GLS (HR 1.4 95% CI 1.1-1.6, p<0.001) were significantly predictive of the primary endpoint, only LV GLS remained independently associated on multivariate analysis (HR 1.3, 95% CI 1.0-1.7, p<0.02). Those with LV GLS >-17.3% (median) were significantly more likely to be free of the primary endpoint at follow-up compared to those with LV GLS >-17.3% (log rank p<0.02).

Conclusions: In ECS patients, LV GLS is reduced suggesting subclinical cardiac disease despite absence of clinical or conventional echocardiographic evidence of cardiac disease. Furthermore, LV GLS is independently associated with the occurrence of adverse events and/or future development of accepted evidence for CS.

P2972 | BEDSIDE
Apical hypertrophic cardiomyopathy: chest pain and myocardial perfusion defects result from regional diastolic persistence of hyperdynamic cardiac contractility
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Background: Apical hypertrophic cardiomyopathy (HCM) is commonly associated with drug-refractory chest pain. We sought to determine whether, in apical HCM, coronary perfusion time is abbreviated by the diastolic persistence of apical contraction, residual apical myocardial perfusion and chest pain.

Methods: 62 apical HCM patients had cardiac magnetic resonance (CMR) scans assessed for stress perfusion (myocardial perfusion reserve index (MPRi)), late gadolinium enhancement (%LGE, % of myocardial volume) left ventricular (LV) volumes and LV contractile persistence (% total cardiac cycle) at the LV apex and base. Radial and circumferential strain were assessed. Patients were divided into three groups on the basis of severity of contractile persistence. The interval between the earliest and latest systolic peaks was measured from strain data from each of the apical segments.

Results: Compared to subjects with the least contractile persistence (C1), those with the most (C3) were more likely to have chest pain (94% vs 63%, p<0.05) and lower MPRi (0.90 ± 0.24 vs 1.43 ± 0.50, p = 0.05). Multiple regression analyses included contractile persistence, LVH, %LGE, age and gender. Contractile persistence was independently associated with chest pain (0.4 per 10% cardiac cycle, CI 95%: 0.1 to 0.8, p = 0.05) and a reduction in apical MPRi (0.09 per 10% cardiac cycle, CI 95%: -0.04 to -0.15, p = 0.01). There were striking differences in systolic strain between C1 and C3. First, radial strain was almost absent in C3, with only post-systolic contraction detected. Second, temporal dispersion in circumferential strain was greater in C3 than C1 (230 ± 111ms vs 114 ± 44ms, p = 0.05). Using the convention >130ms as a threshold, circumferential dysynchrony was present in 25% of C1 and 81% of C3 patients (p<0.001) and radial dysynchrony in 65% of C1 and 95% of C3 patients (p<0.05). In patients with radial dysynchrony, the earliest peak was most often in the inferior or anterior segments (60%) and the latest in the lateral segment (33%). In patients with circumferential dysynchrony, the earliest peak was most often in the inferior or anterior segments (59%) and the latest in the lateral segment (41%).

Conclusions: In apical HCM, regional persistence of contractility into diastole causes myocardial ischemia and chest pain. This is the first description of contractile persistence and dysynchrony as a mechanism for myocardial perfusion abnormalities and presents novel therapeutic opportunities for drug-refractory chest pain in apical HCM.

P2973 | BENCH
Characterization of myocardial deformation in hypertrophic cardiomyopathy using speckle tracking: comparison with physiological hypothyropathy
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Objective: This study was designed to characterize global & regional myocardial deformation of LV segments in patients with HCM compared to healthy subjects. We hypothesized that apical tissues and intra-ventricular systolic delay (intra-V delay). These parameters were quantified by using regional strain (SR), peak systolic strain rate (SRsys), time to peak (tTP) and strain rate velocity (vSR) respectively. LV regional contractility was defined as the intra-V delay and the first derivative of SRsys (SRsys rate) at peak systolic strain rate (SRsys)

Methods: The study comprised 22 patients with HCM. 81% had asymmetric septal hypertrophy, 36% had a history of previous endocarditis, 10% had a family history of HCM. The control group consisted of 19 healthy subjects. Speckle tracking was used to measure longitudinal peak systolic strain ($\varepsilon_{sys}$), peak systolic strain rate (d$\varepsilon_{sys}$/dt), time to peak (tTP), LV contractile persistence (%total cardiac cycle), 1D and 2D speckle tracking was used to measure longitudinal peak systolic strain ($\varepsilon_{sys}$), peak systolic strain rate (SRsys), time to peak (tTP), post systolic strain ($\varepsilon_{psys}$) and peak systolic strain rate ($$\varepsilon_{psys}$/dt) respectively. LV regional contractility was defined as the intra-V delay and the first derivative of SRsys rate at peak systolic strain rate (SRsys rate). The results were analyzed using paired t-tests and the correlations were assessed using Pearson correlation coefficients. Differences were considered statistically significant at p-value < 0.05.

Results: Regional Myocardial deformation of LV segments was significantly reduced in comparison to corresponding segments in athletes & control (P<0.001). (1) a systolic cut-off value of basal and mid septum <13%, <12% between HCM and athletes with 91, 91% sensitivity and 91, 100% specificity respectively.

Conclusions: The novel uniform distribution & magnitude of LV hypertrophy in HCM, is associated with disorganized contraction & regional heterogeneity of myocardial systolic function. Deformation analysis using speckle tracking is a novel ultrasonic technique that helps to differentiate mechanical dysfunction in HCM from myocardial adaptations in physiographic hypothyripathy.

P2974 | BEDSIDE
Two-dimensional speckle tracking echocardiography in early detection and prediction of cardiotoxicity during epirubicin based chemotherapy
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Objective: To investigate whether alterations of myocardial strain and high sensitive cardiac Troponin T (cTnT) could predict future cardiac dysfunction in patients receiving anthracycline-based chemotherapy.

Methods: Sixty-five patients aged 52.46±13.58 years with newly-diagnosed large B-cell non-Hodgkin lymphoma treated with epirubicin were studied. Blood collection and echocardiography were performed at baseline, 1 day after the third cycle, and 1 day after chemotherapy completion. After 4-6 months of chemotherapy, patients were studied using echocardiography. cTnT was detected with a highly sensitive assay. Longitudinal (LS), Circumferential (CS) and Radial Strain (RS) were calculated using two-dimensional speckle tracking echocardiography. Left Ventricular Ejection Fraction (LVEF) was analyzed by real-time 3D echocardiography. Cardiotoxicity was defined as a reduction of the Left Ventricular Ejection Fraction (LVEF) of ≥5% to <55% from baseline at 4-6 months of heart failure or an asymptomatic reduction of the LVEF of ≥10% to <55%.

Results: LVEF remained stable and within normal limits in the whole course of chemotherapy, however decreased from 65.13±3.65% at baseline to 60.58±4.56% during follow-up (p=0.002). Twelve patients (18.46%) developed cardiotoxicity 4-6 months after treatment. Global LS (-18.56±1.69% vs -15.79±1.53%), CS (-20.88±2.67% vs -19.23±3.21%), RS (39.32±6.36% vs 34.79±6.15%) were markedly reduced and cTnT elevated from 0.0010±0.002ng/ml to 0.0072±0.003ng/ml (p all<0.01) at the completion of chemotherapy compared with baseline values. A ~15% decrease in longitudinal strain (sensitivity: 86%, specificity: 75%) and a >0.004ng/ml elevation in cTnT levels (sensitivity: 79%, specificity: 64%) from baseline to the third cycle of chemotherapy predicted later cardiotoxicity.

Conclusions: Longitudinal strain combined with high sensitive cTnT may provide a reliable and non-invasive method to predict cardiac dysfunction in patients receiving anthracycline-based chemotherapy.
P2979 | BEDSIDE
Cardiac magnetic resonance: late gadolinium enhancement for risk stratification of patients with cardiac amyloidosis
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Purpose: Late Gadolinium Enhancement (LGE) technique is suitable for risk stratification purpose in patients with CA. Patients with huge gado-linium deposition show poor outcome.

P2979 | SPOTLIGHT 2013
Role of cardiopulmonary exercise testing in idiopathic dilated cardiomyopathy
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Purpose: Although cardiopulmonary exercise testing (CPET) is well established as a powerful tool in patients with heart failure, investigations for the role of CPET in idiopathic Dilated Cardiomyopathy (IDCM) are lacking. The aim of the study was to assess the prognostic value of CPET in a large cohort of patients with IDCM under optimal therapy.

Methods: We analysed patients with IDCM that consecutively performed CPET from January 1998 to June 2011. The study end-point was the composite of cardiovascular death/heart transplantation (D/HTx). Univariate and multivariable logistic regression models were estimated to compute predicted probabilities of D/HTx, using different combination of parameters. The Area Under Receiver Operating Characteristic Curve (ROC AUC) methodology was used in evaluating the prognostic accuracy and finding optimal cut-off values of strongest variables of CPET.

Results: 381 patients (74% males, mean age 50±11 years, NYHA class 2.7, LVEF 52±9%, LV end-diastolic volume 190±69 cm³) were ana-
lyzed. At enrollment, peak oxygen consumption (peak VO2), percent-predicted peak VO2 (peak VO2%), minute ventilation-carbon dioxide production relationship (VE/VD ratio) and pulse peak were 17.1±1.5 ml/kg/min, 59±15%, 29±6.1 and 11.4±1.4 ml/kg/beat, respectively; at anerobic threshold VO2 (VO2AT) and pulse were 11.3±2.2 ml/kg/min and 8.9±3.1 ml/kg/beat, respectively. The overall dis-
criminatory accuracy using ROC analysis for peak VO2% (AUC 0.74) was signif-
icantly greater than that for peak VO2 expressed as ml/kg/min (AUC 0.63) (p<0.001). VE/VD ratio carried the greatest prognostic strength (AUC 0.78) and VE/VO2 ratio > 3.1 and VE/VCO2 ratio > 29 rather than the traditional cut points may be useful for risk stratification of IDCM patients. These data suggest that considerations