

802-5 Determinants and Outcomes of Congestive Heart Failure Complicating Acute Coronary Syndromes: Observations From the Global Registry of Acute Coronary Events

Philippe Gabriel Steg, Omar Dabbous, Alain Cohen-Solal, Marie-Claude Aumont, Christopher P. Cannon, José López-Sendón, Andrzej Budaj, Werner Klein, for the GRACE investigators, *Hospital Bichat, Paris, France.*

Background: Coronary artery disease is the leading attributable cause of congestive heart failure (CHF) in industrialized countries. Yet little is known about the determinants and outcomes of CHF complicating acute coronary syndromes (ACS), at least outside of the selected patient populations enrolled in clinical trials.

Methods: GRACE is a prospective registry enrolling ACS patients from 94 hospitals in 14 countries. Patients admitted to GRACE hospitals were stratified according to the presence or absence of CHF (Killip class 2 or 3) at admission. Patients with a prior history of CHF or in cardiogenic shock were excluded.

Results: Data from 10,655 ACS patients were analyzed. Selected variables are shown in the table. CHF was a frequent complication in all forms of ACS, including 9% of unstable angina patients. Multivariate analysis showed that the main predictors of CHF were (in order): age (OR 1.06/year), systolic blood pressure (OR:0.99/mm Hg), cardiac arrest at admission (OR 5.17), STEMI (OR 2.8), heart rate (OR 1.01/beat), initial creatinine (OR:1.28), Q-waves (OR 1.54), and diabetes (OR 1.54). CHF was associated with less frequent use of percutaneous procedures, a reduced use of β -blockers, a more than threefold increase in the in-hospital death rate and a prolonged hospital stay across all ACS subsets.

Conclusions: CHF is a common and ominous complication of all forms of ACS. Relatively infrequent invasive management of patients with CHF represents opportunities for improved care.

	STEMI (N=3630)			NSTEMI (N=2890)			UA (N=4135)		
	CHF+	CHF-	P	CHF+	CHF-	P	CHF+	CHF-	P
N (%)	15	85		16	84		9	91	
Age (yrs)	69.7	62.2	<.0001	73.1	64.6	<.0001	70.1	63.9	<.0001
Male (%)	61.1	75.3	<.0001	58.8	70.7	<.0001	60.4	64.8	.0989
Diabetes (%)	26.7	18.6	<.0001	33.6	21.6	<.0001	29.6	22.4	.0024
Cardiac cath (%)	54.6	56.3	.4757	46.8	59.3	<.0001	32.9	45.1	<.0001
PCI (%)	38.4	41.6	.1503	21.0	32.2	<.0001	16.2	19.6	.1260
Hospital death (%)	15.3	4.1	<.0001	9.9	2.8	<.0001	7.0	1.6	<.0001
Length of stay (days)	11.09	9.01	<.0001	10.27	7.96	<.0001	7.31	7.16	.2882

ORAL CONTRIBUTIONS

808 Cardiogenic Shock and Circulatory Support Devices

Monday, March 18, 2002, 9:15 a.m.-10:30 a.m.
Georgia World Congress Center, Room 364W

9:15 a.m.

808-1 Clinical Predictors of In-Hospital Death in Patients With Cardiogenic Shock Selected to Undergo Early Revascularization

Simon R. Dixon, Hassan Alkafri, Aziz Chami, Mark Pica, Judith A. Boura, William W. O'Neill, *William Beaumont Hospital, Royal Oak, Michigan.*

Background: Patients with cardiogenic shock (CS) secondary to acute myocardial infarction (AMI) have a dismal prognosis even with an early revascularization strategy. Clinical predictors of survival after percutaneous revascularization for CS have not been well defined.

Methods: From 1993-1999, 264 AMI patients with CS were admitted to William Beaumont Hospital. Of these 136 (52%) were selected to undergo percutaneous revascularization within 24-hours of shock-onset. CS was defined according to criteria established by the SHOCK investigators. Baseline clinical variables were examined to identify predictors of in-hospital death.

Results: The mean in-hospital mortality from 1993-1999 was 52%. No significant change in the mortality rate was observed during this period (p=0.67). Patients who died were more likely to be older (67 \pm 11 vs. 63 \pm 10 yrs, p=0.05), have a higher heart rate (HR 92 \pm 30 vs. 74 \pm 32, p=0.048), higher serum glucose (277 vs. 228mg/dL, p=0.045), higher serum creatinine (1.8 \pm 1.4 vs. 1.15 \pm 0.3 mg/dL, p=0.0012), and a history of congestive heart failure (CHF 46% vs. 22%, p=0.009) or peripheral vascular disease (PVD 25% vs. 9%, p=0.024). Infarct location and blood pressure did not correlate with in-hospital death. Using multiple stepwise logistic regression analysis, independent clinical predictors of in-hospital death were: creatinine clearance \leq 75ml/min (OR 7.9, CI 1.03-62.4, p=0.04), HR > 100/min (OR 13.1, CI 1.14-151), and a history of PVD (OR 38.6, CI 2.1-724, p=0.01) or CHF (OR 17.6, CI 2.23-134, p=0.005).

Conclusion: Baseline clinical variables provide important prognostic information in patients with CS undergoing early percutaneous revascularization. These data permit early risk stratification and may improve selection of patients with CS who will benefit from mechanical reperfusion.

808-2 Do Women With Refractory Angina Respond as Well as Men to Treatment With Enhanced External Counterpulsation?

William E. Lawson, Elizabeth Kennard, Georgiann Linnemeier, Richard Holubkov, Mandeep Mehra, IEPB Investigators, *SUNY, Stony Brook, New York, U of Pittsburgh School of Public Health, Pittsburgh, Pennsylvania.*

Background: Women (F) benefit less and have greater morbidity and mortality than men (M) with revascularization for severe coronary disease. Enhanced external counterpulsation (EECP) successfully treats angina refractory to medical therapy in patients (pts) with limited revascularization options. Whether F tolerate and benefit equally from EECP in this high risk group of pts was studied.

Methods: 3,126 consecutive pts (M= 2,340; F = 786) in the International EECP Patient Registry were analyzed by intention to treat using unpaired t test and multiple logistic regression for comparison of demographics, adverse events and dropout, angina and quality of life outcomes; significance at p<0.05.

Results: Groups were similar in: age (66.4 \pm 10.4 years), duration of coronary disease (10 years), prior angioplasty (63%), hyperlipidemia, non-cardiac vascular disease. The groups M vs F differed significantly in: prior bypass (69.7 vs 61.2%), prior infarct (68.5 vs 60.2%), heart failure (29.3 vs 33.2%), diabetes (38.6 vs 53.0%), hypertension (67.3 vs 77.1%), ejection fraction (45.1 vs 49.6%), multivessel coronary disease (80.2 vs 71.2%), candidate for revascularization (20.3% vs 28.9%). Events during EECP were comparable in both groups. However, F gender was a predictor (odds ratio 1.62; confidence interval [CI] 1.32-1.99) of failure to complete the usual prescribed 35 hours of EECP, along with current smoking (odds ratio 1.84; CI 1.33-2.53) and heart failure (odds ratio 1.51; CI 1.24-1.84). Despite this, F gender was not a predictor of failure to reduce angina (odds ratio 0.93; CI 0.75-1.16). At baseline 80.2% of M and 84.8% of F were in Canadian Cardiovascular System Angina Class III/IV. Post EECP 73.3% of M and 70.9% of F improved > 1 angina class and only 24% of M and 31.8% of F remained in angina class III/IV; 17.8% of M and 13.8% of F were angina free. Satisfaction, health and quality of life measures improved comparably and significantly with EECP treatment in both groups.

Conclusions: Despite increased diabetes and heart failure and lower EECP augmentation, women improved equally and significantly in CCS anginal class and in quality of life measures. Women demonstrate benefits equal to men with EECP treatment.

9:45 a.m.

808-3 Temporal Trends in Percutaneous Treatment for Cardiogenic Shock Due to Acute Myocardial Infarction: Have Stents and Glycoprotein Receptor Inhibitors Improved Outcome?

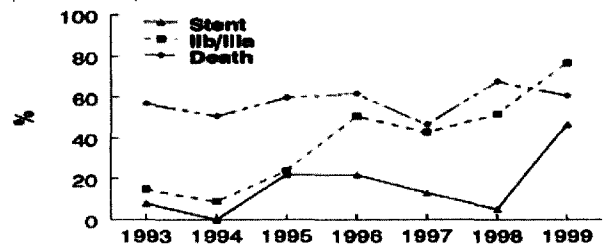
Hassan Alkafri, Simon R. Dixon, Aziz Chami, Mark Pica, Judith A. Boura, William W. O'Neill, *William Beaumont Hospital, Royal Oak, Michigan.*

Background: Cardiogenic shock (CS) is the leading cause of death in patients presenting with acute myocardial infarction (AMI). Few data exist regarding the impact of more recent interventional strategies and adjunctive therapies on clinical outcome in this population.

Methods: From 1993 to 1999, 264 patients with CS secondary to AMI were admitted to our institution. Of these 136 (52%) were selected to undergo percutaneous revascularization within 24-hours of shock-onset. Trends in the utilization of stents and glycoprotein receptor inhibitors (Ib/IIIa) were examined in relation to the incidence of in-hospital death.

Results: The use of adjunctive Ib/IIIa inhibitors increased significantly during this period, particularly from 1996 (p<0.001 for trend). Stenting was performed more frequently from 1995 (p for trend = 0.0012). The overall in-hospital mortality rate was 52% (n=70/136). No significant change in the mortality rate was observed from 1993-1999 (p=0.88).

Conclusion: Despite increased utilization of Ib/IIIa inhibitors and stents in the treatment of patients with CS secondary to AMI, this has not been associated with a significant improvement in hospital survival.



10:00 a.m.

808-4 Abnormal Diurnal Pattern of Blood Pressure in Patients With Left Ventricular Assist Devices

Umesh N. Khot, Bhupinder Singh, Tiffany Buda, Nicholas G. Smedira, Patrick M. McCarthy, Mike Yeager, James B. Young, Randall C. Starling, *The Cleveland Clinic Foundation, Cleveland, Ohio.*

BACKGROUND: In patients with left ventricular assist devices (LVAD), hypertension is a common clinical problem often requiring aggressive management. Furthermore, recent reports have suggested that hypertension may be a risk factor for the development of early device failure. Little is known regarding the pathophysiology of blood pressure (BP)