Use of an ED-based Observation Unit Followed by Outpatient Stress Testing in Chest Pain Patients with Prior Coronary Artery Disease History: Evaluation of Safety and Prognostic Utility

Yasser Khalil MD
Lehigh Valley Health Network

Prasant Pandey MD
Lehigh Valley Health Network, Prasant.Pandey@lvhn.org

Melvin H. Schwartz MD
Lehigh Valley Health Network, Melvin_H.Schwartz@lvhn.org

Maida Abdul-Latif MD
Lehigh Valley Health Network

Martin E. Matsumura MD
Lehigh Valley Health Network, Martin_E.Matsumura@lvhn.org

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Use of an ED-based Observation Unit Followed by Outpatient Stress Testing in Chest Pain Patients with Prior Coronary Artery Disease History: Evaluation of Safety and Prognostic Utility

Yasser Khalil, MD; Prasant Pandey, MD; Mel Schwartz, MD; Maida Abdul-Latif, MD; Martin E.Matsumura, MD

Lehigh Valley Health Network, Allentown, PA

Objective

Chest pain (CP) observation units are increasingly used to efficiently triage patients with CP but without high-risk features such as positive biomarkers or pathologic ECG changes. However, little data is available regarding the use of a CP observation strategy in patients presenting with low-risk CP but with history of prior Coronary Artery Disease (CAD) events. The aim of the present study was to determine the outcomes of patients with CP and established CAD managed with observation followed by outpatient stress myocardial perfusion imaging (MPI) and to determine the prognostic value of this strategy.

Methods

Retrospective analysis of patients with CP managed with observation followed by outpatient stress MPI at a single community teaching hospital and followed up for 3 years for CV events (defined as death, MI, or need for urgent revascularization). Follow-up event rates were stratified by CAD history at the time of initial CP evaluation.

Results

A total of 375 patients were included: 111 with and 264 without a CAD history. All patients safely completed outpatient stress MPI within 72 hours of observation. A stress MPI demonstrating inducible ischemia (+ MPI) effectively identified patients at risk for CV events regardless of CAD history, although pts with CAD history had a significantly higher rate of +MPI (31.5% vs. 10.6% for patients with +CAD vs. –CAD history, respectively, p=<0.001). **Table 1.**

Patients with a non-ischemic stress MPI (-MPI) and without a CAD history had, as expected, very low rates of short- and long-term CAD events (0.8%, and 1.3% at 1 year and 3 years, respectively). In contrast, event rates of those patients with a non-ischemic test but a +CAD history were significantly higher (5.3% and 6.6% at 1 year and 3 years, respectively; p=0.044 and p=0.034 compared to CAD- patients).

Table 2. To determine if stress MPI testing appeared to be a valuable prognostic tool for CP patients with a history of CAD, we developed a multivariable logistic regression model using patient demographic and risk factor data as well as MPI results: in this model a positive MPI proved to be a strong independent predictor of long-term CV events **Table 3.** (OR=4.75, 95% CI 1.35-16.70, p=0.015).

Conclusion

A strategy of observation followed by stress MPI can safely and effectively risk stratify CP patients with prior CAD for long-term CV events. However, our data suggests these patients are at increased risk of CV events even after a low-risk follow-up stress MPI study. Thus, patients presenting with CP and managed with a strategy of observation and a non-ischemic stress MPI still warrant close short and long term monitoring for recurrent events.

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Table 1. Outcomes of testing and rates of cardiac catheterization, comparing ptients with vs. without CAD history.

	+CAD History (n=111)	-CAD History (n=264)	P
Stress ECG ischemic, %	17.1	13.3	0.102
SPECT MIBI ischemic, %	31.5	10.6	<0.001
Cardiac Cath, %	13.5	5.3	0.012

Table 2. Follow-up event rates stratified by ischemic (MPI+) vs. non-ischemic (MPI-) stress myocardial perfusion imaging

(CAD = coronary artery disease; CV = cardiovascular)

	+CAD History (n=111)			-CAD History (n=264)		
	MPI+	MPI-	P	MPI+	MPI-	P
30 day CV event %	14.3	2.6	0.053	17.9	0.8	<0.001
1 year CV event %	17.1	5.3	0.097	21.4	0.8	<0.001
3 year CV event %	22.9	6.6	0.031	25.0	1.3	<0.001

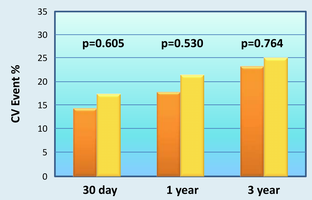
Table 3. Multivariable logistic regression evaluating factors independently associated with 3 year CV events in patients with history of CAD

(MPI = stress myocardial perfusion imaging, M = male sex)

Variable	Odds Ratio	95% CI	P
Age	0.96	0.01-1.02	0.168
Sex (M)	1.28	0.27-6.06	0.757
MPI+	4.75	1.35-16.70	0.015
Hypertension	1.15	0.17-7.71	0.885
Diabetes Mellitus	0.67	0.14-3.13	0.612
Hypercholesterolemia	0.18	0.020-1.61	0.124

Follow-up event rates after ischemic stress MPI, comparing patients with and without CAD history

(orange bars = +CAD history; Yellow bars = -CAD history)



Follow-up event rates after non-ischemic stress MPI, comparing patients with and without CAD history

(orange bars = +CAD history; Yellow bars = -CAD history)