

**Prognostic Significance of Heart Rate for Predicting Cardiac Death
in Post-Infarction Patients on Beta Blocker Therapy**

YY Fadhil, W Zareba, AJ Moss.

University of Rochester Medical Center, Rochester, NY

Background: Heart rate has been considered a prognostic factor in post infarction patients, however, there are no data regarding the predictive value of elevated heart rate in patients on beta-blocker therapy. We aimed to determine the risk of cardiac death associated with elevated heart rate in post infarction patients on and off beta-blockers.

Methods: Resting heart rate was measured on pre-discharge ECGs in 4,462 post infarction patients enrolled in MPIP, MDPIT, and THROMBO studies with 2,513 (56%) patients on beta-blockers and in 1,947 (44%) patients not taking beta-blockers. Heart rates were analyzed separately in these two groups by quartiles. Cardiac death was the endpoint of the study and multivariate Cox analysis was used to determine predictive value of heart rate separately in patients on and off beta-blockers after adjustment for clinical covariates.

Results: During a mean 28-month follow-up, 121 (5%) patients on beta-blockers died and 281 (14%) patients not taking beta-blockers died ($p < 0.001$). Mean heart rate in these groups was 76 bpm and 86 bpm respectively ($p < 0.001$). Results of multivariate Cox analysis after adjustment for clinical covariates entering model at $p < 0.05$ (age ≥ 60 , ejection fraction $\leq 35\%$, history of previous MI, pulmonary congestion, diabetes, hypertension, ACE-inhibitor, and aspirin usage) for each group-specific quartile are shown in the table. Patients with a heart rate > 80 bpm on beta-blocker therapy were at an increased ($> 60\%$) risk of cardiac death as were patients with a heart rate ≥ 65 bpm not taking beta-blockers. Beta-blockers were associated with a substantial reduction of mortality at each level of heart rate.

Conclusions: Elevated heart rate is predictive for cardiac death in post-infarction patients, but different cut-offs need to be used for identifying high-risk patients (≥ 65 bpm off beta-blockers and > 80 bpm on beta blockers). Heart rate could be used to optimize beta blockade therapy leading to decrease risk of cardiac death.

	1 st Quartile	2 nd Quartile	3 rd Quartile	4 th Quartile
Off Beta Blockers				
Heart Rate Range (bpm)	<65	65-75	76-90	>90
Hazard Ratio (p-value)	1	1.61 (0.03)	1.67 (0.02)	2.17 (< 0.001)
On Beta Blockers				
Heart Rate Range (bpm)	<64	64-72	73-80	>80
Hazard Ratio (p-value)	1	1.28 (0.36)	0.84 (0.58)	1.69 (0.05)