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Interest of intra-aortic ultrasound imaging during transcatheter aortic valve implantation

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Background: Information from imaging techniques is determinant for successful transcatheter aortic valve implantation (TAVI). The feasibility and utility of Intra-aortic ultrasound (IAUS) to provide complementary information on top of angiography and trans-oesophageal echocardiography have never been reported.

Methods: In consecutive patients undergoing TAVI in a single university centre, IAUS was performed before and after balloon angioplasty and after TAVI. We assessed off-line the dimensions of the aortic annulus, the extent of calcifications and their position close to a coronary ostium. Post-balloon, IAUS was performed before and after balloon angioplasty and after TAVI. We assessed off-line the dimensions of the aortic annulus, the extent of calcifications and localisation in relation to the coronary ostia, the quality of valve deployment and positioning, and compared to angiographic and intra-oesophageal data.

Results: 14 patients underwent TAVI with IAUS; 6 apical and 8 femoral approach. IAUS was feasible in all patients. On average, each IAUS run lasted 90 seconds. No complications were observed related to IAUS. All 23 runs were suitable for analysis; 4 baseline, 8 after balloon, 11 after TAVI. Relevant information provided by IAUS pre-procedure included annulus diameter, presence of extensive calcifications and their position close to a coronary ostium. Post-balloon, IAUS made it possible to assess sognal mobility. After TAVI, the diameter, area and symmetry of the prosthesis could be measured and in 1 patient who had had balloon post-dilatation for aortic insufficiency, an increase in stent was visible by IAUS.

Conclusion: IAUS appears to be safe and feasible during TAVI and provides additional information on top of angiography and echography. The clinical value of the incremental information provided by IAUS remains to be determined.

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Transcatheter aortic valve implantation with the Edwards valve prosthesis in patients with contra-indication to surgery but low (<20%) logistic Euroscore: results of the Rouen registry

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Background: Transcatheter aortic valve implantation (TAVI) is performed in a number of pts with a Log ES<20% due to comorbidities not included in the calculation of the Log ES but increasing the risk of AVR. The TAVI results in this sugroup of “lower risk” patients needed to be assessed.

Population and Methods: We retrospectively analysed 177 consecutive Edwards balloon expandable TAVI patients included between May 2006 and January 2011 in our center, and compared the clinical characteristics and results at 30 days and 1 year of two groups according to the Log.ES<20% (Low risk: LR; n=60 (34%), or ≥20% (High risk: HR; n=117 (66%)). The transfemoral approach was used in 128 (72.3%).

Results:

Mean Log ES was 11.9±4.9% and 32.2±10.3% in the LR and HR groups respectively. Medistinal radiotherapy (20%) and porcelain aorta (15%) were the dominant inclusion factors in the LS group. Patients in the LR group were younger (80±9 vs 84±5 years, p = 0.003), more often female (70% vs 43.6%, p = 0.001), with previous stroke (3.3% vs 17.9%, p=0.004) or CABG (5% vs 33.3%, p<0.001). There was no significant difference in NYHA class, presence of chronic respiratory failure, diabetes, or pre-existent conductive disorders. Procedural success was 100% vs 95.3% (p=0.1) in the LR and HR group respectively. There was no significant difference in major vascular complications (5% vs 6%), major acute stroke (3.7% vs 4.4%), permanent pace maker (5% vs 6%) but less AKI class ≥ 2 (0% vs 6%, p=0.003) or life-threatening bleeding (5% vs 19.7%, p=0.03) in the LR vs HR groups and a better safety end point (6.8% vs 16.8%, p=0.02) and survival at 30-day (0% vs 11.1%, p=0.04) and 1 year (5% vs 24.8%, p<0.01) in the LR group.

Conclusions: In patients with contra-indication to surgery but low Log ES (<20%), TAVI is associated with similarly good procedural success and better safety end point and mortality rates at 30-Day (0%) and 1 year (5%) than in the regular high risk population.

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Lipoprotein-associated phospholipase A2 levels are influenced by cardiac disease, comorbidities, extension of atherosclerosis and treatments


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Purpose: Lipoprotein-associated phospholipase A2 (Lp-PLA2) predict cardiovascular events in patients with coronary artery disease (CAD) and heart failure (HF) independently of traditional cardiovascular risk factors. Aims of our study were: (1) to assess relationships between Lp-PLA2 levels, cardiac disease and treatments; (2) to evaluate the association of Lp-PLA2 level with the severity of CAD and the extracoronary atherosclerosis.

Methods: 494 subjects (69.8% men, 64.2±16.7y) were recruited from a population scheduled for diagnostic coronary angiography. Lp-PLA2 mass concentration was assessed in serum with a Plac®-test turbidimetric immunoassay. Control Lp-PLA2 values were obtained in 61 healthy subjects (age 44.5±17.6y) without cardiovascular risk factors or cardiac treatment.

Results: In controls, mean Lp-PLA2 was 163±43 μg/L (men: 166±45 μg/L; women:159±39 μg/L).
Etiologies of cardiac disease were ischemic (40%), valvular (22%), HF with left ventricular dysfunction (14%), aortic aneurysm (7%) and infection (5%). Lp-PLA2 correlated with age, BMI, smoking, hypertension, total cholesterol, LDL-cholesterol and apolipoprotein A but not with diabetes, gender, serum creatinine, NYHA status or Lp(a).

Lp-PLA2 were significantly higher in patients with CAD than in patients without CAD (223±54 vs. 208±52 μg/L, respectively; p<0.007) and higher in patients with the most extensive angiographic CAD (single=215±2±52 μg/L, two=22±2±53 μg/L and three vessels =251±9±57 μg/L, respectively; p<0.0001) or carotid artery disease (No stenosis=218±8±51 μg/L, mild=224±4±51 μg/L and severe=231±4±6 μg/L; p=0.004).

Patients with heart failure, sepsis or aortic aneurysm had increased Lp-PLA2 levels: 256.2±46.8 μg/L; 226.7±47.3 μg/L; 218.1±8.9 μg/L, respectively, as compared to controls (p<0.0001).

Lp-PLA2 was significantly associated with treatments such as statins and ACEi/ARA2 but not with β- blockers, antianggregants or diuretics.

Conclusion: This study clearly shows that interpretation of Lp-PLA2 needs a good assessment of cardiac parameters and treatments, especially statins and ACEi/ARA2. Lp-PLA2 levels are significantly associated with coro

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Benefit and risk of transcatheter aortic valve implantation: results from the first Montpellier registry. Division of cardiology, Arnaud-de-Villeneuve hospital, Montpellier

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Introduction: TAVI represent a new therapeutic option In high-surgical-risk patients with severe symptomatic aortic stenosis.

Methods: Uni-centre prospective registry was conducted between 01/02/2010 and 01/02/2011 to evaluate procedural and mid-term outcomes of two models of prosthesis: Edwards SAPIEN (EDW) implanted via a transarterial (TF) or a transapical (TA) approach and CoreValve (CoreV).

Primary endpoint was 30 days and 1 year survival without major events and secondary endpoints was to evaluate benefit (improvement in NYHA class, quality of life, valve performance) and risk (mortality and major adverse events during the follow-up period).

Results: Seventy-three patients (56 EDW TF, 10 EDW TA,7 CoreV), aged 83±4 years with logistic EuroSCORE =29% (IC 25-33) and STS score =28% (IC 25-31) were included.

Device success rate was 97.3% and 30-day and 1 year survival without major events rate was 38% (IC 26-49) and 43% (IC 32-55) respectively. Severe complications included death (12.3%), tamponade (1.3%), valve migration (1.3%), stroke (1.3%), vascular complications (2.7%), Pacemaker was required in 9% (EDW TF), 20% (EDW TA) and 29% (CoreV). At 6 months 88% of patients were in NYHA class II or less. In three groups, mean aortic gradient decreased from 41.2 mmHg (IC 37.8-44.6) to 9.3 mmHg (IC 8.1-10.6) at 6 months post-TAVI (P<0.002) and aortic valve area increased from 0.42 cm²/m² (IC 0.39-0.44) to 0.99 cm²/m² (0.87-1.1) (p<0.002). Paravalvular leak was absent or minimal in 92% of patients. There was significant improvement in quality of life: EQ-5D score was improved in 73% of patients and EVA score in 80% at 6 month follow-up.

Conclusions: Our registry showed satisfactory results in terms of feasibility, short-term hemodynamic and functional improvement after TAVI in inoperable patients with severe aortic stenosis. Longer term follow-up is necessary to determine safety and extend the indications for low-surgical-risk patients.

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Peri-aortic abscess complicating infective endocarditis: outcomes

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Objective: to determine clinical and echocardiographic features, management, and prognosis of peri aortic abscesses complicating infective endocarditis.

Methods: we have analysed clinical, microbiological, echocardiographic data, therapies and outcomes of cardiac abscesses occurring during infective endocarditis in patients admitted to our department from January 2006 to January 2010.

Results: Of 56 cases of infective endocarditis, sixteen patients have developed aortic abscess. The mean age was 33 years with a male predominance. Heart failure was noted in all patients. Streptococcus and staphylococcus predominated. The trans-thoracic echocardiography coupled with trans esophageal echocardiography made the diagnosis of aortic abscess in eleven cases and associated with other complications in five cases. Surgery combined with antibiotic therapy was the standard treatment with variable surgical delay from 4 days to 4 weeks. Hospital mortality in the acute phase concerned the third of patients. The evolution of survivors at six months was favorable.

Conclusion: Peri-aortic abscess complicating infective endocarditis increase mortality and morbidity in spite of modern surgical and medical approach. It requires therefore a strict monitoring of patients presenting infectious endocarditis.

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Predictors of outcome in very high-risk patients undergoing transcatheter aortic valve replacement

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Purpose: To assess the outcome of transcatheter valve replacement (TAVI) in very high risk patients and identify predictors of 30 days mortality, need for pacemaker implantation and > grade 2 aortic regurgitation.

Methods: A total of 102 consecutive patients at very high surgical risk underwent TAVI through femoral (84%), apical (2%) and left subclavian (14%) access. All patients had pre-procedure pan-aortic CT and, pre- and post-procedure transthoracic echocardiography. Correlates of endpoints were assessed using a logistic regression model.

Results: Patients characteristics were: age 82±8, female 42%, Euroscore 32±22, STS score 24±12. CoreValve® (76%) and Sapien® (24%) prostheses were used. The procedure was successful in 96% of cases with 2 per-procedure deaths. At 30 days rates of death, need for pacemaker implantation and significant aortic regurgitation were 18.6, 27.4 and 36% respectively. Pre-procedure correlates of events are reported in the table.

Mortality was mainly related to post procedure pulmonary infection (OR 8.4 [95% CI 2.8-25.2]) and renal failure (OR 5.9 [95% CI 2.0-17.6]).

Conclusions: TAVI is associated with a high procedural success rate in patients at very high surgical risk. Mortality is mainly related to pre-procedure left ventricular enlargement. The need for pacemaker implantation could be predicted by pre-procedure aortoventricular conduction abnormalities. In such patients the use of Sapiens valve and smaller prostheses may be considered. Aortic regurgitation may be prevented by the use of larger prostheses in patients with large aortic annulus.

Table – Pre-procedure predictors of events

| Death OR | 1.1 [1.01-1.17] |
| Pacemaker | 1.06 [1.01-1.12] |
| Prosthesis/annulus ratio (per %) | 4.3 [0.9-20] |
| CoreValve vs Sapien | 9.9 [1.2-79.3] |
| Preprocedure right bundle branch block | 1.18 [0.99-1.14] |

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