Predictors of Early Recurrent Events after Acute Coronary Syndromes among Patients Younger Then 50: A Large-Scale Analysis Based on National Healthcare System Administrative Data

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1. Short Communication

Patients with acute coronary syndromes are at high risk of recurrences. Identifying patients at higher risk of early recurrent events after ACS may provide the opportunity of targeting these subjects with intensive pharmaco-therapeutic preventive strategies. These concepts are especially true among younger patients, that, despite accounting for a small minority of ischemic heart disease patients, are exposed to the longest risk for recurrence [1].

Smoking is certainly one of the most important risk factors in this population and patients often lack warning symptoms of escalating chest pain [2].

It is known that coronary angiography tends to reveal less extensive disease in comparison with older patients [3]. Longer prognosis is relatively poor in younger patients, particularly when they show reduced left ventricular ejection fraction [4]. There is anyway scares knowledge about rate of recurrences and predictors of such an event in younger patients.

The objective of this study is to determine predictors of recurrent events early after ACS focusing on younger patients.

We retrieved admissions to National Health System hospitals in the region of Lombardy (Italy) between January 2010 and December 2014. A restriction using ICD9 codes for acute myocardial infarction (410) and unstable angina (411.1) was made. All admissions lasting less than 20 days were included. Data were pooled per personal code.

Only patients with at least two admissions with an interval of at least 5 days between each admission were considered. Data were analyzed in multiple logistic regression models using STATA version 13.0.

Among 104,360 ACS admissions between 2010 and 2014, 3651 patients with recurrent events matching our inclusion criteria were included in this analysis.

Mean age was 69.2±11.5 years, 28% of patients were women, 19.6% had hypertension, 19.3% had dyslipidemia, 24.6% had diabetes, 10.6% had chronic kidney disease, and 13% of patients had heart failure at the time of first event.

We focused on the 228 subjects of this population that were younger than 50 years at the time of first admission.

Mean age was 44.4±4.2 years, 15% of patients were women, 12.2% had hypertension, 24.5% had dyslipidemia, 13.6% had diabetes, 7.8% had chronic kidney disease, and 4.8% of patients had heart failure at baseline.

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Recurrent events (STEMI, NSTEMI or UA) were stratified by time from the first event: 11% of recurrences occurred within 1 month, 60% within 1 year. When considering patients under 50 years old we found that 9.2 % of recurrences occurred within 1 month and 55% within 1 year.

In a regression model, the strongest predictor of early (within 6 months) recurrent events were age (OR 1.02, 95% CI 1.01-1.02) and heart failure (OR 1.22, 95% CI 1.00-1.50) at baseline. Findings were consistent in an analysis limited to very-early (<1 month) events. **(Figure 1)**.

Previous percutaneous (OR 0.75, 95% CI 0.59-0.84) and surgical (OR 0.81, 95% CI 0.67-0.96) revascularization were protective on recurrences at 6 months.

Regarding younger patients the only protective factor against early recurrences (< 6 months) was found to be hypertension (OR 0.35, 95% CI 0.12- 0.93).

Men were at lower risk than women (OR 0.39, 95% CI 0.15-0.97) to be hospitalized for a second ACS within one year from the first episode.
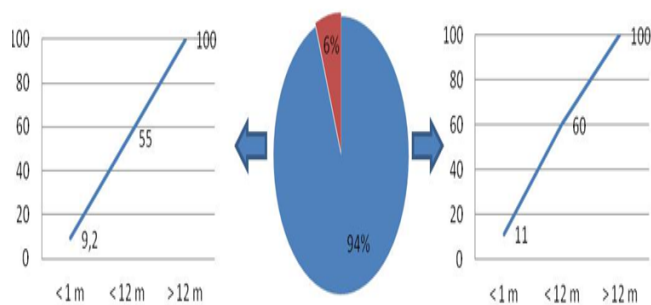

Figure 1: similar pattern of time to the first recurrence (percental values) among patients younger and older than 50 years.

2. Conclusions

Older age and heart failure at baseline represent the stronger predictors of early recurrent events after ACS. Being hypertensive seems to protect younger patients from an early recurrence of ACS after the first episodes, while women have higher risk than men. Intensifying preventive pharmaco-therapeutic strategies at discharge in older patients and patients with heart failure, together with interventions among younger women, should be evaluated in future strategies with the aim of reducing the early risk of recurrences in these patients.

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