

Comparison of Systolic and Diastolic 2d Strain Indices in the Detection of Coronary Disease

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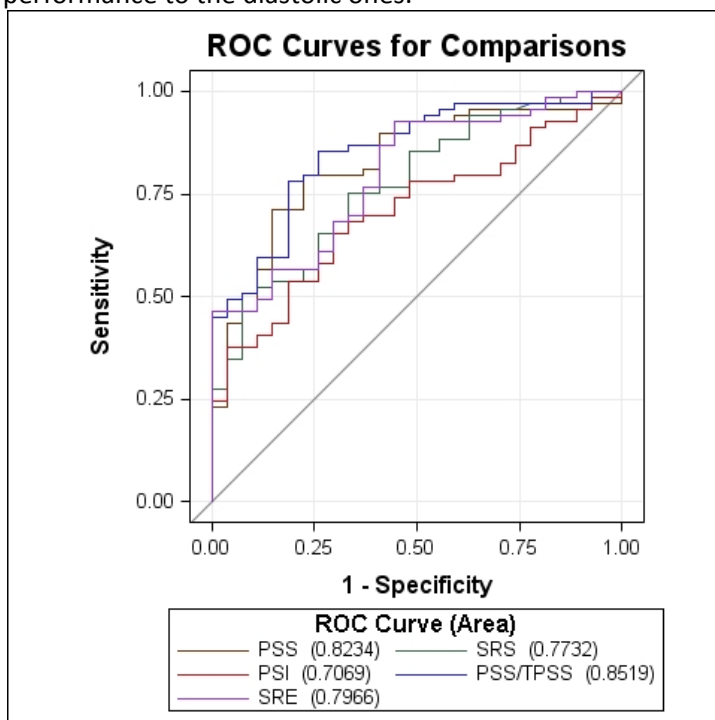
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Longitudinal strain and strain rate (SR) are well known deformation parameters reflecting left ventricular (LV) function in systole and diastole. We compared the diagnostic value of several diastolic and systolic strain and SR related LV parameters in the detection of coronary artery disease (CAD) in patients hospitalized with angina.

Methods: Peak Systolic Strain (PSS), Peak Systolic Strain Rate (SRS), Peak E Diastolic Strain Rate (SRE), Peak Systolic Strain divided by Time to Peak Systolic Strain (PSS/TPSS) and Post Systolic Shortening Index (PSI) were assessed in 97 patients hospitalized with stable angina or acute coronary syndrome and underwent coronary angiography. All 97 patients had normal global and regional LV function by echocardiography. A global LV value for each parameter was determined by numerically analyzing the distribution histogram of the parameter values in all myocardial points in the 4 chamber, 2 chamber and apical long axis views.

Results: Sixty nine patients had significant CAD on coronary angiogram. The AUC for detection of coronary disease for each parameter are shown in Figure. The parameters PSS/TPSS, PSS and SRE were the best parameters for detecting coronary disease in these population.

Conclusion: In patients hospitalized with stable angina or acute coronary syndrome systolic and diastolic strain and strain rate related parameters at rest had good (AUC>0.7) or excellent (AUC>0.8) discriminatory power to differentiate between subjects with and without CAD by angiography. The systolic parameters were similar in performance to the diastolic ones.



Anti-Xa Monitoring in Pregnant Women with Mechanical Valves Receiving LMWH: Peak or Trough Levels?

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Introduction: Low molecular heparin (LMWH) is often used for anticoagulation in pregnant women including for mechanical prosthetic heart valve (MPV). Recent AHA/ACC guidelines recommend the measurement of plasma anti-Xa factor peak levels of LMWH and adjusting the dose to achieve levels between 0.7-1.2 units/ml. In spite of these recommendations cases of valve thrombosis during pregnancy continue to occur.

Hypothesis: Recommended peak anti-Xa levels with adjusted dose LMWH given every 12 hours are associated with subtherapeutic trough levels of anticoagulation during pregnancy.

Results: We studied 26 pregnant patients receiving anticoagulation with LMWH given s/c q12 h who had both trough and peak anti-Xa levels throughout pregnancy for a total of 177 determinations. Indications for LMWH treatment were: MPV in 9 patients, MS and AF in 11 patients and others in 6. At peak anti-Xa levels between 0.7-1.2 U/ml was obtained in 93 (53%) of the measurements, but in 65% they were found to be subtherapeutic (anti-Xa level <0.6 U/ml). Subtherapeutic trough levels were found in 7/9 (78%) measurements with peak levels of 0.7-0.79 U/ml, 13/16 (81%) of 0.8-0.89 units/ml, 18/26 (69%) of 0.9-0.99 U/ml 13/24, (54%) of 1.0-1.09 U/ml, 4/17 (24%) of 1.1-1.19 U/ml, 1/11 (9%) of 1.2 U/ml. There were 51 measurements of peak anti-Xa > 1.2 U/ml, but 5 of them (10%) showed subtherapeutic trough levels. Trough levels of anti-Xa \geq 0.6 U/ml (0.6-1.2 U/ml) were found in 116 measurements. High peak levels exceeded 1.5 U/ml in only 7(6%), and 6 of these had trough levels \geq 0.8 U/ml.

Conclusions: Anticoagulation with adjusted does LMWH aimed to achieve guidelines recommended peak levels of anti-Xa is commonly associated with subtherapeutic trough levels. Routine measurements of trough anti-Xa levels have to be recommended in women with PMV treated with LMWH during pregnancy to assure adequate level of anticoagulation.

Sub-therapeutic trough Anti-Xa levels according to peak Anti-Xa levels								
Peak anti-Xa level (unit/ml)	0.7-1.2	0.7-0.79	0.8-0.89	0.9-0.99	1.0-1.09	1.1-1.19	1.2	> 1.2
Sub-therapeutic	54/101	7/9	13/16	18/26	13/24	4/17	1/11	5/5
Trough level (unit/ml)	(51%)	(78%)	(81%)	(69%)	(54%)	(24%)	(9%)	(10%)