patients. Reperfusion pulmonary injury occurred in 3 patients (14.3%) after PEA, and in 21 sessions (32.8%) after BPA with 3 sessions required emergent intubation. Two patients (9.5%) died after PEA due to persistent of right heart failure and 1 patient (4.0%) died after BPA due to systemic infection.

Conclusions: BPA could be an effective treatment option for non-operative CTEPH to achieve dramatic improvement of hemodynamic and outcome parameters. The efficacy and safety for non-operative cases were equivalent to those of PEA for operable cases.

TCT-103

Is fetal aortic valvuloplasty effective to achieve a biventricular circulation after birth?

Carlos Pedro1, Simone Pedroa2, Rodrigo Costa2, Marcelo Ribeiroa2, Fabio Penalta1
1Hospital do Coração, São Paulo, Brazil, 2Hospital do Coração, São Paulo, Brazil

Background: Critical aortic stenosis (AS) in utero is a severe disease that may evolve to hypoplastic left heart syndrome (HLHS) if not treated. Fetal aortic valvuloplasty (AV) has been performed in selected cases to avert this progression. However, more data is required to assess its impact on achieving a biventricular circulation (BVC), especially in patients with smaller left ventricles (LV). We report the immediate procedural results and the postnatal outcomes up to one year of age of fetuses who underwent AV.

Methods: Procedures were performed under spinal maternal block and fetal anesthesiain between 23 to 34 weeks gestation through a transabdominal (maternal) and transhoroic (fetus) approach under echographic guidance. The LV apex was entered using 17/18 G Chiba needles and the valve was dilated with coronary angioplasty balloons (1-1.2 times the valve annulus). Serial echos were performed pre and post nataly.

Results: Thirteen fetuses underwent the procedure. Five were severely hydropic, 4 had severe mitral regurgitation and giant left atrium (GLA), 3 had hypoplastic LVs (2 severe). Endocardial fibroelastosis was present in all (severe in 6). In all but 1 fetus the valve was successfully crossed and dilated. Satisfactory antegrade flow was observed in 12 cases, aortic insufficiency in 7 and pericardial effusion ± bradycardia in 9 fetuses requiring needle aspiration + atropine. There were no maternal complications. There were 2 early neonatal deaths after premature delivery because of severe hydrops (both with GLA). BVC was achieved in 3 neonates. All required aortic valvuloplasty. Three with smaller LV underwent aortic valvuloplasty + hybrid procedures, with 2 undergoing LV outflow and a BVC @ 9 months of age. In the other a BVC is still contemplated. One neonate born at another institution died on the first day of life, 3 were managed as univentricular hearts and 1 had comfort care (no LV growth).

Conclusions: Fetal aortic valvuloplasty may improve overall neonatal and infancy outcomes. BVC was achieved in 30% of the cases with a chance of improving to a 50% rate. Neonatal outcomes seem to depend on the clinical and anatomical fetal presentation, with hydropic fetuses having worse outcomes.