Conclusions: The clinical data in support of TAVI is now strong and it is calculated has led to a Class-I recommendation for TAVI in the recent European guidelines.

Methods: We reviewed all 216 CT scans of the chest with contrast on patients that had a 2D echocardiogram done within 1 year. Of these patients 107 were found to have severe AS and evaluated for transcatheter aortic valve replacement (TAVR).

AA type was determined by CT, then patient's baseline characteristics and echocardiographic parameters including, but not limited to LV ejection fraction (LVEF), LV mass, LV mass index, and relative wall thickness were analyzed. Complete data was available in 163 patients. The relationship between these variables and AA type was then tested in univariate and multivariate models.

Results: Univariate analysis revealed severe AS, increased age, weight, coronary artery disease, LV mass, and LVEF were all significantly correlated with type II and III AAs, however after multivariate analysis, only severe AS, increased age, and LVEF remained as independent predictors of AA type.

TCT-732

Predictors of Aortic Arch Type: Implications in Patients with Severe Aortic Stenosis Being Evaluated for Transcatheter Aortic Valve Replacement

Rajiv Tayal1, Benjamin LeSar2, Ahmed Seliem2, Spas Kotev3, Alan Weinberg3, Afrodit Emporelli4, Zafar Iqbal1, Omar Hasan1, Deepa Iyer1, Gurinder Rand1, Manjusha Ann1, Humayun Ifthikar5, Patricia Panfilie6, Marc Cohen7, Najam Wasty8

1Newark Beth Israel Medical Center, Newark, NJ, 2Newark Beth Israel, Newark, NJ, 3Newark Beth Israel Medical Center, Newark, NJ, 4Mount Sinai School of Medicine, New York, NY, 5Mount Sinai School of Medicine, Newark, NJ

Background: Type II and III AAs (T2-3AAs) are associated with lower procedural success and higher embolic complications in catheter based interventions. No definitive studies identify the cause of these challenging anatomical variations. We hypothesize the development of T2-3AAs is related to gravitational pull on the AA and brachiocephalic vessels by the heart over time. Results: Patients of increased age and left ventricular hypertrophy, those with severe AS or TAVI are more likely to have more complex arches as those with severe aortic stenosis (AS) should have a higher incidence of T2-3AAs.

Methods: We reviewed 216 CT scans of the chest with contrast on patients that had a 2D echocardiogram done within 1 year. Of these patients 107 were found to have severe AS and evaluated for transcatheter aortic valve replacement (TAVR). AA type was determined by CT, then patient's baseline characteristics and echocardiographic parameters including, but not limited to LV ejection fraction (LVEF), LV mass, LV mass index, and relative wall thickness were analyzed. Complete data was available in 163 patients. The relationship between these variables and AA type was then tested in univariate and multivariate models.

Results: Univariate analysis revealed severe AS, increased age, weight, coronary artery disease, LV mass, and LVEF were all significantly correlated with type II and III AAs, however after multivariate analysis, only severe AS, increased age, and LVEF remained as independent predictors of AA type.

TCT-731

TRANSCATHETER AORTIC VALVE IMPLANTATION (TAVI) REDUCES SYMPATHETIC ACTIVITY AND NORMALIZES ARTERIAL BLOOD PRESSURE IN PATIENTS WITH AORTIC STENOSIS

Nicolas Dumontel2, Angelica Vaccaro1, Fabien Despres2, Marc Labranche1, Bertrand Marcheix1, Elisabeth Lambert1, Murray D. Ester1, Didier Carrié1, Jean Michel Senard1, Michel Galinier1, Atul Pathak6

1Cardiovascular and Metabolic Pole, Rangueil Hospital, Toulouse, France, 2Metabolic and Cardiovascular Institute, UMR-1048, Toulouse, France, 3Department of Cardiology, Rangueil Hospital, Toulouse, France, 4Health Neuroscience Laboratory, Baker IDI Heart and Diabetes Institute, Melbourne, Australia, 5Baker IDI Heart and Diabetes Institute, Melbourne, Australia, 6Cardiovascular and Metabolic Pole, Rangueil Hospital, Toulouse, France

Background: TAVI is an emerging therapeutic option in pts with severe AS at high risk for open heart surgery. Whether pts with AS have increased sympathetic activity remains to be established and effects of TAVI on sympathetic nervous system is also unknown. We directly measured Muscle Sympathetic Nerve Activity (MSNA) in patients with aortic stenosis (AS) before and after transcatheter aortic valve implantation (TAVI) and compared MSNA with control patients with normal cardiac pressures.

Methods: We prospectively enrolled 14 patients with severe symptomatic AS treated by TAVI. Fourteen control patients matched for age, body mass index and unscathed of AS were also included. All patients underwent MSNA and arterial baroreflex gain (ABG) assessment at baseline and one week.

Results: Pts with AS had lower BP levels, significant increase in MSNA (61.0±1.7vs55.4±1.4 burst/min; p<0.05) and a decrease in ABG(2.13±0.10 vs 3.32±0.19 bursts/mmHg; p<0.01) compared to controls. TAVI induced an increase in sympathetic activity with a significant decrease of MSNA from (61.0±1.7 to 54.1±2.1,0 burst/min; p<0.01) and was associated with a significant increase of ABG from (2.13±0.10 to 3.49±0.33 bursts/mmHg; p<0.01). One patient without sympathetic baroreflex improvement was the only one with moderate paravalvular aortic regurgitation (PAR). This could be interpreted as a result of pressure-induced change in afferent baroreceptor nerve activity thus leading to an increase of MSNA through a baroreflex-mediated mechanism.

Conclusions: We report for the first time, that pt with AS have elevated sympathetic nervous system (SNS) activity associated to a decrease in sympathetic baroreflex gain and that TAVI normalizes these parameters. This study provide evidences for a new beneficial effect of TAVI namely normalization of SNS hyperactivity. Additionally, knowing the deleterious effect of SNA in other cardiovascular diseases such as hypertension or CHF, the lack of normalization of SNS in the pt with moderate PAR could lead to undesirable relationship noticed between these significant regurgitations following TAVI and the worse survival associated, without any evidence of causality to date. However, this pathophysiological concept would need to be further evaluated.

TCT-733


Anthony C. Camuglia1, Jaffer Syed1, Pallav Garj2, Bob Kias1, Michael Chu1, Philip M. Jones3, Daniel Bainbridge1, Patrick Teefy1

1Royal Adelaide Hospital, University of Adelaide, Adelaide, Australia, 2University of New South Wales, Sydney, Australia, 3Royal Prince Alfred Hospital, Sydney, Australia

Background: Severe AS is the most powerful predictor of T2-3AAs. Advanced age and reduced LVEF also has a statistically significant independent correlation with T2-3AAs. This observation may explain the previously demonstrated benefit of the left subclavian approach in these patients and accordingly may merit further investigation into the adequacy and benefit of axillary access as smaller caliber TAVR delivery systems become available.

Conclusions: Severe AS is the most powerful predictor of T2-3AAs. Advanced age and reduced LVEF also has a statistically significant independent correlation with T2-3AAs. This observation may explain the previously demonstrated benefit of the left subclavian approach in these patients and accordingly may merit further investigation into the adequacy and benefit of axillary access as smaller caliber TAVR delivery systems become available.
measurements to follow-up, there was no significant improvement in CFR immediately post-TAVI (mean % SBCFR pre TAVI to immediately post TAVI 8.6%, 95% CI -23.0 – 40.3%, p=0.41).

Conclusions: TAVI does improve coronary flow dynamics as measured by CFR. This improvement does not occur immediately, but requires a period of time post-TAVI to manifest. The improvement in coronary flow reserve may represent a mechanism by which both symptoms and prognosis improve following TAVI.

**TCT-734**

**Percutaneous Implantation of Stent Grafts in the Management of Vascular Complications in Transfemoral Transcatheter Aortic Valve Implantation**

Jaciyn Chat1, Alaide Chiefo2, Roberto Chiesa3, Enrico Maria Marone4, Daniele Mascia5, Antonio Colombo6

1San Raffaele Scientific Institute, Milan, N/A, 2San Raffaele Scientific Institute, Milan, Italy, 3San Raffaele Scientific Institute, Milan, N/A, 4San Raffaele Scientific Institute, Milan, N/A, 5EMO GVM Centro Cuore Columbus/San Raffaele Hospital, Milan, Italy

**Background:** Vascular complications remain to be the most prevalent adverse event associated with transfemoral TAVI and related to increased morbidity and mortality. Pericardiocentesis and placement of stents in the management of access-site related vascular complications is not widely studied.

**Methods:** Among 379 patients who underwent TAVI from November 2007 to December 2011 for severe aortic stenosis, transfemoral access was performed in 314 patients. Logistic closure and consequently pure percutaneous transfemoral TAVI was performed in 304 patients. We described the clinical outcomes of this patient cohort who developed access-site related vascular complications and were subsequently managed by percutaneous implantation of stent grafts. We also compared their baseline, procedural and in-hospital characteristics, as well as in-hospital outcomes with those without vascular complications.

**Results:** Access-site related vascular complications occurred in 68 (22%) patients. 8 patients were managed surgically and 18 by manual compression. The remaining 42 patients with access site-related complications were managed by percutaneous means, in which 29 were treated solely by implantation of stent grafts. Overall, stent graft implantation was successful in all cases. The rate of VARC-defined endpoints was similar between patients managed by stent graft implantation and those free of vascular complications. After a median follow-up of 19.2months, 9 patients underwent duplex ultrasonography of the intervened limb and the remaining patients underwent clinical assessment. Duplex ultrasonography revealed no evidence of obstructive flow. Moreover, no patient experienced lower limb ischemic symptoms during follow-up.

**Conclusions:** Access-site related vascular complications in transfemoral TAVI can be managed by implantation of stent grafts with an encouraging technical success rate and safety profile. The clinical outcomes in these patients are similar to those who have undergone transfemoral TAVI without vascular complications. However, more dedicated imaging and larger clinical trials are needed to define the applicability of stent grafts in the treatment of vascular complications in TAVI.

**TCT-735**

**Can we Predict Post-Procedural Paravalvular Leak After Edwards Sapien Transcatheter Aortic Valve Implantation?**

Yusuke Watanabe1, Bertrand Cornier2, Thierry Lefèvre3, Erik Bouvier4, Kentaro Hayashida1, Bernard Chevalier5, Mauro Romano2, Thomas Hovasse5, Philippe Garot1, Patrick Donzeau-Gouge6, Arnaud Farge7, Marie-Claude Morice8

1Institut Cardiovasculaire Paris Sud, Générale de Santé, Massy, France, 2Hôpital Privé Jacques Cartier, Massy, France, 3Institut Cardiovasculaire Paris Sud, Générale de Santé, Quincampoix, France

**Background:** Post-procedural PVL ≥ 2 has been shown to be associated with worse mid-term outcomes after TAVI. Valve calcification and optimal valve sizing may play an important role in this setting. This study sought to identify predictive factors of post-procedural paravalvular leakage (PVL) ≥ 2 after transcatheter aortic valve implantation (TAVI) with the Edwards valve.

**Methods:** A total of 477 Edwards TAVI patients (aged 83.4 ± 7.4 years, Logistic EuroSCORE 18.8 ± 12.0%, transmural 54.5%) who had preprocedural multislice computed tomography (MSCT) were studied. In order to assess the role of valve calcification, a new Valve Calcification Index (VCI) was defined using MSCT as aortic root calcification volume / aortic annulus area. Optimal valve sizing was defined as the valve diameter calculated as the aortic annulus average diameter (CAAD) by MSCT.

**Results:** After post dilatation, performed in 16.7% of cases, a PVL ≥ 2 was observed in only 12.5% of cases. The 1-year estimated survival of both PVL < 2 and PVL ≥ 2 groups were 95.3 ± 3.2% vs 79.0 ± 10.8% (log-rank p = 0.02), respectively. Only the VCI odds ratio (OR) 2.11, 95% confidence interval (CI) 1.27 to 3.51, p < 0.01) and the valve diameter / CAAD (OR 0.57, 95% CI 0.38 to 0.87, p = 0.01), were identified as independent predictors of post-procedural PVL ≥ 2. A score predicting post-procedural PVL ≥ 2 (PVL score) was determined by assigning one point when the valve diameter / CAAD ratio was < 1.05 and one point when VCI was > 2.05, and summing all points accrued. Area under receiver-operator characteristic curves of PVL score were 0.70 (95% CI 0.58 to 0.82, p < 0.001). The incidence of PVL ≥ 2 in patients with a PVL score of 0 was 5.5%, 1 was 16.7% and 2 was 38.5%, respectively.

**Conclusions:** The only predictors of PVL ≥ 2 after Edwards valve implantation are the valve diameter / CAAD and VCI. The use of these two simple parameters, could become an excellent tool to predict the risk of PVL.