Methods: A total of 90 patients, who had undergone TAVI, were retrospectively studied. Vascular complications were defined as major and minor according to the Valve Academic Research Consortium (VARC) criteria. Patients were divided into High Cannulation Site (CS) group and Low CS group depending on the common femoral artery puncture site position, in regards to the most inferior border of the posterior epigastric artery.

Results: Vascular complications were significantly more frequent in the high CS group versus the low CS group (32.3% vs 11.9%; p=0.039). High cannulation remained an independent predictor of vascular complications after adjustment for known risk factors (OR: 4.827, CI: 1.441-16.168; p=0.011).

Conclusions: In patients undergoing transfemoral TAVI, arterial puncture above the most inferior border of the posterior epigastric artery is associated with vascular complications.

TCT-839

Early Changes Of Left Ventrience Deformation Indices After Transcatheter Aortic Valve Implantation. A Speckle Tracking Echocardiographic Study

Manolis Vavuranakis, Konstantinos Kalogerou, Ioannis Vlassopoulos, Maria Kariori, Dimitris Yvarakis, Carmen Moldovan, Vicky Katsi, Stylianos Velegronis, Ioannis Kalikazaros, Christodoulos Stefanidis

1 1st Dept. of Cardiology, Hippokration Hospital, Medical School of Athens, Athens, Greece, 2Cardiology department, Hippokratieio Hospital, ATHENS, Greece, 31st Dept. of Cardiology, Hippokration Hospital, Medical School of Athens, Athens, Greece, 41st Department of Cardiology, National and Kapodistrian University of Athens, Hippokratieio Hospital, ATHENS, Greece, 5Athens Medical Center, Athens, Greece

Background: Transcatheter aortic valve implantation (TAVI) has been established as a reliable alternative treatment in high risk patients, resulting in symptoms and left ventricle function improvement. The aim of this study was to evaluate the impact of TAVI on early recovery of left ventricle function using echocardiographic left ventricular deformation parameters and to define their possible correlation with myocardial function.

Methods: 16 patients (6 females, 51 ± 8 years; EuroScore: 24 ± 4%) with severe aortic stenosis, but free of significant coronary artery disease, who underwent TAVI with the CoreValve aortic prosthesis were studied. Conventional 2D and 2D-speckle echocardiography analysis were performed pre-interventional and at discharge. Deformation indices of left ventricle, such as Peak Systolic Longitudinal Strain (PSLS) and Torsion (apex-basal rotation) were determined by speckle tracking echocardiography using commercially available computer software. Besides, Left Ventricle Ejection Fraction (LVEF), calculated with Simpson method, was evaluated at one month follow-up.

Results: In all patients at discharge, a reduction of transaortic peak pressure gradient (p<0.0005), of mean pressure gradient (p=0.001) was observed, with a concomitant increase in aortic valve area (p<0.0001). In addition, 2D speckle analysis showed a significant improvement of PSLS at discharge (-10.6 ± 2.8 vs 12.8 ± 3.9%; p=0.008). Similarly, left ventricle Torsion was significantly increased comparing to pre-implantation values (7.2 ± 5.1 vs 11.5 ± 2.6; p=0.015). However, overall LVEF did not change (51.4 ± 8.8 vs 50.9 ± 8.1%; p=0.05). During follow-up, a strong correlation was found between discharge LVEF and PSLS with greater longitudinal deformation (PSLS) associated with higher LVEF (p=0.03). However, one month LVEF compared to discharge, indicated a trend for improvement (p=0.05), but not statistically significant.

Conclusions: Deformation indices of PSLS and Torsion are able to detect early improvement of left ventricle function after TAVI regardless LVEF alteration. Moreover, PSLS seems to predict LVEF in one month. Larger studies with long term follow-up are required.

TCT-840

Mortality Risk For Transcatheter Aortic Valve Implementation Patients Eventually Approaches General Population: Innovative Time Series Analysis Of Outcomes

Hala Sharaf1, Derek Chin2, Hassan Jlaihawi1, Tom Spyt1, Jan Kovac1

1Glengfield Hospital- Leicestershire Teaching Hospitals NHS Trust, Leicester, United Kingdom, 2Glengfield Hospital- Leicestershire Hospitals NHS Trust, Leicester, United Kingdom

Background: TAVI has increasingly improved outcomes for high-risk patients with severe aortic stenosis, We hypothesize that residual mortality risk eventually approaches that of general population.

Methods: 160 patients with severe aortic stenosis who underwent TAVI between January 2007 and October 2011 were assessed.

Results: Procedural success rate was 97%. Cumulative survival (& mortality) rates at 1 and 6 months, 1, 2 and 3 years were 91% (9%), 83% (17%), 72% (28%), 65% (35%), and 57% (43%) respectively. However, specific mortality (survival) at the 3rd year for patient group who were alive after 2 yrs post-procedure (30 patients, age range 70-93 yrs; average 82yrs) was 13% (87%), representing the highest whole-year-equivalent-rate of all periods post-procedure. The comparative UK general population annual death risk ranges from 2% at 70yrs to >17% at 85+ yrs. Factors with significant impact on mortality were: At 6 months: COAD (P < 0.03), extracardiac arteriopathy (p < 0.005), poor LV function (p < 0.005), previous Ml (p = 0.017), poor LVEF (p =0.00817) and high creatinine levels (p<0.005); At 1 year: renal disease (p = 0.001), MI history (p < 0.03); At 2 yrs: poor LVEF (p<0.04), and high creatinine levels (<0.009); and at 3 yrs: only high creatinine levels (p=0.012) with no significance for cardiac factors. Logistic Euroscore had no significant impact at any point. Most deaths occurred before 1 yr, largely by 6 months post procedure (28 deaths - 64%), only 4 new deaths occurred in the third year.

Conclusions: We presented comparative data at 5 different time points, with outcomes similar or better than other TAVI studies which usually present time-point outcomes separately. Survival for those passing 2 yrs alive is the highest with lowest number of significant mortality linked factors suggesting ‘normalisation’ towards random (non-cardiac) factors in comparative general population. Further analyses is required with larger number of patients for longer time points and this could lead to new paradigm in selection criteria for TAVI patients.

TCT-841

One Year Outcomes following Transcatheter Aortic Valve Implantation Versus Surgical Aortic Valve Replacement In Patients Over 75 Years ‘The Elderly Pilot Study’

Alaide Chieffi1, Gild Buchanan2, Azem Laith3, Irene Frazoni1, Matteo Montorjano1, Francesco Maisano1, Micaela Cioni1, Filippo Figni1, Eustachio Agricola1, Giovanni La Cuna1, Remo Covello1, Annalisa Franco1, Chiara Gerli1, Pietro Spagnolo1, Ermelinda De Mee2, Alessandro Durante1, Angela Ferrari1, Ottavio Alfieri3, Antonio Colombo1

1San Rafael Scientific Institute, Milan, Italy

Background: Elderly patients with severe aortic stenosis (AS) are high risk for surgical aortic valve replacement (SAVR). Transcatheter aortic valve implantation (TAVI) has emerged as an alternative. The study aim was to compare clinical outcomes of TAVI vs. SAVR in elderly patients with severe AS.

Methods: All consecutive patients with severe AS ≥75 yrs old treated in our center with either TAVI (n=226) or SAVR (n=222) were analyzed. A propensity score analysis was performed to adjust for differences in baseline clinical characteristics between the two groups.

Results: Patients treated with TAVI were significantly older (82.4±3.9 vs. 79.0±2.9 years; p<0.001) with more co-morbidities, higher Logistic EuroSCORE (25.1±16.6% vs. 13.1±11.7%; p=0.001) and STS score (6.6±7.5 vs. 5.8±7.3; p=0.01). At one-year, there was a benefit of TAVI was observed at the adjusted analysis (adjusted OR 0.27; 95% CI 0.27; 95% CI 0.08-0.95; p=0.041). These data are consistent with sparse literature based on transesophageal echo observations. In patients undergoing transfemoral TAVI, arterial puncture above the most inferior border of the inferior epigastric artery is associated with vascular complications. One Year Outcomes following Transcatheter Aortic Valve Implantation

TCT-842

Embolic Particles Show Surprising Size Dependent Predilection for Cerebral versus Peripheral Arteries: Results from Computational Fluid Dynamic Modeling

Shawn Shadden1, Naohiko Nemoto2, Wesley Pedersen2, John Lesser2, Robert Schwartz2

1 Illinois Institute of Technology, Chicago, IL, 2Minneapolis Heart Institute Foundation at Abbott Northwestern Hospital, Minneapolis, MN

Background: Embolic particles originating at the aortic valve or ascending aorta can have devastating consequences if they enter the cerebral circulation. Little is known about anatomic embolic origin and cerebral events, as this relationship is difficult to observe. To better understand emboli arising from procedures such as TAVR, we built a computational fluid dynamic (CFD) model of cerebral emboli originating at the aortic valve and ascending aorta.

Methods: An exact computer model of a human aorta and arteries to the brain was created using CT angiography. Blood flow was modeled by the Navier-Stokes equations using pulsatile inflow at the inlet and physiologic Windkessel models at the outlets. Embolic particle was injected at the level of the aortic valve and tracked using modified Maxey-Riley equations.

Results: Aortic emboli that entered the cerebral circulation through the carotid or vertebral arteries were localized to specific locations of the proximal aorta, most closely in the region of the right and non-coronary aortic valve cusps. The percent of released particles embolic to the brain was markedly dependent on particle size. Particles 1.0 mm diameter had a 28% chance of reaching the brain, whereas particles 2.5 mm dia or greater had 5% chance of reaching the brain. Particles smaller than 1.5 mm dia were less likely to traverse the cerebral vessel by a factor of 5 or greater. Particles less than 2 mm dia and originating from the right and non-coronary cusps appear more likely to cause cerebral injury according to this model. These data are consistent with sparse literature based on transesophageal echo observations. This CFD modeling method may prove useful for limiting aortic emboli to the brain during cardiovascular procedures.