

the absence of obstruction. The peak velocity difference between the proximal and distal part to the stent significantly increased from 1.24 ± 0.8 m/s to 2.92 ± 0.44 m/s with the higher flow rates ($p < 0.05$), and mean velocity differences significantly increased from 0.34 ± 0.29 m/s to 0.83 ± 0.34 m/s ($p < 0.05$). The V1 corrected Bernoulli equation correlated well with the catheter-measured peak-to-peak pressure gradient ($r = 0.90$, SEE = 3.17); but it overestimated the manometric measurements by $381.01 \pm 214.64\%$. **Conclusion:** Flow acceleration occurs with a stiff proximal aortic segment and a compliant distal segment with a long rigid stent interposed between them, and while small pressure gradients occur, they are not accurately estimated by the usual V1 corrected Bernoulli relationship.

POSTER SESSION

1070 Stress Echocardiography I

Sunday, March 17, 2002, 3:00 p.m.-5:00 p.m.

Georgia World Congress Center, Hall G

Presentation Hour: 4:00 p.m.-5:00 p.m.

1070-59**Outcome of Patients After Exercise Echocardiogram Suggestive of Single Vessel Coronary Artery Disease**Abdoul Elhandy, Bijoy K. Khandheria, Douglas Mahoney, Timothy E. Paterick, Kelli Burger, Patricia A. Pellikka, *Mayo Clinic, Rochester, Minnesota.*

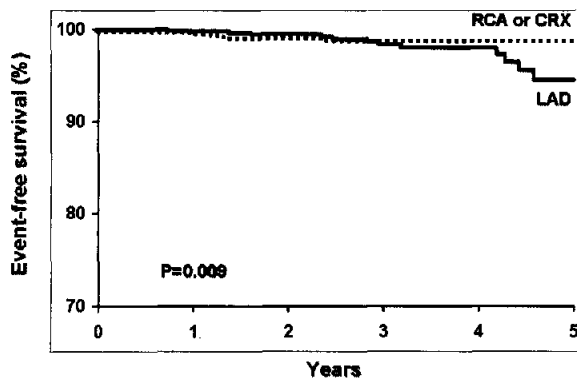
Background. Patients (pts) with exercise wall motion abnormalities (WMA) suggestive of single vessel coronary artery disease (SVD) are thought to have an intermediate risk for cardiac events. The predictors of outcome in these pts are not known.

Aims. To study the outcome of pts with WMA suggestive of SVD, and to identify the predictors of cardiac events in these pts.

Methods. Follow up was performed in 702 pts (age 64 ± 10 years, 394 men) who had WMA suggestive of SVD during symptom-limited exercise echocardiography.

Results. Abnormalities were located in the territory of the left anterior descending coronary artery (LAD) in 355 pts and in the left circumflex (LCX) or the right coronary artery (RCA) distribution in 347 pts. There were 21 cardiac events (7 cardiac deaths and 14 nonfatal myocardial infarctions) during a median follow-up of 3 years. Event rates in pts with WMA in LAD versus other distributions were 1% vs 1.6% at 2 years, 3.2% vs 2.1% at 3 years and 10.8% vs 2.1% at 5 years (graph), $P = 0.009$. A history of myocardial infarction was the only clinical predictor of events. WMA in the distribution of LAD were incremental to clinical data and ejection fraction in the prediction of events (global $\chi^2 = 29$ versus $\chi^2 = 38$, $P = 0.003$).

Conclusion. Pts with single-vessel distribution of exercise WMAs have low event rate if the WMA were located in the RCA or the LCX distribution. Pts with WMAs in the LAD territory have a higher event rate during intermediate term follow up.

**1070-60****Which is Accurate to Detect the Coronary Stenosis Using Adenosine Triphosphate Stress Test? Wall Motion Abnormality or Replenishment Curve Analysis of Real-Time Myocardial Contrast Echocardiography**Fuminobu Ishikura, Kentaro Ohtani, Jyuri Okazaki, Hideo Hirayama, Yasushi Kashiwagi, Sachiko Yagura, Tsutomu Toshiida, Akiko Iwata, Hiroyuki Kayano, Toshihiko Asanuma, Shintaro Beppu, *Osaka University, Suita, Japan.*

Background and Purpose: Analysis of replenishment curve after bubble destruction at stress test in real-time myocardial contrast echocardiography (MCE) is useful to detect coronary stenosis. Wall motion abnormality is also the marker of myocardial ischemia. Aim of this study is to examine the accuracy of each method for diagnosis of coronary stenosis by adenosine triphosphate (ATP) stress test.

Methods: Ten dogs were examined before and after having severe stenosis in the circumflex coronary artery (LCx). Each flow volume of LCx and the left anterior descending coronary artery (LAD) was measured by an ultrasonic flowmeter, and coronary flow reserve (CFR) was calculated using ATP administration. Real-time MCE along the short axis was recorded by Sequoia 512 (Siemens) during infusion of 0.1 ml/min of Optison®. The wall motion abnormalities were evaluated and the replenishment curve was analyzed by fitting to an exponential function of $y = A(1 - e^{-\beta t})$ in the mid-septum (LAD region) and lateral wall (LCx region) before and after ATP infusion.

Results: At baseline, wall motion was normal and replenishment curve was equivalent between LAD and LCx regions irrespective of ATP in all dogs. After establishing LCx stenosis, CFR of LCx was low as 1.14 ± 0.22 , while that of LAD was 2.83 ± 0.81 . No dog showed wall motion abnormalities, and values of β and $A^*\beta$ did not differ between two regions before ATP infusion. Regional difference of these indices was 0.1 ± 0.09 and 1.52 ± 1.87 , respectively. During ATP infusion, wall motion abnormality was evident in 6 cases (60%), but all were hypokinesia. On the other hand, values of β and $A^*\beta$ at LCx region were lower than those at LAD region (β : 0.46 ± 0.23 vs. 1.19 ± 0.54 , $A^*\beta$: 6.96 ± 2.87 vs. 22.8 ± 14.0). Regional difference of these indices was significantly large (0.73 ± 0.57 and 15.81 ± 13.64). When cut-off level of regional difference of these indices was determined as mean value \pm standard deviation before ATP infusion, sensitivity of diagnosis was 90% and 100% from β and $A^*\beta$, respectively. Specificity was 90% by both indices. **Conclusion:** Accuracy of diagnosis of coronary stenosis is extremely high in real-time MCE in comparison with wall motion assessment during ATP administration.

1070-61**Effective PredischARGE Triage at the Emergency Room With Dobutamine Stress Echocardiography and Cardiac Troponin T**Radha Bholasingh, Jan H. Cornel, Otto Kamp, Jan P. van Straalen, Gerard T. Sanders, Jan G. Tijssen, Victor A. Umans, Cees A. Visser, Robbert J. de Winter, *Academic Medical Center, Amsterdam, The Netherlands.*

Background: Risk stratification of patients with chest pain remains a challenge. We prospectively studied the prognostic value of cardiac troponin T (cTnT) and dobutamine stress echocardiography (DSE) in low to intermediate risk chest pain patients.

Methods: Patients presenting at the emergency room ≤ 6 hours of chest pain onset and a normal or non-diagnostic electrocardiogram were eligible. cTnT (measured on admission and at 12 hours after symptom onset) ≥ 0.06 ng/ml was considered abnormal (cTnT+). DSE was performed ≤ 24 hours after admission, after ruling out unstable coronary artery disease by standard protocol. DSE was positive if new wall motion abnormality occurred (DSE+). DSE and cTnT results were blinded. All patients were followed up at 6 months. Cardiac events were cardiac death, acute myocardial infarction, unstable angina requiring hospital admission, and revascularization.

Results: In total, 406 patients were included. At 6 months, 31 patients had experienced a cardiac event: cardiac death (3), acute myocardial infarction (4), unstable angina (10), revascularization (14). Results are displayed in the table.

Conclusions: For triage at the emergency room, DSE has independent prognostic value in addition to serial cTnT in low to intermediate risk chest pain patients. Importantly, in patients with a normal troponin T, DSE was able to distinguish low risk patients from not low-risk patients.

	Cardiac event rate (%)	Odds Ratio (95%CI)	p-value
cTnT-	22/377 (5.8)	-	
cTnT+	8/28 (28.6)	6.46 (2.56-16.30)	<0.0001
DSE-	19/376 (5.1)	-	
DSE+	12/32 (37.5)	11.27 (4.81-26.42)	<0.0001
cTnT-/DSE-	14/351 (4.0)	-	
cTnT-/DSE+	8/26 (30.9)	10.70 (3.98-28.78)	<0.0001

1070-62**Does Real-Time Perfusion Have Any Incremental Value for the Sensitivity and Specificity of Dobutamine Stress Echocardiography?**Meida S. Dolan, Amr El-Shafei, Michelle Bierig, Amit Doshi, Jiri Sklenar, Toniya Singh, Denise Sheriff, Alan Maniet, Mort Kern, Arthur J. Labovitz, *Saint Louis University Hospital, St. Louis, Missouri.*

Contrast administration during Dobutamine Stress Echo (DSE) in technically difficult studies leads to improved sensitivity and specificity as compared to patients with good quality images has already been shown. However, there is very limited data related to simultaneous assessment of perfusion and wall motion in clinical setting. We therefore evaluated 101 patients who underwent DSE with myocardial perfusion during continuous infusion of Optison. All patients underwent coronary angiography. Quantitative perfusion analysis, regional wall thickening (WT) were performed. Overall characteristics of the study group: 42% of pts had 3 vessel disease, 44% had history of myocardial infarct, 56% LAD lesion, 54% had resting wall motion abnormalities. Sensitivities and specificities were calculated for DSE and nuclear. Table

Overall sensitivity of DSE for detecting coronary artery disease (lesions of 70% or greater) was slightly higher with contrast with additive information derived from quantitative perfusion and wall thickening analysis performed (71% vs 80%, $p = 0.06$), however still lower than sensitivities obtained with nuclear imaging (80% vs 88%, $p = 0.06$). On the other hand, specificity was decreased slightly with perfusion information (79% vs 74%, $p = NS$). **Conclusion:** Contrast administration during Dobutamine Stress Echo combined with perfusion analysis in technically difficult studies leads to improved sensitivity comparable to that obtained with nuclear imaging at the expense of specificity.

	SENSITIVITY (%)	SPECIFICITY (%)
DSE/QUALITATIVE (Visual)	71	79
DSE/WT & PERFUSION	80*	74
NUCLEAR	88	84
P*	0.06	NS