perfusion was determined for each vascular zone. The BARI-score was calculated from the coronary angiograms to quantify the myocardium at risk.

Results FFR was measured in 70 of 162 coronary vessels; Vessels FFR measured per patient was 1.3±0.57. Sensitivity, specificity, and diagnostic accuracy of MPI for the detection of significant CAD were 92%, 88%, and 90% by coronary territory and 87%, 93%, and 92%, on a patient basis. The area under the summary receiver-operating characteristic at the patient level was 0.94 (95% CI: 0.88 to 1) and 0.90 (95% CI: 0.83 to 0.97) at the artery and territory levels, respectively. The mean ischemic burden for MPI and BARI-score showed a strong correlation between techniques (r=0.71, P<0.0001).

Conclusions Stress thallium-201/rest technetium-99m sequential DI-HS-MPI accurately detects functionally significant CAD as defined by using FFR and provides an assessment of ischemic burden in agreement with the invasive BARI-score.

The author hereby declares no conflict of interest

0146

Comparison of cardiac magnetic resonance imaging and echocardiography for the assessment of aortic valve area

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Background aortic valve area (AVA) calculated by the continuity equation by echocardiography (CE-TTE) is the method of reference to assess aortic valve stenosis severity (AS). The Hakki's formula (simplified Gorlin formula) is another method, sometines used during cardiac catheterization to calculate AVA. It can also be adapted to magnetic resonance imaging (CMR) to assess the AVA as previously demonstrated. The aim of our study is to investigate, using a large number of patients with AS, the accuracy of the « hakki-cmr » method to determine the severity of AS compared to C-TTE.

Methods and results between 2007 and 2014, 390 consecutive patients with AS (mean age 81±10 years, men 55%, mean LVEF=60±13%, underwent clinically indicated TTE (IE 33, philips) and CMR (philips ACHIEVA 1.5 tesla) within 30 days. The mean pressure aortic gradient was 44±18mmHg; the AVA was respectively 0.67±0.25cm^2 by CE-TTE, 0.74±0.30cm^2 using Hakki-CMR. Hakki's formula and AVA from CE-TTE were almost interchangeable, with a mean difference of 0.07cm^2 (95% limits of agreement 0.15 to 0.21cm^2, p<0,0001). The intraobserver reproducibility of the AVA measurements with Hakki-CMR was excellent, with an average of 2 measurements of 0.67±0.18 and 0.67±0.13cm^2 (intraclass correlation coefficient 0.77, estimated withinsubject SD 0.01cm^2).

Conclusion in a large cohort of patients with AS, assessment of AVA using the Hakki's formula by CMR, yielded more reliable results than those obtained using planimetry by CMR, and similar to those obtained using the CE-TTE. Despite the potential time and cost issue of CMR, the Hakki formula used during flow quantification, is a valuable method that is reliable easy, and fast to apply. It may be highly useful especially in cases of echogenicity issues by TTE and regardless of the valve degree of calcification.

The author hereby declares no conflict of interest

0117

Left ventricular mechanics in mitral valve prolapse: a longitudinal strain study

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Background Valve apparatus alterations may influence left ventricular (LV) mechanics in mitral valve prolapse (MVP).

Objective To assess LV mechanics and ventriculo-valvular interaction in MVP.

Material and results A comprehensive echocardiography including 2D speckle tracking myocardial longitudinal strain assessment was carried out in 194 adult patients with MVP (leaflet displacement >2mm above the annulus) and 30 matched controls. In MVP group mitral regurgitation (MR) was not significant in 76 (39%) patients (NoMR-MVP, effective regurgitant orifice <10mm^2), mild to moderate in 53 (27%) and severe in 65 (34%) patients. Posterior (PML) and/or anterior (AML) mitral leaflet prolapse were present in 188 (93%) and 85 (42%) patients, respectively. PML and AML positions averaged –6.0±3.4mm and –1.6±3.5mm, respectively. Ventriculo-atrial disjunction was found in 82 (41%) patients and averaged 5.7±1.6mm. Posterior wall thickening was clearly increased in MVP groups with frank wall bulging in 82 patients (41%). Despite the third left chamber (between mitral annulus and prolapsed leaflets) forward stroke volume was preserved in MVP groups, and even increased in NoMR-MVP (44±9mL/m^2 vs 39±9mL/m^2 in Controls, p<0.001). In addition LV EF was improved in NoMR-MVP. Global Longitudinal Strain (GLS) was also improved in NoMR-MVP (–21.5±2.8%) and in the overall MVP group (–21.7±3.0%) compared with Controls (–19.7±1.7%, both P<0.001). In multivariate analysis GLS improvement was associated with the magnitude of PML prolapse (β=0.14, P=0.04), posterior wall thickening (β=–0.16, P=0.004), posterior papillary muscle displacement in systole (β=–0.21, P=0.002) and posterior wall bulging (β=–0.23, P<0.001).

Conclusion MVP and associated abnormalities have a significant impact on LV mechanics. LV systolic function is improved in MVP as assessed by EF and GLS and preserves forward stroke volume. These changes might have significant effect at long-term on LV myocardium.

The author hereby declares no conflict of interest

0038

Addressing the controversy of estimating right ventricular systolic pressure by echocardiography: insights from 307 patients with advanced lung disease or pulmonary arterial hypertension

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Background There is a controversy on the reliability of echocardiography in estimating right ventricular systolic pressure (RVSP) in advanced lung disease (ALD) and idiopathic pulmonary arterial hypertension (PAH) patients. This study aimed to develop a quality control method for echocardiographic RVSP assessment to provide guidance.

Methods We selected consecutive patients referred from 2001 to 2012 for ALD or PAH, in whom an echocardiogram and a right heart catheterization (RHC) were performed within five days. In order to assess reader level influence on echo interpretation, three levels of readers (multi-reader echo-lab, level 2 and 3) estimated RVSP (based on the tricuspid regurgitation TR maximal velocity). Invasive and non-invasive RVSPs were compared using Pearson's coefficient and Bland-Altman analysis. PH classification performance was also assessed. Reasons for under- and overestimation were systematically analysed.

Results Among the 307 patients included (mean age 50±13, 41% male), two-thirds had pulmonary hypertension (PH). RVSP was measurable in 56% of patients. There was a strong correlation between echo and RHC (r=0.84 for echo-lab; 0.86 level 2 and 0.96 level 3). For PH classification, areas under the curve of level 2 and 3 RVSPs were excellent (0.94 and 0.97); >45mmHg was associated with 86% sensitivity and 100% specificity. No severe PH (mPAP ≥35mmHg) was missed. The main reason for underestimation was the absence of a well-defined TR envelope and for overestimation the inability to identify the complete envelope by decreasing the gain.

Conclusion Echocardiography's reliability for RVSP estimation can be improved when careful attention is paid to simple practical signal quality parameters, clearly identified by the present study.

The author hereby declares no conflict of interest