Clinical features of acute myocardial infarction: A report from Halibet Referral Hospital in Eritrea.

Yemane Seyoum MD and Negassi Leake M.D.

Orotta National Referral Hospital, Asmara, Eritrea.
Correspondence to be sent to Dr Yemane Seyom. Email address:

Abstract

Background: Acute myocardial infarction is one of the commonest manifestations of ischemic heart diseases treated at a hospital setting. Coronary heart disease (CHD) has been reported to be rare in Africa due to environmental rather than genetic factors. To our knowledge there is no study done about CHD in Eritrean patients. We undertook a retrospective study of data from clinical records of patients admitted to the intensive care unit following diagnosis of acute myocardial infarction (AMI) during four years period from May 1997 to June 2001.

Objective: To determine the incidence and risk factors of AMI in Eritrea.

Methods: Clinical records of all confirmed cases of AMI admitted to Halibet Hospital in Asmara, Eritrea, were reviewed, criteria for diagnosis set and risk factors analyzed. The incidence of AMI was compared to the general medical admission to the intensive care unit (ICU).

Findings: There were 71 cases of AMI giving an incidence of 4.35 per 1000 admissions to Halibet referral hospital. The average age was about 60 years and the male female ratio was 5 to 1. Uncontrolled hypertension, diabetes mellitus and smoking were the major risk factors identified. Mortality rate was found to be at 35.8%.

Interpretation: AMI is not rare in Eritrea. The risk factors for AMI in our setting were similar to those reported in other studies done elsewhere. Westernized life style may further increase the incidence of AMI.

Introduction

Acute myocardial infarction (AMI) still remains a major reason for ICU admission although mortality from Coronary heart disease (CHD) has declined steadily in the western world [1]. The average incidence of AMI in these societies is 3.5 per 1000 for males and 1 per 1000 for females aged 20 to 64 years [2]. Previous studies have reported low disease burden from AMI in Africa, and the scarcity has been largely attributed to environmental rather than genetic factors [3]. An increase in the incidence of CHD has been strongly associated with an increase in the incidence of risk factors. Modifiable factors such as diet high in saturated fats, cholesterol and calories, smoking, physical inactivity hypertension, hyperglycemia, obesity thrombogenic factors and non-modifiable factors (age, gender, family history of CHD) are the recognizable risk factors in the pathogenesis of CHD. The risk factors are believed to be on the increase pattern among African blacks due to an increase in the adoption of western life style [4].

We retrospectively analyzed admissions to the ICU at Halibet referral Hospital, Asmara, Eritrea, in a four year period. This study was undertaken to evaluate the clinical features, describe possible risk factors, outcome and propose useful recommendations.

Methods

Study sample

A retrospective analysis was used. Clinical records of patients admitted to the ICU with AMI during four years period from May 1997 to June 2001 were reviewed. Data on personal history, risk factors for AMI, clinical presentation, diagnostic and therapeutic methods, complications and outcome was systematically collected and easily retrievable from the patient cards.

Case definition of AMI

1. Acute chest pain characteristic of myocardial ischemia or infarction associated with other symptoms, tightness of chest, diaphoresis, vomiting and shortness of breath and excluding other causes of chest pain.
2. Exposure to risk factors for AMI which were considered to be strong as smoking hypertension, diabetes mellitus, obesity and hyperlipidemia and family history of CHD. .
3. Characteristic findings on 12 lead electrocardiogram tracing of elevation of ST segment in contiguous leads, development of new left bundle branch block or development of pathologic Q waves and other ST-T wave abnormalities.
4. At least three-fold rise in one or more of serum cardiac enzymes such as serum glutamic oxaloacetic transaminase (SGOT), creatinine-phosphokinase (CPK) and lactate dehydrogenase.

Results

Seventy one cases of AMI of whom 67 were Eritreans and 4 were foreigners were admitted during the four year study period. The data from the foreigners was not used for the analysis detailed below. During the same period, a total of 16318 medical cases were admitted to Halibet referral hospital. The incidence of AMI was 4.1 per 1000. In the period under review, there were a total of 1501 admissions to the ICU and 868 (57.8%) were medical admissions. Of all the medical admissions to the ICU, AMI was diagnosed in 8.2%. The age range in those diagnosed to have an AMI was between 30 and 88 years with a mean age of 59years. The male to female ratio was found to be 5 to 1.

Of the known major risk factors for myocardial infarction, hypertension, diabetes mellitus, male

gender, age and smoking were the leading identified in our study. The most frequent non modifiable risk factor was the male gender, whereas among the modifiable factors, being diabetic and hypertensive featured as the main risks for developing AMI (Table 1). The mean duration of symptoms before admission was 3days. There were 20 (35.8%) deaths and the average hospital stay was 5.6 days.

Table1. Risk factors identified in AMI patient, n =67

Risk factor	Number	Percentage
Age>50yrs	46	68.6
Male sex	55	82.1
Diabetes mellitus	22	32.8
Hypertension	26	37.2
Smoking	17	25.4
Hyperlipidemia	3	4.5

The commonest presenting symptoms for AMI were chest pain, tightness of chest/dyspepsia and diaphoresis which were each present in about 50% of the patients (Table 2). A small proportion presented with arrythmias or evidence of heart failure or hypotension/shock.

Table 2. Common presenting clinical features of patients with AMI, n=67

Symptoms/Signs	Number	Percentage
Chest pain	51	76
Tightness of chest/ Dyspepsia	53	79
Diaphoresis	48	72
Syncope/dizziness	7	10
Nausea/vomiting	17	25
Hypotension/shock	8	12
Congestive heart failure	5	7
Arrhythmia	1	2

CPK and SGOT were elevated in more than two thirds of all cases and normal in less 20% in each case. LDH was only elevated in one third of cases.

Table 3. Enzymatic changes in patients with AMI, n=67

Levels of enzyme	SGOT		CPK		LDH	
	Number	%	Number	%	Number	%
Elevated	46	69	45	70	25	34
Normal	10	16	9	13	--	
Unknown	11	18	13	20	42	63

According to the analysis of the records from12 lead electrocardiograms, the most frequent site of AMI was anterior/antero-lateral present in 37 cases (55%), followed by 31% in inferior walls. Among the deaths, 12 (60%) had anterior and antero-lateral wall infarction and 30% had inferior wall infarction.

Sudden cardiac arrest due to ventricular fibrillation was found to be the major cause of death. Cardiogenic shock and pump failure associated with pulmonary edema were listed as secondary line causes of mortality. All patients received conservative treatment which included bed rest, oxygen, analgesics, vasodilators, platelet aggregation inhibitors including Aspirin, tranquilizers for anxiety, treatment of heart failure, dopamine, lidocaine for arrythmias and defibrillation was used when indicated. Underlying diseases such as hypertension, diabetes, infections and other medical events that either precipitate or aggravate myocardial infarction were appropriately managed.

Discussion

Our retrospective sought to document the incidence of AMI in Eritrea as there is no published information on that subject. We found that AMI was not as rare as has been reported in Africa and other developing countries. The frequent risk factors among the cases with MI were hypertension, diabetes and smoking which is consistent with findings elsewhere 4.

Coronary heart disease has long been recognized as the leading cause of death among middle-aged men especially in the west 3. Although AMI was previously reported to be relatively rare in developing countries, the trend is changing. Among Nigerian patients, a ten year review in a university hospital reported an incidence rate of 1 in 20000 admissions 4. In the South African four year review study, AMI incidence was found to be 0.6% which reflects a substantial disease burden from CHD 5.

Reports from Ethiopia showed a progressive increment in the incidence of MI from only four cases in a survey of 2584 Ethiopian bank employees in 1982 to an incidence of 3.5 per 1000 admissions, in a five year review reported in 1989 by Yacob and others 6, 7. Our review study has documented an incidence of MI to be 4.35 per 1000 of all medical admissions to Halibet referral hospital. This high incidence may support the opinion that CHD in Africa is increasing due to the adoption of a western type of lifestyle. The mean age of Eritreans was 59.8 yrs. which is similar to the mean age of other studies in Africa.

In both affluent societies and Africa MI is less common among women. In our review the male to female ratio is 5:1 which is similar to observations else where3. CHD is more common among the socio-economically privileged. This has been supported by a number of considerable studies from both the developed nations and African countries. Hypertension, diabetes mellitus, cigarette smoking, old age and male gender are the leading recognized risk factors in the pathogenesis of MI. More than four fifths of our patients had at least one of the above risk factors. This finding supports that; our patients share similar risk factors to those in developed societies and

29

in other African settings.

The cardinal clinical features among our patients were similar to those reported in other series of studies which made the diagnosis of the condition relatively easy and reproducible. The mortality of MI in our series was 35.8% which is slightly higher than that from Ethiopian and South African study which was 29.4% and 33% respectively. Although this difference was not investigated, one can speculate that the difference in management could have played a part. The incidence of AMI has fallen in many western countries over the past twenty years 8. This is due to many factors, preventive as well as immediate interventions such as early diagnosis and introduction of thrombolysis as well as primary angioplasty 9, 10. The absence of both thrombolytic therapy and primary angioplasty in the management of AMI in our setting may have contributed to the high mortality rate in our series. This is consistent with the fact that event rate in AMI increases with age and poorer than richer people at every age 1.

Conclusions

Transmural anterior wall infarction is associated with high mortality which is also observed in our review. It has also indicated that AMI in Eritrea is not as rare as it is said to be. it is highly recommended that further study is done to elucidate the actual prevalence, risk factors, cause and clinical pattern and applicable therapeutic outcomes. The value of trained personnel and training of health workers in the treatment and care of MI shall be emphasized.

References

1. Wayne D. Rosmond, Lloyd E. Chambless. Trends in the incidence of myocardial infarction and in mortality due to coronary heart disease, 1987 to 1994. N Engl J Med 1998:339. 13, 867-67.

2. Fibrinolytic therapy trialists (FTS) Collaborative Group. Indications for fibrinolytic therapy in suspected AMI: Collaborative overview of mortality and measure morbidity results from all randomized trials of more than 1000 patiens. Lancet 1994;343:311-22

3. Janet W.Rich. Edwards, Sc.D, et. Al. The primary prevention of coronary heart disease in women. N Engl J Med 1995: 332.26, 1758-66.

4. Falase, AO, Cole TO, and Osuntuken, BO. 1973. Myocardial infarction in Nigerians. Trop. Geogr. Med. 25, 147-150.

5. Seftel, He, and Kew, Mc. 1970. Myocardial infarction in Johannsbburg Bantu. S. African Med. J. 20, 49-54.

6. Teklu, B. 1982. Chronic disease prevalence in Ethiopian bank employees. Ethiopian Med. J. 20, 49-54.

7. Fikreyesus, Y, Bahta, Y. 1989. Myocardial infarction in Tikur Anbessa teaching hospital. A five year review. Ethiop. Med J. 27, 2, 55-61.

8. Clinical evidence 2000 3rd issue. BMJ publishing group. Acute myocardial infarction pp1-2.

9. R.A.Lange and L.D. Hillis; C.L. Grines. Should thrombolysis or primary angioplasty be the treatment of choice for AMI. N Engl J M ED. 1996; 335, 17, 1311-1317.

10. R.Collins et al., Asprin, heparin, and fibrinolytic therapy in suspected AMI. N Engl J Med. 1997. 336, 12, 847-60.