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Symposium: Prehospital & Emergency Medicine: Coronary Care — Improving the Chain of Survival

Cardiac Chest Pain as Emergency Problem and Its Outcome in Crowded Emergency Ward in Teheran, Iran

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Cardiac chest pain with coronary heart disease in one of the most crowded emergency wards in Iran constitutes the leading cause of death in men age >40 years and for women >65 years.⁽¹⁾ It is expected to remain the leading cause of death until 2020.⁽²⁾ In the present study, a survey of consecutive cases of possible acute myocardial infarction admitted to the emergency ward in one of the busiest hospitals in Iran was conducted. The aim was to describe the clinical features, prognosis, and treatment of patients presenting with chest pain in a developing country metropolitan hospital.

Methods: During the three-month period from 08 September 2001 to 08 December 2001, patients with chest pain admitted to the emergency ward at the Be'sat hospital, Teheran, Iran were evaluated. All patients hospitalized suspected of suffering from ischemic heart disease were included in the present study. Demographic data (age, gender, social status), risk factors (smoking, dyslipidemia, hypertension, diabetes), previous medical history (including cerebrovascular disease and myocardial infarction), other medical conditions, clinical and vital signs, electrocardiographic findings and biochemical markers (CK, LDH, AST) were recorded. All patients were followed for three months, and the clinical outcome was recorded.

Results: The records of 240 consecutive patients with cardiac chest pain were available for statistical analysis. The mean age was 53.7 ±14.1 years with a range between 16 and 97 years of age. Of these patients, 47.1% (n = 113) were men and 52.9% (n = 127) were women. The most common time of arrival at the emergency center was 10:00 to 12:00 hours (16.8%) and 22:00 to midnight (13.8%). Patients with the maximum attained level of primary school education predominated (42.9%). The duration of chest pain was <20 minutes in 35% of patients (n = 84); 27.3% of patients (n = 59) were smokers (mean = 81.4%, f = 18.6%; p = 0.000), 65.4% of patients (n = 157) were non-smoker, and 10% of patients (n = 24) didn't respond to this query. The most common pre/co-morbid risk factors in order of frequency were: hypertension, 34.6% (n = 83), previous myocardial infarction (22.9%), dyslipidemia (22.5%), diabetes mellitus (18.3%), and previous CVA (8.3%). The prevalence of hypertension as the most common co-morbid risk factor was approximately twice in women (44.9%) than in men (23.0%). The most common ECG finding was inverted T-wave in (32.5%) and ST-segment depression in 20.4%, and ST-segment elevation in 12.1% of patients respectively; 17.5% (n = 42) had a "normal" ECG. Only

7.6% of patients (n = 18) were transported to this hospital by ambulance; men constituted 83.3% and women 16.7% (p = 0.001); 29.2% of patients had systolic blood pressure >140 mmHg at the time of admission, and 18.8% of patients had diastolic blood pressure >90 mmHg. The most common time interval between the onset of chest pain and arrival time to the emergency ward was 50 minutes. 72.9% (n = 175) were hospitalized in the CCU; 1.3% had successful CPR (n = 3) and were moved to the CCU; 0.8% (n = 2) died despite having CPR performed. One patient died during transportation to the hospital (0.4%), and the remainder (24.6%) were hospitalized for a few hours and then were discharged for outpatient evaluation.

Discussion and Conclusions: This study, like other studies, showed that on average, cardiovascular disease (CVD)-induced chest pain occurs later in life in women. Also, comorbid risk factors like hypertension are more common in women.^{1,3} Pre-hospital transportation time was long. In addition, ambulance transportation was not considerable in comparison with western records. However, some studies mentioned that transfer of unstable angina patients over long distances (e.g., air transport) do not significantly affect the overall mortality and morbidity,⁴ and more investigation is recommended. In those patients who had positive history of cigarette smoking, no significant trend on outcome and mean age was identified in comparison with other studies.⁵ In 18.8% of patients, the diastolic BP was more than 90 mmHg and due to its more important role as a risk factor for MI, should be noticed more and lowered to 80 mmHg, especially in women.⁶

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Keywords: cardiac chest pain; demography; prognosis; risk factors
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Current Benefit from AEDs

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Introduction: Sudden cardiac arrest is a major public health problem in Germany. Use of automated external defibrillators (AEDs) has become an important component of emergency medical systems. Sub-group-analysis or studies on selected illnesses often estimate higher survival

rates for the patients treated with AEDs. Until now, there have been no published studies whether the whole population in a certain district, benefits from this capability.

Methods: Based on a prospective study, all out-of-hospital resuscitations in a rescue service area were to be analyzed with respect to place, time, primary rhythm, procedures taken, and outcome. The collective analysis was conducted for the District of Dachau, Germany. All resuscitations within the period of the two years were recorded.

Results: In total, there were 196 resuscitation attempts conducted in two years (average age = 62.4 years). The most frequent causes for the resuscitations were internal diseases in 72% (n = 145). Of the total number of patients, 29.6% (n = 58) were treated at home, and 62% of the cardiac arrests were witnessed by bystanders (n = 122). Forty percent (n = 79) were taken to the hospital after the return of spontaneous circulation (ROSC). Also, 9.2% (n = 18) were discharged from hospital, most of them (75%) with a good neurological outcome. Of the 18 survivors, 11 had ventricular fibrillation, but only three of these were defibrillated by Emergency Medical Technicians with AEDs, the others by emergency physicians without AEDs. **Conclusion:** AEDs in the German emergency rescue service currently are of little benefit. No greater benefit can be expected from area-wide, AED deployment in the emergency rescue service. Currently, research is in progress whether training of the lay public and the availability of public AEDs would be of higher value.

Keywords: automatic external defibrillators (AEDs); bystanders; etiology; deployment; emergency medical technicians (EMTs); evaluation; impact; outcome; physicians; rescue service; utility; ventricular fibrillation (VF)

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Locations of Cardiac Arrest: Affirmation for Community Public Access Defibrillation (PAD) Programs

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Background: The purpose of this study was to identify and describe the regional locations of the incidence of cardiac arrest and to help determine optimal placement of Automatic External Defibrillators (AEDs) under the regional Public Access Defibrillation (PAD) Program.

Methods: The locations of cardiac arrest were retrospectively abstracted from Ambulance Call Reports (ACRs) collected by the Essex-Kent Base Hospital Centre from regional ambulance services provided throughout the City of Windsor, and the Counties of Essex and Kent, Ontario, Canada, from 01 January 1994 through 31 December 2000. Locations of cardiac arrests were grouped into five categories, and the number of public venues was determined. Public sites were grouped into 28 locations.

Results: During the study period, a total of 2,295 cardiac arrests occurred. Of these, 152 cases were excluded and 2,143 arrests were categorized (an average annual incidence of 357 cardiac arrests), with 327 (15%) occurring in public locations. Of the public venues, 19 had ≥ 1 arrest/year, and nine had a ≥ 1 arrest/year, on average, during the study period. Institutions experienced a total of 244 cardiac arrests

(11.4%). Calculations of the annual incidence of arrests for each public location were completed.

Conclusions: These findings have significant prehospital emergency, cardiac care implications for communities that wish to strengthen or improve their responses to out-of-hospital cardiac arrests. Public Access Defibrillation Programs should identify the site-specific incidence of arrest within their communities to provide legitimacy for funding and planning of programs.

Keywords: automatic external defibrillation (AED); cardiac arrest; Canada; funding; locations; out-of-hospital; placement; public access defibrillation (PAD); public venues

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Effects of Use of Questionnaire and Rescuers with Different Levels of Education in Screening Patients with Chest Pain Who Contact the Tehran EMS System

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Introduction: Cardiovascular diseases are the leading cause of mortality in the Iranian population, and are the most common cause for contact with prehospital emergency system in Iran. Only half of the patients with chest pain who contact 1-1-5 for assistance require transportation to hospitals. This study was designed to evaluate the effectiveness of using questionnaires for identifying the real cardiac patients, the effects of attendance of highly educated healthcare professionals in screening patients, and comparing this method (i.e., using questionnaires) with the current method used in emergency medical services (EMS). The study examined the ability of personnel to make a correct diagnosis, and sought to document whether there occurred qualitative and quantitative improvements in the provision of emergency care to this population.

Methods: This cross-sectional study was performed on 355 patients with chest pain who contacted the Tehran EMS System using randomized selection and by using two types of questionnaires. Personnel involved in this study were emergency medical technicians (EMTs), nurses, and general physicians. The relation between chest pain features, cardiovascular risk factors, level of consciousness, history of cardiac problem, and patients' outcome were determined, and the sensitivity, specificity, and accuracy of personnel functions were compared using Spearman's chi-square and t-test.

Results: Of the 355 patients, 45.5% had a positive outcome, and 54.5% had a negative outcome. The average age of patients with positive outcome was six years greater than for those with negative outcome. The relationships between the severity of the chest pain and outcome was 33%. The relative risk of having a positive outcome in patients with a disorder in the level of consciousness was 1.4. The use of a three question questionnaire about chest pain, disorder in the level of consciousness, and heart disease history, had 98% sensitivity, 16% specificity, and 52% accuracy. The performance of the EMS System rescuers