Conclusion: In our study, echocardiography remains the essential imaging method to diagnose cardiac tumors. Now, with technological advances, cardiac CT and MRI imaging are changing the diagnostic approach, particularly in case of malignant tumors.

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Cardiac magnetic perfusion stress test at 3 tesla in patients suspected of myocardial ischemia

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Aim: to determine the feasibility, the security, the positive predictive value and the prognosis of cardiac magnetic resonance (CMR) perfusion stress test at 3 tesla.

Materials and methods: in 115 patients with known or suspected coronary disease, dipyridamole stress magnetic resonance perfusion examination was performed at 3 T. Vasodilation was induced with dipyridamole (0,84mg/kg over 4 minutes) and followed by first-pass perfusion imaging (3T EXCITE, GE MEDICAL SYSTEMS). Stress testing was classified as pathological if more than one segment showed an inducible perfusion deficit without delayed-enhancement. Coronary angiography was performed in all positive patients.

Results: One of 115 patients could not be evaluated owing to poor-quality images. Induced myocardial ischemia was found in 29 patients. 6 patients had perfusion deficit in two different coronary territories. Perfusion deficit was showed in 3,2 segments. Significant coronary stenosis (more than 50%) was showed in the induced myocardial ischemia territory in 26 patients with a positive predictive value of 89,6%. Dark rim artefacts explained the 3 cases of perfusion deficit (less than 3 segments) without coronary lesion. No complication occured during examination. During a median follow-up of 512 days (at least 12 months), 1 patient with negative stress testing was admitted for unstable angina, no cardiac death and no myocardial infarction were documented.

Conclusion: CMR perfusion stress test at 3 tesla is a feasible and a safe technique. In this small cohort, positive predictive value is good and the prognosis of normal stress test at 1 year is excellent.

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Evaluation of left ventricular systolic function using automated angle independent motion tracking of mitral annular displacement (MAD)

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The range of excursions of the mitral or tricuspid annulus measured in mm by 2D or TM mode echocardiography has been shown to reflect the systolic function of both ventricles. We studied a new technique based on a tissue tracking algorithm that is ultrasound beam angle independent for automated detection of mitral annular displacement (MAD) (QLAB, Philips Medical Imaging).

Aim: To validate the accuracy of MAD (mitral annular displacement) assessed as a surrogate for determination of the left ventricular function in comparaison with biplane LVEF and 3D LVEF.

Methods and results: 133 patients with a variety of cardiac pathologies underwent 2D, DTI and 3D echocardiography. MAD was used to detect mitral annular motion off-line the apical four chamber using the hinge point of the mitral valve leaflets with the septal and lateral aspects of the mitral annulus as user-defined anatomic landmarks. Mean age was 70+/–16,7 years, 67 were male and 37 had symptomatic heart failure.

4-chamber MAD was correlated with biplane LVEF (R^2= 0,49 p<0.0001) and 3D LVEF (R^2=0,37 p<0.0001). Negative correlation was found between MAD and age (R^2=0,2, p<0.0001). A value of MAD <10mm predicted left ventricular dysfunction (biplane LVEF<50%) with a sensitivity of 93% and a

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specificity of 76%. A value of MAD -12 mm predicted 2D LVEF - 50% (negative predictive value of 100%).

Conclusion: We found a significant correlation between both measures of sytolic function, MAD, biplane EF and 3D LVEF. As shown by De Cara and colleagues, MAD is a rapid and reproductible method of determining global systolic function.
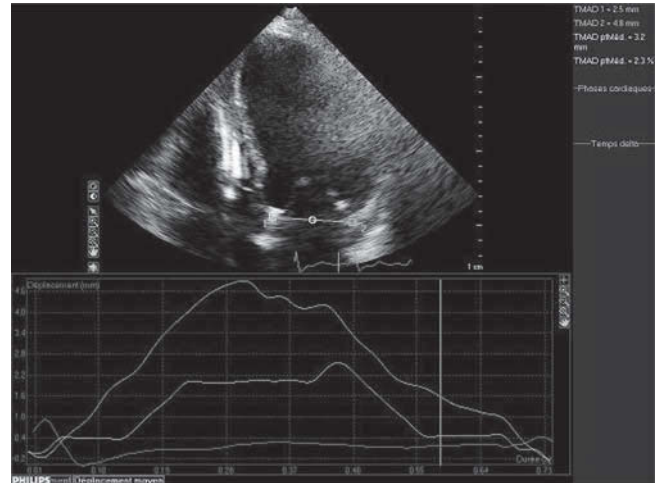
MAD in 4-apical view in heart failure pt

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Determinants of non invasive coronary flow reserve in severe aortic stenosis

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The coronary flow reserve (CFR) is progressively impaired with aortic stenosis (AS) severity, but there is a broad range of CFR in patients (pts) with severe AS, and the factors responsible for this variability are weakly characterized. Our objective was to assess the determinants of non-invasive CFR in pts with severe AS (≤1 cm² or ≤0.6 cm²/m²) and preserved left ventricular ejection fraction (LVEF >50%)

Methods: 63 consecutive pts (72±10 years, 27 women, mean LVEF 67±10%) with isolated severe AS (mean 0.77±0.2 cm²), underwent prospectively transthoracic-Doppler echocardiography including CFR measurement in the distal part of the left anterior descending artery (LAD) with intravenous adenosine infusion. CFR was defined as hyperemic peak LAD flow velocity divided by baseline flow velocity. Fifteen normal subjects matched for age and gender, served as a control group.

Results: When compared to controls, pts with AS had higher baseline, lower hyperemic LAD flow velocity (all, p<0.05), and consequently lower CFR (2.33±0.68 vs. 3.2±0.7, p<0.01). In pts with AS, there was a significant correlation between CFR and age (r=–0.33), E/Ea, LV mass/m², NT-proBNP (r=–0.4), pulmonary artery systolic pressure (PASP), baseline LV rate-pressure product (LVPP), left atrial volume/m² (LAV)(all, p<0.05), LVEF, and deceleration time of E (all, p<0.05). Compared to asymptomatic AS pts (n=17), symptomatic AS pts had a more severely impaired CFR and a higher NT-proBNP values (all, p<0.05). Using a ROC curve analysis, the best cut-off of CFR to predict symptoms was 2.1 with a sensitivity of 64% and specificity of 75%, AUC 0.72, p<0.01. In multivariate analysis, NT-proBNP was the main independent predictor of CFR (p<0.01), and among echographic variables, PASP and LVPP (all, p<0.01). PASP was independently predicted by age, DTE, and LAV (all, p≤0.01).

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