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Patient-dependent variables affecting treatment and prediction of acute coronary syndrome are age-related
A study performed in Israel

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Abstract

Background: Acute coronary syndrome (ACS) prevails in older patients and is associated with higher morbidity and mortality. Little is known about patient-related variables that may affect course and treatment of ACS in older vs. younger with acute chest pain.
Methods: Situational, circumstantial, and other patient-related variables were assessed in 1000 unselected consecutive older (≥70 years) and younger (<70 years) patients admitted with chest pain and possible ACS.
Results: In 182 older vs. 818 younger patients, prevalence of females, those not speaking the local language, living alone, lower education level, non-smokers, diabetes, hypertension, preexisting coronary artery disease, and attempting some form of self-treatment before seeking medical help were significantly greater ($P<0.001$). Interval from chest pain onset to emergency department arrival was longer ($P=0.05$), and a higher proportion of the older considered hospitalization mandatory, suspecting ACS ($P<0.001$). ACS eventually developed in 19.1% of younger and 39% of older patients ($P<0.001$). On multivariate analysis, most predictive of ACS in the younger group were: preexisting coronary artery disease (OR 5.27; 95% CI 3.44–8.07, $P<0.001$), current smoking (OR 1.78; 95% CI 1.16–2.75, $P=0.002$), male sex (OR 1.57; 95% CI 1.0–2.59, $P=0.07$), and older age (OR 1.25; 95% CI 1.11–1.42, $P=0.005$). In the older group, these were: not speaking the local language (OR 2.39; 95% CI 1.19–4.79, $P=0.005$), preexisting coronary artery disease (OR 1.95; 95% CI 1.0–3.87, $P=0.026$), direct emergency department arrival (OR 1.9; 95% CI 1.0–3.77, $P=0.066$), and diabetes (OR 1.84; 95% CI 1.0–3.56, $P=0.079$).
Conclusions: We defined age-associated differences in patient-related variables that may predict ACS and affect treatment negatively. These variables might improve risk stratification upon hospitalization.

Keywords: Chest pain; Acute coronary syndrome; Older age; Patient-related variables; Risk stratification

1. Introduction

Prompt diagnosis and early treatment of acute coronary syndrome had been proved no less important in the advanced age than in the younger patients [1–3]. However, acute coronary syndrome, which prevails in elderly patients, is associated with a higher morbidity and mortality than in the younger [3–11]. Multiple cardiovascular risk factors, preexisting coronary artery disease, age-related pathophysiological changes, more frequent complications of acute coronary syndrome and comorbid conditions are contributory [4,6,9,11,12]. Moreover, it is well recognized that older patients are frequently denied prompt and appropriate treatment of acute coronary syndrome without any justification or valid contraindication [4,6,8–10,12].

While the reasons underlying responsibility of the medical community for this omission are continuously investigated,

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Table 1
Baseline characteristics of younger vs. older patients

Variable	Age <70 years (n=818)	Age ≥70 years (n=182)	P
Mean age, years±SD	51.8±9.9	76.4±5.3	<0.001
Male	69.3	53.3	<0.001
Married	84.9	61.5	<0.001
Speaking the local language	94.2	70.9	<0.001
Resident in country, years			
Mean±SD	33.5±17.7	34.5±20	0.5
≤5	6.7	9.8	0.2
Education, years			
≤8	29.7	48	<0.001
9–12	52.3	38.7	
≥13	18	13.3	
Living with family	92.1	77.7	<0.001
Cardiovascular risk factors known to the patient before admission	90.5	93.9	0.15
Diabetes mellitus	21.8	35.6	<0.001
Hypertension	39.7	71.1	<0.001
Current smoking	53.1	25.6	<0.001
Family history of premature coronary artery disease	32.3	16.1	<0.001
Hypercholesterolemia	46.9	52.2	0.2
Obesity	24.6	21.1	0.3
Cardiovascular risk factors identified during hospitalization	24.6	22.6	0.6
Preexisting documented coronary artery disease	25.6	60.4	<0.001
Mean±SD duration, years	6.9±6.2	10.4±7.8	<0.001
Previous hospitalization due to acute coronary syndrome	24.9	59	<0.001
Previous coronary angiography	21.9	43	<0.001
Previous percutaneous coronary intervention	11.5	15.7	0.15
Previous coronary artery bypass graft	5	17.4	<0.001
Previous electrocardiogram provided	45.9	50	0.3
Knowledge of thrombolytic therapy and percutaneous coronary intervention	13.4	15.6	0.2
Direct arrival at emergency department	44.7	30.2	<0.001
Variables affecting the decision to seek medical help			
Suspicion of coronary disease needing hospitalization	34	47.5	<0.001
Suspicion of coronary disease needing treatment but not hospitalization	17.1	17.1	
Seeking reassurance the pain is not coronary	12.5	3.9	
Want to know precise medical diagnosis	30	22.1	
Other	6.5	9.4	
Patient as a dominant party in seeking help	73.6	61.4	0.002
Time (h) from chest pain onset to arrival at emergency department			
Mean±SD	46.4±114.7	60.8±124.4	0.05
Median	5	7	0.05*
Arrival at emergency department ≥6 h after chest pain onset	45.9	51.4	0.2
Main reasons for delayed arrival at emergency department			
Expectation that the pain will subside	82.4	84.8	0.1
Belief that the pain is not coronary	11.1	5.4	
Delay at non-relevant facilities	6.5	9.8	
Self-treatment before seeking medical help			
Any medication	22.9	40.1	<0.001
Sublingual nitrates	10.9	25.8	<0.001
Anxiolytic drugs	3.2	3.8	0.6
Aspirin	1	1.1	0.9
Analgetic drugs	4.6	2.7	0.3
Patient as a dominant party in decision for self-treatment before seeking help	71.7	74	0.5
Final diagnosis on discharge			
Acute coronary syndrome	19.1	39	<0.001
Acute myocardial infarction	3.2	7.7	<0.01
Unstable angina	15.9	31.3	<0.001

Values are percentages unless stated otherwise. *Mann–Whitney test.

little is known about patient-related factors, which may also contribute to the failure to use advanced medical technologies and therapies. In this context a number of factors have already been reported. Thus, it is known that in the case of elderly with acute ischemic chest pain the delay in seeking medical assistance is longer [9,12–17]. Moreover, older patients as