

A Ten Year Study of Management of Ischemic Heart Disease in a Tertiary Hospital in South West Nigeria

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Abstract

The Pharmacotherapy of drugs used in the management of ischemic heart disease at the University College Hospital (UCH) in Ibadan between June 1998 and May 2007, was studied retrospectively. The objective was to assess the rational use of the prescribed drugs and to determine the tolerability and benefits of using nitrates, betablockers, calcium channel blockers and acetylsalicylic acid (aspirin). A total of 52 case files of patients with ischemic heart disease were randomly selected from the central medical record department and used for the study. Information extracted includes demographic data, the prescribed drugs and side effects. Results showed that males 27(51.9

Index terms— ischemic heart disease, pharmacotherapy, management, prescriptions, patients.

1 Introduction

Coronary heart disease (CHD) also known as coronary artery disease (CAD) is a condition in which the vascular supply to the heart is impeded by atheroma, thrombosis or spasm of coronary arteries. This may impair the supply of oxygenated blood to the cardiac tissue sufficiently to cause myocardial ischemia which if severe or prolonged may cause death resulting from myocardial infarction 1 .

Ischemic heart disease (IHD) or myocardial ischemia is a disease characterized by ischemia (red-Author ? : Department of Clinical Pharmacy & Pharmacy Administration, Faculty of Pharmacy, University of Ibadan. E-mail : kayodeomole06@yahoo.com Author ? : Department of Clinical Pharmacy and Pharmacology, Faculty of Pharmaceutical Sciences, Ahmadu Bello University, Zaria. reduced blood supply) to the heart muscle usually due to coronary artery disease (CAD). Angina pectoris is one of the primary manifestations of ischemic heart disease. Other manifestations include myocardial infarction (MI), heart failure (HF), arrhythmias, and sudden cardiac death. 1 In 1977, Ladipo and colleagues 2 documented coronary artery disease to be nonexistent in Zaria, Northern Nigeria. Abengowe in 1979 also studied 4,456 medical admissions at Ahmadu Bello University Teaching Hospital, Kaduna Nigeria. These include 354 cardiovascular patients. He concluded that coronary heart disease occurred only among non-Africans. 3 Sani MU et al (2006) in Kano studied the case notes of 1347 patients with CVD over a period of five (5) years. The study which showed 46 cases of IHD, with 41(89.1%) of whom were Nigerians suggested a change of epidemiology of this disease over the last three decades 4 . Several authors have alluded to the factors that contribute to the increase in the incidence of coronary artery disease in our environment 5 . These factors include urbanization, low level of physical activities, acquisition of unhealthy habits and diets of westernized population. World heart federation reports that 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 6 .

Anti-angina drugs provide prophylactic or symptomatic treatment for IHD patients with angina symptoms. Beta adrenergic receptor antagonist reduces mortality apparently by decreasing the incidence of sudden cardiac death associated with myocardial ischemia and infarction 7. Acetylsalicylic acid (ASA) also called aspirin is used at a homeopathic dose of 75mg to 300mg daily to reduce or prevent platelet aggregation and myocardial ischemia. The treatment of cardiac risk factors by aspirin reduces the progression and regression of atherosclerosis 7 .

The rational use of drugs used in the patients with ischemic heart disease has not been documented. This led to this study which assessed the rational use of drugs in the management of ischemic heart disease over a period of 10 years at the University College Inpatients and outpatients from cardiology unit with symptoms of ischemic heart disease were included in the study while inpatients and outpatients without symptoms of ischemic heart disease were excluded. A total of all 52 patients who were treated for ischemic heart disease over a period of ten years were used for the study. The sample size was small because the whole population was used. Statistical analysis was done using SPSS version 15.0 software programme for frequency distribution and cross tabulation.

The UI/UCH institutional review committee of the institute for advanced medical research and training (IMRAT) gave the ethical approval to conduct the study. The ethical approval was dated 31/03/2009 with IRC protocol no UI/EC/09/0049.

2 III.

3 Results

Table ?? shows the age and sex distribution of patients with ischemic heart disease. Nine (17.3%) patients aged between 31 and 40 years, 7 (13.5%) aged between 41 and 50 years, while 15, 10 and 11 patients aged between 51 and 60 years, 61 and 70 years and 70 years and above respectively. There were 27 (51.9%) males and 25 (48.1%) females. Table 2 shows that there was statistical significant association between the age and sex of patients with ischemic heart disease. $P < 0.05$.

Table 3 indicates drugs prescribed for patients with ischemic heart disease. Nineteen (16.1%) patients were prescribed sublingual glyceride trinitrate, 17 (14.4%) were prescribed oral isosorbide dinitrate, 4 (3.3%) on propranolol, 2 (1.7%) on acebutol, 5 (4.2%) on atenolol, 2 (1.7%) on metoprolol, 1 (2.8%) on dilitiazem, 4 (3.5%) on nifedipine, 3 (2.5%) on amlodipine, 29 (24.5%) on aspirin, 11 (9.8%) on sedatives, 4 (3.3%) on morphine sulphate, while 14 (11.9%) and 3 (2.5%) were on angiotensine converting enzyme inhibitors (ACEI) and dopamine respectively.

Table 4 shows that aspirin was used as a combination drug in patients with ischemic heart disease. Twenty (38.5%) patients were on aspirin + sublingual nitroglycerine tablet, 8 (15.4%) on aspirin + sublingual nitroglycerin + beta blockers, 4 (7.7%) on aspirin + sublingual nitroglycerin + calcium channel blocker, 11 (21.1%) on aspirin + sublingual nitroglycerin + ACEI, 1 (1.9%) on aspirin + sublingual nitroglycerin + lipitol, while 8 (15.4%) were on aspirin + glyceride trinitrate + ACEI + calcium channel blocker.

Table 5 shows side effect of prescribed drugs. Eight (19.2%) patients had headache, 5 (12.1%) had dizziness, 5 (12.1%) had flushing, 4 (9.7%) had tachycardia, 2 (4.8%) had cough (bronchoconstriction), 7 (17.0%) had depression while 10 (24.3%) patients had hypoglycemia. In 11 (21.2%) patients, there was no side effect documented.

4 IV.

5 Discussion

Table ?? show that males 27(51.2%) were more prone to ischemic heart disease than females 25(48.1%). This result was supported by the findings of Sani in Kano where incidence in males was found to be higher than in females 4 . This high incidence may be attributed to hypertension which occurs more commonly in males than females as important risk factors for IHD 7 . In addition males have been suggested to likely utilize healthcare services than females. 1,7,8 .

Table ?? also indicates that patients within the age range of 50-59 years constituted the highest percentage while those within the age range of 40-49 years constituted the least percentage of IHD. This agrees with the findings that risk of IHD increases with an advance age. It was stated that approximately half of all deaths of persons older than 65 years of age was as a result of IHD, and 80% of all coronary deaths occur in this age group 8,9,10 . Table 2 shows that there is a correlation between age and sex of patients having IHD. This is in agreement with the study which shows that IHD is a major health issue in the elderly 8,9,10 . Table 3 shows classes of drugs used in the management of IHD and their frequency of administration. Nitrates were the most commonly administered drugs for the symptomatic relief of chest pain and discomforts associated with angina 11 . Thirty six (30.5%) patients were on nitrates. Nitrates had been established to dilate both veins and arteries thereby reducing preload to the heart and filling pressure in the ventricles. This in turn reduces myocardial oxygen demand and increase myocardial oxygen supply thereby reducing angina 12,13 . Thirty six (30.5%) were prescribed both short acting and long acting nitrates.

The study showed that there was benefit in the use of the nitrates since low incidence of side effect had been reported with the use of nitrates and tolerability in the use of nitrate is high 11,12,13 . Thirteen (10.9%) patients were prescribed ?blockers. This is in agreement with current guidelines which recommend that beta-blockers should be administered before nitrates or calcium channel blockers when long term therapy is indicated 14,15 . ?adrenergic antagonists have been shown to prevent angina and also reduce mortality following myocardial infarction. Cardio selective beta-blockers are used for patients in order to minimize adverse effects such as bronchospasm in asthmatic or chronic obstructive pulmonary disease, intermittent claudication and sexual

dysfunction. It is rational to use beta blockers to treat patients with angina pectoris to prevent acute myocardial infarction 14,15,16 .

Eight (6.7%) were administered calcium channel blockers (CCBs). The documented side effects of the drugs showed that most of the patients tolerated CCBs which indicates the benefits of the drug. The benefits provided by calcium channel antagonists is related to reduced myocardial oxygen demand and improved oxygen supply 16,17,18 .

Acetylsalicylic acid 29(24.5%), administered at homeopathic dose of 75-325mg are effective in the treatment of angina and post myocardial infarction. Studies have been conducted evaluating the efficacy of aspirin in cardiovascular disease in the second international study of infarction survival (ISIS-2) trials 19 . The study randomized 1,718 patients with suspected MI to receive a double blind version IV SK (Streptokinase) for 1 month, both aspirin and SK for 1 month compared with placebo for 1 month. The use of aspirin for 35 days in the study was associated with a highly significant 23% reduction in mortality rate. Therefore early administration of aspirin helps reduce the incidence of IHD and prevent myocardial infarction when used indefinitely 19,20,21,22 .

Table 3 further explains the individual drugs used within each class. Nineteen (16.1%) patients were prescribed sublingual glyceride trinitrate while 17(14.4%) were on oral isosorbide dinitrates. In table 4, eleven (21.1%) were administered a combination of Aspirin + Sublingual Nitrates + ACEI. Angiotensin converting enzyme inhibitors have a prominent role in the overall treatment of patients with CAD. It has demonstrated significant benefits in morbidity and mortality in a number of patients with heart failure (HF), acute MI and Diabetes mellitus 20,21,22,23 .

Table 5 shows the side effects documented when drugs in table 3 and 4 were administered in the management of ischemic heart disease. Adverse effects seen with the sublingual nitroglycerine include dizziness, tachycardia and head ache. Side effects seen in dihydropyridines calcium channel blockers such as nifedipine include head ache, bradycardia, flushing and dizziness. Bronchoconstriction (cough) is a major side effect of ACEI 22 . Hypoglycemia can result from administration of insulin and oral hypoglycemic agents when diabetes is treated in patients with ischemic heart disease 7,24,25,26 .

V.

6 Conclusion

The administration of both short acting and long acting nitrates for symptomatic relief of chest discomfort and angina symptoms have benefits and tolerability. This aids compliance because of few side effects. A combination therapy of beta-blockers or calcium channels blockers with nitrates and with daily aspirin dose have shown great improvement in angina patients. Administration of aspirin daily has been found to be of great benefit in the management of patients with ischemic heart disease and to prevent acute myocardial infarction.

7 VI.

stable angina pectoris: executive summary. BMJ;3 Global Journal of ^{1 2 3}

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³Sex

Agegrp	<40	Count	% within Agegrp	% within SEX
	40-49	Count		
	50-59	% within Agegrp	% within SEX	Count
	60-69	% within Agegrp	% within SEX	Count
Total	70+	Count	% within Agegrp	% within SEX

Pearson Chi-Square	Likelihood Ratio	Linear-by-Linear Association	.177 a	.178	.106	Value
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N of Valid Cases	52
Males	27
Females	25
Total	52

Figure 1:

2

Chi-Square Tests

Figure 2: Table 2 :

3

Drugs	Frequency	Percentage (%)
Sublingual glyceride trinate	19	16.1
Oral isosorbide dinatrate	17	14.4
Propanol	4	3.3
Acebutolol	2	1.7
Atenolol	5	4.2
Metoprolol	2	1.7
Diltiazem	1	0.8
Nifedipine	4	3.4
Amlodipine	3	2.5
Aspirin	29	24.5
Sedatives	11	9.3
Morphine sulphate	4	3.3
Angiotensin converting enzyme inhibitors	14	11.9
Dopamine	3	2.5
Total	118	100
multiple responses		

Figure 3: Table 3 :

4

Drugs	Frequency	Percentage (%)
Aspirin + Sublingual tablets	20	38
Aspirin + Subl. Nitroglycerin + Beta blockers	8	15
Aspirin + ubl. Nitrates + Calcium channel blockers	4	7.8
Spirin + Subl. Nitrates + ACEI	11	21.1
Aspirin + Subl. Nitrates + Liptor	1	1.92
Aspirin + glyceride trinitrate + antihypertensive + others	8	15.4

Figure 4: Table 4 :

5

Side effects	Frequency	Percentage
Headache	8	19.2
Dizziness	5	12.1
Flushing	5	12.1
Tachycardia	4	9.7
Bronchoconstriction	2	4.8
Depression	7	17.0
Making of hypoglycemia	10	24.3
Total	41	100

Figure 5: Table 5 :

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