ORIGINAL ARTICLE

Ischaemic Heart Disease in Aminu Kano Teaching Hospital, Kano, Nigeria: A 5 Year Review.

M.U. Sani FWACP, **B. Adamu** FWACP, **M. S. Mijinyawa** FWACP, **A. Abdu** MWACP, **K. M. Karaye** FWACP, **M.B. Maiyaki** MBBS, **M. M. Borodo** FMCP

Department of Medicine, Aminu Kano Teachig Hospital, Kano, Nigeria

ABSTRACT

Background: *Socio-economic changes and rural urban migration have led to emergence of non-communicable disease including ischaemic heart disease (IHD) and many others. The actual prevalence of IHD in Nigeria is not known. The non communicable disease (NCD) survey sought to determine the prevalence of major risk factors, rather than the prevalence of the disease itself. The prevalence is generally considered low in Nigeria but the current impression about its importance stems mostly from anecdotal reports. We therefore set out to describe the prevalence as well as the spectrum of IHD at Aminu Kano Teaching Hospital, Kano*

Method: *Between July 2000 and June 2005, we reviewed the prevalence as well as the spectrum of presentation of IHD in Aminu Kano Teaching Hospital. Information was obtained from the medical records of patients in the medical unit of the hospital. Age, sex, diagnosis, risk factors for IHD, other relevant clinical and laboratory data and outcome of patients for myocardial infarction (MI) were extracted from the records. Data was analyzed using SPSS version 10.0 software.*

Results: *There were 5124 medical patients admitted over the period under review, out of which 1347 had cardiovascular diseases. Forty six patients were diagnosed to have IHD giving it a prevalence of 0.9% of medical conditions and 3.4% of all cardiovascular cases. There were 33 males and 13 females (M: F = 2.5:1). Twenty two patients (47.8%) had myocardial infarction, 14(30.4%) had ischemic cardiomyopathy and 10 (21.7%) had angina. The patients consist of 41 (89.1%) Nigerians, 3(6.5%) Lebanese, 1(2.2%) Indian and 1(2.2%) Pakistani. The risk factors found were Hypertension in 37 (80.4%) of patients, diabetes in 16 (34.8%), and Dyslipidaemia in 20 (43.5%). Others were cigarette smoking and obesity.*

Conclusion: *IHD is an important cause of morbidity and mortality in our population. There is need for us to be on the alert and prepare ourselves to manage these cases. Focus should be on preventive cardiology.*

KEYWORDS: *Nigeria; Heart disease; Ischaemic.*

Paper accepted for publication 24th January 2006.

INTRODUCTION

Non-communicable diseases are currently the leading causes of death worldwide accounting for about 60% of all deaths annually (66% of these in developing countries); this toll is expected to rise to 73% by 2020[1]. Historically, the infectious diseases have been emphasized in the tropical populations but, as some populations have undergone socio-economic changes, vital statistics have described a change in the pattern of disease. The picture is of a decline in infectious and a rise in chronic non-communicable disease[2].

Nigeria has witnessed tremendous socio-economic changes and rural urban migration which have led to emergence of non-communicable disease including ischaemic heart disease[3]. In 2001 alone, there were 985 000 deaths from CVD in Africa, chiefly from ischemic heart disease (IHD), cerebrovascular disease and hypertensive heart disease (HHD)[4]. The actual prevalence of IHD in Nigeria is not known. The non communicable disease (NCD) survey[5] sought to determine the prevalence of major risk factors, rather than the prevalence of the disease itself. The prevalence is generally considered low in Nigeria but the current impression about its importance stems mostly from anecdotal reports. Ischaemic heart disease (IHD) was said to contribute very little to mortality figures in Nigerians[6]. Kano was documented to have the highest prevalence of systemic hypertension and the highest mean serum cholesterol levels in Nigeria[5] - two major cardiovascular risk factors.

We therefore set out to describe the prevalence as well as the spectrum of ischaemic heart disease at Aminu Kano Teaching Hospital, Kano a major referral and tertiary health center in north western Nigeria.

PATIENTS AND METHODS

We reviewed the prevalence as well as the spectrum of presentation of IHD in Aminu Kano Teaching Hospital, Kano over a five year period (July 2000 to June 2005). Information was obtained from our admission and discharge/death register, patients' case records and discharge summaries as well as

Correspondence to: **Dr. D.I. Agomuoh**

echocardiography register.

Information obtained from the records included age, sex, diagnosis, risk factors for IHD, other relevant clinical and laboratory data and outcome of patients who had myocardial infarction (MI).

The diagnosis of MI was based on world health organization (WHO) criteria[7] which are the presence of two out of three (cardinal signs). These are chest discomfort or pain characteristic of ischaemia, evolutionary changes on serial ECG tracings and typical rise and fall in serum markers of myocardial injury. Ischemic cardiomyopathy was defined as an ejection fraction of less than 40%, with global or regional wall motion abnormalities in the presence of history of previous myocardial infarction or abnormal ECGs suggesting previous MI. Patients were considered to have angina if they have typical ischemic chest discomfort or pain associated with ECG evidence of ischemia and do not fulfill the criteria for myocardial infarction.

Hypertension was determined based on the history or a documented blood pressure of >140/ 90 mmHg on more than 2 occasions in those not taking anti hypertensive medication while Diabetes was determined by fasting blood sugar of $\geq$ 7.0 mmol/ l and/or a 2 hour post prandial blood sugar of $\geq$ 11.1 mmol/l. Dyslipidaemia was determined by the presence of any of the following: total cholesterol >6.2 mmol/l, LDL cholesterol > 3.88 mmol/l, triglycerides > 1.8 mmol/l and HDL cholesterol < 1 mmol/l. Obesity was said to occur if the body mass index (BMI) was $\geq$ 30 Kg/m^2

All statistical analysis was carried out with the help of a computer using statistical package for social sciences (SPSS) version 10.

RESULTS

There were 5124 patients admitted into the medical service of Aminu Kano Teaching Hospital between July 2000 and June 2005, 1347 of whom had cardiovascular diseases.

Forty six patients were diagnosed to have IHD over the period under review. This gives prevalence of IHD to be 0.9% of medical conditions and 3.4% of all cardiovascular conditions.

There were 33 males and 13 females (M: F = 2.5:1). The age range for the study population was 42 - 80 years with a mean of 60.2 $\pm$ 9.5 years. The males were slightly older with a mean age of 61.6 $\pm$ 8.3 years while the females had a mean age of 56.8 $\pm$ 11.5 years and this achieves statistical significance. The mean body mass index is 27.7 $\pm$ 4.1 and 27.0 $\pm$ 4.1 for males and females respectively, not different statistically.

Twenty two (47.8%) were diagnosed to have myocardial infarction, 14(30.4%) had ischemic cardiomyopathy and 10 (21.7%) had angina. There were 41 (89.1%) Nigerians and 5 (10.9%) foreigners (3 Lebanese, 1 Indian and 1 Pakistani).

Hypertension was found in 37 (80.4%) of patients, diabetes in 16 (34.8%), and Dyslipidaemia in 20 (43.5%). Among the patients with dyslipidaemia, 13 (65%) had hypercholesterolemia and 7 (35%) had combined hyperlipidemia. No information was documented on physical activity. Table 1 shows the risk factors for ischemic heart disease among the study population. Twenty eight (60.9%) had 2 or more risk factors, 17(37.0%) had 1 risk factor and only 1 patient had no apparent risk factor.

Among the 22 patients with MI, 13 (59.1%) presented with typical ischaemic chest pain. Of the remaining 9 patients, 4 (18.2%) presented in left ventricular failure, 3 (13.6%) were in cardiogenic shock and 2 (9.1%) presented with peptic ulcer disease (PUD) like illness. The commonest type of MI was anteroseptal found in 9 (40.9%) of the patients. Other types of MI seen include extensive anterior MI in 5 (22.7%), inferior MI in 4 (18.2%), anterolateral in 3 (13.6%) and posteroinferior in 1 (4.5%). Echocardiography was done only in 15 of the patients with MI. It demonstrated wall motion abnormalities in the areas affected in all the scanned patients. Four of the patients had mitral valve regurgitation. One of them had an apical left ventricular (LV) aneurysm and one had a left ventricular intramural thrombus. Seventeen (77.3%) were discharged from the hospital while 5 (22.7%) died.

Table I. Risk factors for Ischemic Heart Disease in Aminu Kano Teaching Hospital, Kano Nigeria.

Risk factor	Number of cases	Percentage
Hypertension	37	80.4
Diabetes mellitus	16	34.8
Dyslipidemia	20	43.5
Cigarette smoking	10	21.7
Obesity	12	26.1

DISCUSSION

About 30-years ago, Ladipo and colleagues[8] documented coronary artery disease to be non existent in Zaria, northern Nigeria. Around the same time Abengowe reviewed 4,456 medical admissions at

Ahmadu Bello University Teaching Hospital, Kaduna, Nigeria, included 354 cardiovascular patients and found coronary heart disease to occur only in non-Africans[9]. The finding of 46 cases of IHD in our review, 41 (89.1%) of whom are Nigerians suggests a change of epidemiology of this disease over the last 3 decades. Several authors have alluded to the factors that contribute to the slow but certain increase in the incidence of coronary artery disease in our environment. Among these factors include urbanization, low level of physical activity, and acquisition of unhealthy habits and diets of westernized populations[3]. Our study has also shown that the overall incidence of cardiovascular diseases is rising. We had 1347 patients over a 5 year period in Kano compared to 354 patients reported by Abengowe over a 2 year period in neighboring Kaduna, about 25 years ago. This further supports the world heart federation report that the global burden of cardiovascular disease is on the increase especially in the developing world. It is estimated that CVD will claim 30 million lives by the year 2020, 18.5 million of whom will be in the developing countries[10].

There has been a report of an increase in the incidence of MI among hospital population at UCH Ibadan, Nigeria from 1 in 20,000 to 1 in 10,000 over a 30 year period (1972 Vs 1999)[3]. More recently Rotimi & co-workers reviewed 79 cases of sudden cardiac deaths by autopsy in Ife, and found 6.3% to be due to Acute MI[11].

The male preponderance among our patients is similar to what was found by Falase[3] in Ibadan and Danbauchi[12] in Zaria. The NCD survey[5] as well as other community surveys among Nigerians[13] have shown that hypertension, an important risk factor for IHD, is commoner in males than in females. In addition males have been suggested to be more likely to utilise health care services than females[3].

It appears the risk factors of IHD among Nigerians have been consistent over the years. We found hypertension in 37 (80.4%) of our patients, diabetes in 16 (34.8%), Dyslipidaemia in 20 (43.5%), obesity in 12 (26.1%) and cigarette smoking in 10 (21.7%) of patients. This agrees with previous studies of risk factors of IHD among Nigerians[3, 6, 12-14]. In addition we found that 28/46 (60.9%) had multiple (2 or more) risk factors. It has already been shown by Framingham data that the more the number of risk factors of IHD, the higher the 10 year probability of a coronary event both among men and women[15]. Unfortunately, there was no documentation of physical activity information in our series. This has shown that Doctors do not pay much attention to obtaining history of physical activity and subsequent counselling of the patients. This has been shown by studies in other parts of the world. In a 1984 survey of primary-care physicians, Rosen *et al.*[16] showed that 29% of physicians reported they counselled on exercise during a preventive exam, and 64% brought up exercise only for high-risk patients. In the 1995 United States National Health Interview Survey, only 34% of 9299 respondents reported they had been counselled about exercise at their last medical exam visit[17]. The NCD has shown that 58% of Nigerians 15-34 years are physically active and this value decreased to 21% after the age of 64 years.

Our series has demonstrated the atypical ways of presentation of acute MI. While 13/22 (59.1%) of our MI patients presented with typical ischaemic chest pain, 9 presented atypically. Four (18.2%) presented in left ventricular failure, 3 (13.6%) were in cardiogenic shock and 2 (9.1%) presented with peptic ulcer disease (PUD) like illness. This is lower than 29% of patients presenting with left ventricular failure but higher than 4% found in cardiogenic shock in the Ibadan series[3].

We found the commonest type of MI to be Q wave anteroseptal infarction in 9 (40.9%) of the patients. This differs from the findings in Ibadan[3] and Zaria[12] where anterolateral site was the commonest affected site. We had also seen 5 patients with extensive anterior MI. All the 5 had multiple risk factors and all died, 3 from cardiogenic shock and 2 from arrhythmias (ventricular tachycardia and ventricular fibrillation). There is a paucity of reports in Nigeria documenting Extensive anterior MI.

IHD is still uncommon in Nigeria, but there is a trend of increasing incidence of this disease in major Nigerian cities from anecdotal reports which lead to the current impression about its importance. Additionally, the prevalence may be low now but social changes are taking place which may be expected to lead to a massive increase in coronary artery disease morbidity and mortality in the next few years. There is need for increase awareness among health personnel and the general public need to raise the index of suspicion among doctors especially primary care physicians.

Perhaps the best and the cheapest approach to this impending epidemic especially in this part of the world is preventive cardiology. This entails health education on IHD, its risk factors and prevention, awareness on modification of life style (weight reduction by regular physical activity, cessation of cigarette smoking, avoiding overeating and high cholesterol containing foods).We should probably institute regular physical activity in early school days & throughout life, as well as in the medical curriculum.

Other components of preventive cardiology include

aggressive screening for the risk factors and adequately managing them; possibly through the use of drugs in primary prevention for IHD, for example low dose aspirin, lipid lowering agents and antioxidants.

REFERENCES

1. The world health report 2002. Reducing risks, promoting healthy life. Geneva, World Health Organization, 2002.
2. Forrester T, Cooper RS, Weatherall D. Emergence of Western diseases in the tropical world: the experience with chronic cardiovascular diseases. Br Med Bull. 1998; 54 (2):463-73.
3. Falase AO, Oladapo OO, Kanu EO. Relatively low incidence of myocardial infarction in Nigerians. Trop Cardiology 2001;27(107):45-47
4. Integrated management of cardiovascular risk: a report of a WHO meeting, Geneva 9-12 July 2002.
5. Non-Communicable Diseases (NCD) in Nigeria final report of a national survey. Federal Ministry of Health National Expert Committee on NCD, 1997
6. Kadiri S, Salako BL. Cardiovascular risk factors in middle aged Nigerians. East Afr Med J 1997 74 (5):303-6.
7. Expert Committee on Cardiovascular Diseases and Hypertension. Hypertension and coronary heart disease: Classification and criteria for epidemiological studies. WHO 1959; 168:3.
8. Ladipo GO, Froude JR, Parry EH. Pattern of heart disease in adults of the Nigerian Savanna: a prospective clinical study. Afr J Med Med Sci 1977 6; (4):185-92.
9. Abengowe CU. Cardiovascular disease in Northern Nigeria. Trop Geogr Med 1979; 31(4):553-60.
10. Global Burden Of Disease: Total Mortality and Cardiovascular Disease Mortality In 1990 and 2020 World Health Report, WHO, 1997.
11. Rotimi O, Fatusi AO, Odesanmi WO. Sudden cardiac death in Nigerians-the Ile-Ife experience. West Afr J Med 2004; 23(1):27-31
12. Danbauchi SS. Ischaemic heart disease and myocardial infarction in ABU Teaching Hospital, Zaria: a 10 year review (1985 to 1994); a short report. Cent Afr J Med 1996; 42(7):209-11.
13. Taylor OG, Oyediran OA, Bamgboye AE, Afolabi BM, Osuntokun BO. Profile of some risk factors for coronary heart disease in a developing country: Nigeria. Afr J Med Med Sci 1996; 25(4):341-6.
14. Ogunowo PO, Ekpo EB, Odigwe CO, Andy JJ. A clinical profile of patients with coronary artery disease in Nigeria. Trop Geogr Med 1989; 41(3):242-6.
15. Wilson PW. Established risk factors and coronary artery disease. The Framingham Study. Am J Hypertens 1994; 7: 78.
16. Rosen MA, Logsdon DN, Demak MM. Prevention and health promotion in primary care: baseline results on physicians from the INSURE project on lifecycle preventive health services. Prev Med 1984; 13:535-548.
17. Wee CC, McCarthy EP, Davis RB, Phillips RS. Physician counselling about exercise JAMA 1999; 282: 1583-1588.