PREDICTORS OF EARLY REHOSPITALIZATION IN PATIENTS WITH ACUTE CORONARY SYNDROME

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Background:
- Readmission following an acute coronary syndrome (ACS) is frequent in our community. Patient-specific factors identifying those at risk of readmission are poorly described.
- Readmissions, in general, and following percutaneous coronary intervention (PCI), in particular, represent a significant clinical and economic burden to our healthcare system.
- Identifying the causes of readmission may help identify strategies to prevent readmission.

Methods:
- Analyzed variables:
  - Type of acute coronary syndrome (STEMI/NSTEMI/APHNS), location of MI, gender, age, risk factors and comorbidities: hypertension (HTA), hyperlipidemia (HLP), diabetes mellitus (DM), chronic obstructive pulmonary disease (COPD), coronary artery disease (CAD), peripheral vascular disease (PVD), cerebrovascular disease (CVD), ejection fraction (EF%), type of treatment (PCI versus noninvasive), extensiveness of coronary disease, GRACE and TIMI risk score, occurrence and type of morbidity during hospitalization, and reason for rehospitalization (ischemic events, heart failure, malignant arrhythmias etc)
- Measured variables:
  - Heart rate (HR), systolic blood pressure (SBP), body mass index (BMI), ejection fraction (EF%), GRACE risk score and TIMI risk score.
- Statistical analysis:
  - SPSS 17 statistical package, descriptive and comparative analysis, t-test, Chi square, univariate (binary logistic and linear regression) and multivariate linear regression (stepwise backward).

Results:
- 463 patients were enrolled: 68.9% males, mean age 60.4±10.9, and 31.1% females, mean age 64.9±12.0 (p 0.000).
- MI type: STEMI 75.8%, NSTEMI 11.2%, APNS 13%.
- MI location: 40.2% anterior, 39.7% inferior, 3% lateral and 3.7% multiple locations (p 0.000).
- Risk profile: 15.3% HCAD, 27% HF, 62% HTA, 21.5% DM, 5.8% PVD, 2.6% COPD.
- Mean BMI was 27.3 ± 2.9, mean SBP 138.8 ± 28.5 mmHg, mean HR 84.3 ± 42.2, mean EF (in 208 pts.) 50.2 ± 10.4%, mean GRACE score (in 72 pts.) was 148.9 ± 60.6, mean TIMI score (in 263 pts.) was 3.9 ± 2.3.
- 87.5% were treated with PCI procedure, with mean disease CA 1.84 (range 1-5), median 1 (p 0.000).
- Hospital morbidity was present in 16% of pts., 6.9% minor bleeding complications, 3% major bleeding complications, 2.4% acute HT, 1.9% pericardial effusion, and 1.1% early stent thrombosis.
- Early rehospitalization rate was 6.3% (29/463): 14 ischemic/trombotic events; 9 acute heart failures, 3 malignant arrhythmias, and three fatal events.
- Univariate predictors of RH: HR (R square 0.014, p 0.014, beta .16, r - .217, p 0.002); EF (R square 0.055, p 0.001, beta - .234, r - .231, p 0.001); HTA was significantly associated with reduced hospitalization risk (Chi square 4.28, p 0.039, exp B .405, p 0.054); diabetes (Chi square 10.04, p 0.002, exp B 3.45, p 0.001), PVD (exp B 2.85, p 0.070), early in-hospital morbidity (exp B 2.12, p 0.084), and NSTEMI pts. had OR 1.3, and APNS pts. OR 1.16 for rehospitalization (higher but not significantly in comparison to STEMI pts.).
- Multivariate model with variables that were found significantly associated with RH, identified two strong independent predictors of early rehospitalization (mean square .424, sig 0.000), EF (beta -.220, p 0.001), and diabetes (r 2.52, p 0.012).

Conclusion:
- Left ventricular systolic dysfunction was again proven to be a strong predictor of the clinical outcome in terms of early hospital readmission in patients with acute coronary syndrome. No matter how they were treated, and diabetes location was the single strong independent predictor-risk factor for this event.

Comparative analysis was performed between patients with early rehospitalization and others.

Gender

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**Type of ACS**

- STEMI
- NSTEMI
- APHNS

**Risk profile**

- HCAD
- HF
- HTA
- DM
- PVD
- COPD

**BMI**

- 27.3 ± 2.9

**SBP**

- 138.8 ± 28.5 mmHg

**HR**

- 84.3 ± 42.2

**EF**

- 50.2 ± 10.4%

**GRACE score**

- 148.9 ± 60.6

**TIMI score**

- 3.9 ± 2.3

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**Type of treatment**

- PCI
- Noninvasive

**Location**

- Anterior
- Inferior
- Lateral

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**Reasons for rehospitalization**

- Ischemic events
- Heart failure
- Malignant arrhythmias

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**Group statistics**

- Variables associated with reduced hospitalization risk
- Variables associated with increased hospitalization risk

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**Multivariate model**

- EF beta -.220, p 0.001
- Diabetes r 2.52, p 0.012

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**Conclusion**

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