June 13th, Thursday 2019

Poster n°7 - 10h00—11h00

Vasodilator stress perfusion CMR is feasible and has prognostic value in morbid obese patients without known CAD

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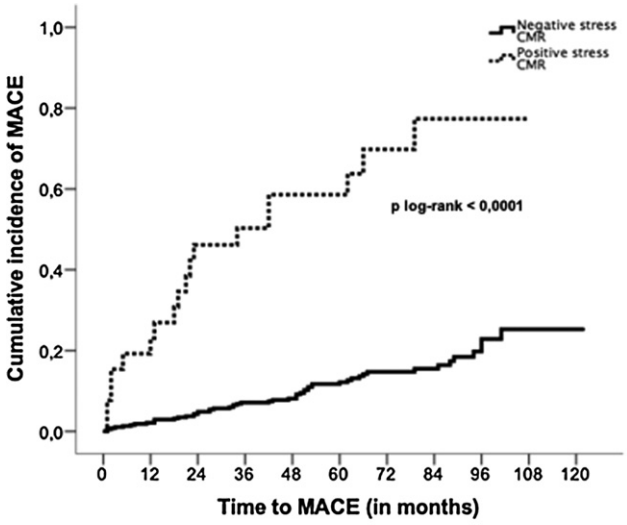
Introduction Obesity is a growing public health problem with an impact on cardiovascular disease. But current methods for the detection of myocardial ischemia remain limited in obese patients and stress cardiac magnetic resonance (CMR) may be a powerful alternative. To determine feasibility and prognostic value of vasodilator stress perfusion CMR in morbid obese patients with body mass index (BMI) $\geq 40\,kg/m^2$.

Method Consecutive patients with a BMI $> 40\,kg/m^2$ and without known coronary artery disease (CAD) referred for vasodilating stress CMR were followed for major adverse cardiovascular events MACE, defined as cardiac death, non-fatal myocardial infarction of stroke. Univariable and multivariable Cox regressions for MACE were performed to determine the prognostic association of inductible ischemia or late gadolinium enhancement (LGE) by CMR.

Results Of 452 obese patients (mean BMI $43.9 \pm 3.8\,kg/m^2$, 44% of men), 444 (98%) completed the CMR protocol and among those, 404 (91%) completed the follow-up (mean 5.6 ± 2.2 years). Patients without inductible ischemia or LGE experienced a susbtantially lower annual rate of MACE (3.3% vs. 12.4% for those with ischemia and vs. 11,2% for those with ischemia and LGE). In a multivariable stepwise Cox regression including clinical characteristics and CMR indexes, the absence of inducible ischemia was an independent predictor of a lower incidence of MACE at follow-up (Hazard ratio 0.20, 95% confidence interval: 0.11 to 0.36; $P < 0.001$) (Fig. 1) and cardiac death (hazard ratio 0.11 95% confidence interval: 0.02 to 0.63). Using Kaplan-Meier analyses, myocardial ischemia identified future CV events/survival ($P < 0.001$).

Conclusion Stress CMR is feasible and has a high prognostic value in morbid obese patients, with a very low negative event rate in patients without ischemia or infarction as opposed to patients with inducible ischemia and/or presence of myocardial infarct. Kaplan-Meier curves (Fig. 1).



Kaplan–Meier curves describes the occurrence of MACE in morbid obese patients with or without inducible ischemia

Fig. 1

Disclosure of interest The authors have not supplied their declaration of competing interest.

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Poster n°8

3D echocardiographic assessment of right ventriculo-arterial coupling in mitral valve prolapse

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Introduction Pulmonary artery pressure (PAP) and right ventricular (RV) function have shown their value in the prognostic evaluation of patients with mitral valve prolapse (MVP). Echocardiography, including pressure estimation and volume measurement by 3D, allows an approach of right ventriculo-arterial coupling (RVAC) and assessment of the RV-PA unit.

Method Thirty healthy controls patients and 53 patients with MVP (34 in group MVP1 with no or mild mitral regurgitation (MR) and 19 in group MVP2) with moderate to severe MR underwent echocardiography including 3D RV acquisition. RV end-systolic volume (ESV), end-diastolic volume (EDV), stroke volume (SV) (mL) and ejection fraction (EF) (%) were obtained 3D echo (3DE) volumetric analysis (GE, EchoPac). mPAP was estimated from echo using Chemla's formula (mPAP = 0.61 × sPAP + 2 mmHg). Pulmonary artery effective elastance (Ea) was estimated as mPAP/SV (mmHg/mL), RV maximal end-systolic elastance (Emax) as mPAP/ESV (mmHg/mL), and RVAC as Ea/Emax. Ea, Emax and RVAC were compared between the 3 groups of patients unsing ANOVA.

Results Mean LVEF, TAPSE, mPAP were similar in the 3 groups. RVEDV (Nl: 81.3 ± 19.2; MVP1: 81.5 ± 23.1; MVP2: 92.7 ± 26.4, ns) and RVEF (Nl: 50.4 ± 4.4; MVP1: 49.2 ± 5.6; MVP2: 47.1 ± 5.5, ns) were similar in the 3 groups but not RVESV (Nl: 39.9 ± 9.8; MVP1: 41.6 ± 13.4; MVP2: 49.2 ± 15.7, $P = 0.05$). Ea (Nl: 0.41 ± 0.12; MVP1: 0.45 ± 0.16; MVP2: 0.48 ± 0.30, ns) and E max (Nl: 0.42 ± 0.11; MVP1: 0.45 ± 0.18; MVP2: 0.43 ± 0.25, ns) were not significantly different but RVAC was significantly different (Nl: 0.99 ± 0.17; MVP1: 1.06 ± 0.23; MVP2: 1.15 ± 0.25, $P = 0.04$).

Conclusion 3D echocardiography is able to reveal subtle changes in RV-PA unit equilibrium. Together with an increase in RV end-systolic volume, our study reveals a progressive alteration in RVAC in parallel with the severity of MR in patients with MVP as compared to normal patients.

Disclosure of interest The authors declare that they have no competing of interest.

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Thursday, June 13, 2019 - 15h45—16h30

Poster n°19

One-year experience of the micro trans esophageal probe in cardiac structural interventions

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Introduction Transoesophageal echocardiography (TEE) under general anesthesia (GA) is the reference technique to guide most of transcatheter cardiac structural interventions (TCI). However, the need for GA represents an important limitation in the context of the dramatic increase of this activity. Multiplane micro TEE probe (MMt) has recently emerged as an alternative imaging technique for procedural guidance that would not require GA. The aim is to evaluate the feasibility of the use of MMt to guide TCI without GA.

Method We report our 1-year experience of TCI guidance with MMt used during the whole procedure under conscious sedation or without sedation in specific situations requiring unplanned TEE guidance.

Results MMt was used during the following interventions:
— Patent Foramen ovale closure ($n = 73$),
— Guidance of difficult transseptal catheterization during percutaneous mitral commissurotomy ($n = 6$),
— Selected cases of assessment after TAVI requiring TEE to evaluate the final result (position, paravalvular leak) ($n = 5$),
— MitraClip procedure with failure of conventional TEE ($n = 1$).
Overall, the tolerance of the probe and the comfort of the patients were excellent. There was neither complication related to its use, nor conversion to GA and conventional TEE. Although the quality of imaging might be inferior to that of conventional TEE, the information was sufficient to guide the procedures in all cases. The absence of GA significantly shortened procedural time and interval between procedures.

Conclusion This preliminary experience illustrates the role of MMt without GA during specific TCI, improving procedural time while preserving the comfort of the patients. In addition MMt appears particularly useful in patients requiring unplanned TEE during TCI. Despite some limitations, as the lack of 3-D imaging, we anticipate that MMt will play an important role in the context of increasing demand in interventional guidance.

Disclosure of interest The authors declare that they have no competing of interest.

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Poster n°20

Echonavigator in children with congenital heart diseases

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Introduction Transesophageal echocardiography (TEE) has become indispensable in catlab to guide some percutaneous interventions as a complimentary imaging for fluoroscopy. However the tow imaging modalities are presented separately and differently. Echonavigator® is an innovative software enabling fusion between the tow imaging modalities on the same screen. We aimed to assess the feasibility of Echonavigator system to guide interventional procedure in children with CHD, and to present our initial clinical experience using this software.

Method We enrolled all children underwent interventional catheterization needing guidance by TEE from December 2015 to December 2017. Patients weighting less than 20 kg or having a contraindication for TEE were excluded. TEE was realized by using X7-2t TEE probe connected to an echocardiographic system (EPIC). Fluoroscopy was realized using Allura Xper FD/10 system. Image fusion was attempted in all patients using Echnavigator system. Markers were positioned on the target zone on echocardiographic images and projected to the interventionists on the fusing screen.

Results Fifty-one patients with CHD were included, mean age was 8 years old (5.5—14), mean weight was 25 kg (20—36 kg). 36 patients underwent Atrial septal defect closure, 10 ventricular septal defect closure, 3 aortic valve dilatation and 2 right ventricular outflow tract revaluation. Image fusions were successfully obtained in all patients in real time during all steps of procedure. No complication related to TEE probe insertion or manipulation was observed. Markers were successfully positioned in the all target zones and automatically projected to the interventionist on the fusion screen.

Conclusion Echonavigator system is feasible and safe to guide interventional catheterization in children with CHD. It enables better appreciation of anatomical relationships and improves confidence of interventionist to achieve the target zones.

Disclosure of interest The authors declare that they have no competing of interest.

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