

value)— $0.46 \times$ (minimum SR value) + $4.83 \times$ (mean SR value). As invasive indexes, coronary blood flow (CBF) and fractional flow reserve (FFR) were measured. Blood flow probes (t-402M Transonic System, Inc, USA) to measure coronary blood flow (CBF) and vascular occluders (DOCSX Occluder, BIOMEDICAL PRODUCTS & ACCESSORIES, Inc, USA) were placed on the LAD #6 and/or 7, and on the LCX #11 and/or 13. Fractional flow reserve (FFR) were measured with Primewire Prestige® PLUS Pressure Guide Wire. 75% CAS produced by vascular occluders was confirmed by measuring the diameters of coronary arteries using coronary angiography. The grN and gr75 of the four indexes were compared by a paired t-test.

Results: The results of ROC analysis of the four indexes were as follows. PSS(%): grN -17.78 ± 3.54 , gr75 -14.98 ± 2.23 , sensitivity(Sn); 0.71, specificity(Sp); 0.67, accuracy(Ac); 0.75, discriminant probability(Dp); 0.682 (cut-off value $-16.38 \leq$). SRZ: grN -1.85 ± 0.53 , gr75 1.87 ± 0.83 , Sn; 1.00, Sp; 0.96, Ac; 0.98, Dp; 0.926 (cut-off value $0.13 \leq$). CBF(ml/min): grN 54.83 ± 5.54 , gr75 17.41 ± 6.56 . Sn; 1.00, Sp; 1.00, Ac; 1.00, Dp was 0.998 (cut-off value ≤ 31.4). FFR(%): grN 0.99 ± 0.01 , gr75 0.81 ± 0.14 , Sn; 0.38, Sp; 1.00, Ac; 0.69, Dp; 0.806 (cut-off value ≤ 0.75). There was significant difference between grN and gr75 of each index (PSS, SRZ and CBF: $p < 0.0001$, FFR: $p < 0.01$).

Conclusion: The results proved decreased CBF of 75% CAS caused segmental LV wall systolic dysfunction. The non-invasive strain rate value of Z variable is more reliable than the invasive index of FFR and is almost the same as CBF to detect 75% CAS.

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Validity of postsystolic shortening velocity detected by Tissue Doppler Echocardiography for prediction of coronary artery disease in patients with normal resting wall motions

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Background: Postsystolic shortening (PSS) is a delayed ejection motion of the myocardium occurring after the aortic valve closure during a prolonged isovolumic relaxation time, previous studies had shown the relation between PSS and myocardial ischemia.

Aim of the work: To assess the value of PSS detected by tissue Doppler imaging (TDI) in prediction of coronary artery disease (CAD) in patients with chest pain and normal resting wall motions.

Patients and Methods: The study included 80 subjects, 41 females (51%) & 39 males (49%), who were enrolled for coronary angiography because acute chest pain, non diagnostic ECG and normal resting wall motion. All patient subjected to standard 2-D echocardiography, and (TDI) with measurement of: peak velocity of Systolic ejection phase (S'), postsystolic shortening (PSS), Early diastolic relaxation phase (E'), Atrial contraction phase (A') and Isovolumic contraction phase (VIC).

Results: According to coronary angiography, Patients were divided into 2 groups, group A (patients with CAD) It included 60 patients and group B (patients without CAD) It included 20 patients: PSS was found more frequent in group A compared group B (32% vs 13% $P < 0.01$). At mid LV level the PSS velocity was significantly higher in ischemic segments compared to non-ischemic segments: mid anterior wall (4.1 ± 3.5 VS 1.1 ± 2.8 , $P < 0.05$), mid lateral wall (4.6 ± 3.7 VS 2.6 ± 0.85 , $P < 0.001$), mid septal wall (4.3 ± 3.4 VS 4 ± 1.6 , $p < 0.05$), and mid inferior wall ($5.3 \pm 3.5 \pm 1.5 \pm 4.9$, $P < 0.001$). Kappa agreement test showed significant association between positive PSS velocity and angiographic evidence of significant CAD ($P < 0.001$). Left ventricular wall analysis of the association between the presence of postsystolic shortening and obstructive lesions of the related arteries showed strong correlation by a General Liner Model analysis ($p < 0.001$). ROC curve showed cut off value of PSS velocity for prediction of CAD (anterior wall 4.1 cm/sec, lateral wall 4.8 cm/sec, septal wall 4.4 cm/sec, and inferior wall 4.2 cm/sec) with sensitivity (63.3%, 69.5%, 63.3%, and 73.3%) and specificity of (80%, 85%, 85%, and 80%) respectively.

Conclusion: Detection of PSS by TDI may be a useful noninvasive, non provocative indicator of CAD in patients with chest pain and normal left ventricular wall motion.

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Echocardiographic predictors of in-hospital events in patients with Acute Coronary Syndrome

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Background: Aim of our study was to evaluate the role of echocardiography performed at admission in the risk stratification of patients with acute coronary syndrome (ACS).

Methods: 173 patients were prospectively enrolled (mean age 67 ± 13 years, 127 men) for ACS (91 STEMI and 82 NSTEMI). Of the STEMI patients, 68 (74%) were treated with primary PCI and 20 (21%) with thrombolysis. Rest echocardiography was performed at hospital admission, before any treatment. Assessment of lung water was performed by determining the presence of ultrasound B-lines (at least 5 detectable in lung examination).

Results: During hospitalization 39 events occurred: 13 acute heart failure, 10 cardiogenic shock, 8 ventricular fibrillation and 8 deaths. Patients with events were older (75 ± 12 vs 64 ± 11 years, $p < .001$), showed longer hospitalization (10 ± 11 vs 6 ± 2 days, $p < .001$), higher end-systolic volume (61 ± 34 ml vs 50 ± 23 , $p = .024$), left atrial volume index (38 ± 16 ml/m² vs 30 ± 11 ml/m², $p < .001$), and E/e' (15.8 ± 6.9 vs 10.5 ± 5.3 , $p < 0.001$), lower TAPSE (16 ± 5 mm vs 21 ± 4 mm, $p < .001$), and lower ejection fraction (42 ± 11 vs 52 ± 9 %, $p < .001$), higher incidence of moderate-severe mitral regurgitation (38% vs 9%, $p < .001$), restrictive transmitral pattern (71% vs 5%, $p < .001$), and presence of B-Lines (78% vs 21%, $p < .001$). Univariate and multivariate predictors of in-hospital events are reported in the Table 1. At Cox multivariable regression analysis, the presence of B-Lines and restrictive transmitral pattern, were independent predictors of in-hospital events

Conclusions: Chest ultrasound imaging plays an important role in the identification of patients with in-hospital events.

Abstract P987 Table.

	Univariate analysis		Multivariate analysis	
	HR (95% CI)	p value	HR (95% CI)	p value
Age (years)	1.026 (0.997-1.057)	0.082		
Sex (male)	0.931 (0.449-1.934)	0.849		
STEMI (%)	1.614 (0.789-3.299)	0.190		
LV end-systolic volume (ml)	1.001 (0.991 -1.010)	0.909		
LV ejection fraction (%)	0.986 (0.958 -1.015)	0.346		
Restrictive transmitral pattern (%)	4.784 (2.181-10.493)	<0.001	3.259 (1.360-7.812)	0.008
Mitral regurgitation (moderate to severe)	2.470 (1.253-4.867)	0.009		
B-lines (>5)	3.737 (1.480-7.687)	0.004	2.659 (1.036-6.827)	0.042

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Assessment of Left Ventricular twist and untwist rate in a rat model of Myocardial Infarction

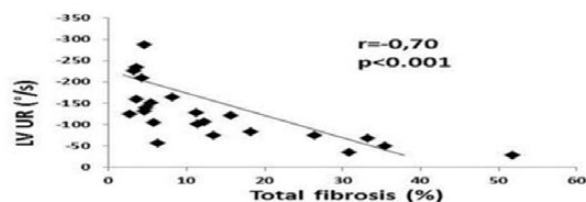
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Purpose: Left ventricular (LV) twist and untwist rate (UR) are known to be strongly related to LV systolic and diastolic function, respectively. Although these parameters are emerging as important tools to evaluate LV function, yet their assessment and physiological significance in small animals remain challenging. The study was designed to investigate how twist and UR, measured by speckle tracking imaging (STI), relate to LV function and extent of fibrosis in a rat model of chronic myocardial infarction (MI).

Methods: 23 Sprague-Dawley rats were subjected to LAD ligation (MI; n=14) or sham surgery (SHAM; n=9). 2D echocardiography at baseline (BL), day 1, day 3 and 2 months post-surgery was used to calculate LV dimensions, volumes (EDV, ESV) and global functional parameters. STI was applied to measure circumferential strain (Scirc), twist and UR. LV fibrosis was estimated from Sirius Red staining at day 1, day 3 and 2 months post-surgery.

Results: Progressive cardiac failure evaluated during 2 months was characterized by a gradual increase in EDV and ESV respectively (0.2 ± 0.04 mL to 0.8 ± 0.2 mL, and 0.04 ± 0.02 mL to 0.5 ± 0.1 from BL to 2 months post-surgery, $p < 0.05$) along with depressed ejection fraction (76 ± 9 to 32 ± 11 %, $p < 0.05$). Peak LV twist and UR progressively decreased over time and were associated respectively with a decreased Scirc ($r = -0.58$, $p < 0.001$) and an increased myocardial fibrosis ($r = -0.70$, $p < 0.001$) (fig.1).

Conclusion: Assessment of LV twist and UR is feasible in small animals. Worsening of these parameters is associated with a progressive impairment of LV function in rats with chronic MI and correlates with the amount of fibrosis present in the tissue.



Abstract P988 Figure.

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Factors associated with Right Ventricular dilation in patients with prior Q-wave myocardial infarction

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Detection of right ventricular (RV) dilation in patients with coronary artery disease is very important to identify subjects at high risk for adverse cardiovascular events. Data about factors associated with RV dilation in patients with prior Q-wave myocardial infarction (MI) are insufficient.

Purpose: To reveal factors associated with RV dilation in patients with prior Q-wave MI. **Methods:** Out of 16839 patients from coronary angiography database we selected patients with prior Q-wave MI without congenital or acquired valvular heart disease: 1263 patients without RV dilation (end-diastolic RV outflow tract diameter measured by echocardiography ≤ 27 mm) and 99 patients with RV dilation (RV outflow tract diameter ≥ 30 mm).

Results: There were more male patients in the group with RV dilation (97.0% vs 89.6%, $p = 0.018$). Body mass index (BMI) was higher in this group (31.0 ± 5.1 kg/m² vs 29.4 ± 4.6