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Epidemiological Characteristics of Patients with Acute Myocardialinfarction

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Abstract: ***The aim of this study was to describe the epidemiological characteristics of patients with acute myocardial infarction. There were 343admissions during the study period. (77%) were males and (23%) females, giving a male to female ratio of 3.1:1. The mean age of patients was 60.2 (±10.2) years (range 35–93 years). Smoking, diabetes, hypertension and history of coronary heart disease were the most common cardiovascular risk factors in the sample studied. More than half (53%) of patients were reported to be current smokers and 15% were ex-smokers. 31% were identified as having diabetes mellitus (type 1 or 2 unspecified). History of hypertension and coronary heart disease were reported in 55.4% and 42.8% of patients respectively. Dyslipidaemia as risk factor was reported in 66.3% of patients. All of the patients included in the study had abnormal ECG.***

Keywords: myocardial infarction, epidemiology,risk factors, gender

1. Introduction

An acute myocardial infarction (MI) is caused by necrosis of myocardial tissue due to ischaemia, usually due to blockage of a coronary artery by a thrombus. Most myocardial infarctions are anterior or inferior but may affect the posterior wall of the left ventricle to cause a posterior myocardial infarction.Myocardial infarction is now considered part of a spectrum referred to as acute coronary syndrome. This refers to a spectrum of acute myocardial ischaemia that also includes unstable angina and non-ST segment elevation myocardial infarction (NSTEMI) (1). The new criteria for diagnosing myocardial infarction are detection of rise and/or fall of cardiac biomarkers (preferably troponin) with at least one value above the 99th percentile of the upper reference limit, together with evidence of myocardial ischaemia with at least one of the following:Symptoms of ischaemia.Electrocardiogram (ECG) changes indicative of new ischaemia (new ST-T changes or new left bundle branch block (LBBB)).Development of pathological Q-wave changes in the ECG.Imaging evidence of new loss of viable myocardium or new regional wall motion abnormality (2.3)

Coronary heart disease (CHD) continues to be the leading cause of death in developed countries and is increasing rapidly in the developing world (4). It is well known that CHD is strongly associated with conventional risk factors, namely smoking, diabetes, hypertension and hypercholesterolemia (5,6). The most recent reports suggest that these risk factors are found in ~75% of the occurrences of CHD within populations, and not 50%, as has been previously claimed (7,8). Changes in the prevalence rates of different forms of CHD have implications for prevention policy and health provision (9). Moreover, continued assessment of temporal trends regarding risk factors for CHD is needed to inform population strategies in order to reduce risk and predict the future burden of CHD. The aim of this study was to describe the epidemiological characteristics of patients with acute myocardial infarction.

2. Material and Methods

This is a prospective study including consecutive patients with first acute myocardial infarction over the period 2011-2013 admitted at regional hospital of Shkodra district, Albania. The following criteria were used for the diagnosis of acute MI: a clinical history of sudden chest pain, electrocardiogram (ECG) changes consistent with acute MI or characteristic changes in serum cardiac enzymes activity including: creatine kinase (CK), aspartate aminotransferase (AST), and lactate dehydrogenase (LDH) on 3consecutive days after admission.

A medical history was obtained from every patient, including demographic data (sex, age, nationality, phone number, and address) and anthropomorphic variables (weight, height). Body mass index was calculated as weight in kilograms divided by height in metres squared. In addition, patients were questioned about the exact date and time of symptom onset, call of emergency ambulance services (optional) and presentation at the emergency department of the index hospital as well as the means of transportation used in case that the ambulance service was not preferred. All patients were asked to give information about their past medical history, smoking status, hypercholesterolaemia (total cholesterol higher than 200 mg/dL or use of hypolipidaemic agents), hypertension (usual blood pressure levels higher than 140/90 mmHg or use of antihypertensive medication), diabetes mellitus (fasting plasma glucose higher than 125 mg/dL or use of antidiabetic agents), family history of premature CAD (CAD in male first-degree relative 50%), prior myocardial infarction, previous percutaneous coronary intervention (PCI), and previous coronary artery bypass graft surgery. Patients were classified by their smoking status as current smokers if they smoked even one cigarette daily or had stopped smoking in the previous 12 months, ex-smokers if they had stopped smoking more than 12 months, and never smokers. The case record form also included information regarding patients' medications before the index hospitalisation; their clinical symptoms and signs at presentation (levels of systolic and

diastolic blood pressure, heart rate); data on their first medical contact ECG (leads with ST elevation or depression, presence of left bundle branch block, non-specific ST/T segment changes); types of medication administered in the emergency department and during hospitalisation; reperfusion treatment, date and time of fibrinolysis administration, type of fibrinolytic agent used, date and time of primary PCI, use of stent, type of PCI (facilitated, rescue or urgent); inhospital complications and adverse events (angina recurrence, reinfarction, heart failure, atrial fibrillation, ventricular fibrillation, cardiogenic shock, haemorrhagic stroke, ischaemic stroke, stroke of undetermined origin, major bleeding, death). heart failure was, while cardiogenic shock was defined as oliguria and peripheral hypoperfusion with systolic blood pressure 3 g/dl, or requiring surgical management, or causing death. Follow up of the studied patients was performed by the attending physicians with phone contacts at 30 days and 6 months post-discharge in order to ascertain vital status, current medical treatment, and potential occurrence of reinfarction or revascularisation. All definitions were clearly included in the case record forms in order to avoid heterogeneity.

3. Results and Discussion

There were 343admissions during the study period. (77%) were males and (23%) females, giving a male to female ratio of 3.1:1. The mean age of patients was 60.2 (±10.2) years (range 35–93 years). The mean age of females was 63.2 (±9.4) years (range 42–81 years). The mean age of males was 59.2 (±10.4) years (range 35–93 years).The ratio of patients ≥ 60 years of age to those < 60 was 1.0:1 in male and 1.4:1 in female patients. Thepeak age of occurrence of acute MI for males and females was 61–70 years (38.6%).

Risk factors: Smoking, diabetes, hypertension and history of coronary heart disease were the most common cardiovascular risk factors in the sample studied. More than half (53%) of patients were reported to be current smokers and 15% were ex-smokers. 31% were identified as having diabetes mellitus (type 1 or 2 unspecified). History of hypertension and coronary heart disease were reported in 55.4% and 42.8% of patients respectively. Dyslipidaemia as risk factor was reported in 66.3% of patients. Table 1 summarizes the baseline demographic and clinical characteristics of the patient population, categorised by gender.All of the patients included in the study had abnormal ECG. Furthermore, the CK value at presentation was more than the upper limit of the normal reference range (167 IU/L) in 514 (82.6%) patients; the mean CK value was 1084 (SD 1144) IU/L (range 21–7617 IU/L) in the patients studied. Elevated LDH levels at presentation were above the upper limit of the normal reference range (480 IU/L) in 443 (71.2%) patients; the mean LDH value was 1034 (SD 839) (range 51–9182 IU/L).Means and delays of arrival to the hospital In this analysis we included those patients who could reliably define delays from pain onset to admission to be less than 24 hours, given that available electrocardiographic and biochemical data were in accord with this information (92% of the total population). For those patients the median value of the pain-to-door time was 137 minutes, while the 25th and 75th percentiles were 53 and 304 minutes, respectively. Interestingly, the transfer of patients to hospital was by ambulance in only 8% of cases.

4. Conclusions

Key priorities for implementation of a prevention strategy include cardiac rehabilitation programmes after an MI which should be designed to motivate people to attend and complete the programme and explain the benefits of attending. Cardiac rehabilitation as soon as possible after admission and before discharge from hospital. Also it should start again within 10 days of their discharge from hospital (10).

Lifestyle Changes after an MI: Patients should be advised to eat a mediterranean-style diet (more bread, fruit, vegetables, and fish; less meat; and replace butter and cheese with products based on plant oils); to be physically active for 20 to 30 minutes a day to the point of slight breathlessness; to increase their activity in a gradual, step-by-step way, aiming to increase their exercise capacity. They should start at a level that is comfortable, and increase the duration and intensity of activity as they gain fitness. Patients who smoke should stop smoking (11-13).

Drug Therapy: people who have had an acute MI treatment should be treated with the following drugs:Angiotensin-converting enzyme (ACE) inhibitor; Dual antiplatelet therapy (aspirin plus a second antiplatelet agent); Beta-blocker; Statin; assessment of left ventricular function to all people who have had an MI (14-15).

Drug treatment is by no means the only effective method of secondary prevention. Dietary advise, smoking cessation, weight reduction, physical exercise and other no-pharmacological preventive interventions are crucial for improving the cardiovascular risk profile and prognosis of CVD.

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Table 1: Baseline demographic and clinical characteristics of the patient population, categorised by gender (n,%).

	All Patients (n=343)	Males (n=264)	Females (n=79)	P-value
Age, M (SD)	60.2 (±10.2)	63.2 (±9.4)	59.2 (±10.4)	0.03
Current or ex-smoker	211 (61.4)	99 (38)	3 (4)	<0.01
Hypertension	190 (55.4)	62 (23)	30 (38)	<0.01
Diabetes mellitus	114 (33.1)	39 (15)	16 (20)	0.2
Dislipidemia	227 (66.3)	82 (31)	28 (35)	0.2
Obesity	194 (56.6)	76 (29)	18 (23)	0.4
Alcohol consumption	83 (24.1)	39 (15)	1 (1)	0.01
Lack of physical activity	204 (59.6)	73 (28)	26 (23)	0.2
Family history of CVD	147 (42.8)	55 (21)	16 (20)	0.9