

DRUG UTILIZATION REVIEW OF ANTIHYPERTENSIVE THERAPY AMONG PATIENTS WITH COMPELLING INDICATIONS IN TWO HOSPITALS IN SOUTH-EASTERN NIGERIA

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Hypertension, a silent killer remains a leading cause of morbidity and mortality world-wide. Application of evidence based practice would help in the control of hypertension especially in tropical Africa where control indices are poor. The aim of this study was to analyze out-of-hospital antihypertensive drug utilization in two secondary health care centres in South-Eastern Nigeria among patients with compelling indications. The utilization of antihypertensive drugs dispensed to out-patients in the year 2006 to 2007 was analyzed retrospectively using the ATC/DDD method. Results were expressed in DDDs/1000 inhabitants/day. Adherence to World Health Organization/International Society of Hypertension (WHO/ISH) management guideline was also assessed. Nifedipine and hydrochlorthiazide/amiloride were the most frequently prescribed antihypertensive drugs with 10.48 and 9.79 DDDs/1000 inhabitants/day respectively. For patients with compelling indications, 46% and 67% of hypertensive patients with diabetes mellitus (DM) and congestive heart failure respectively were placed on correct (appropriate) therapies in accordance with WHO/ISH guideline. All the hypertensive patients with cerebrovascular accident (CVA) alone as well as those with DM and CVA received drugs indicated by WHO/ISH guideline. This study pointed out some therapeutic rationality in these two health centres. However, targeted education of the prescription-givers and dissemination of treatment guideline could facilitate rational use of drugs and adherence to treatment guidelines.

KEYWORDS: hypertension, antihypertensive therapy, treatment guideline, drug utilization review, Nigeria

INTRODUCTION

Hypertension is a global health problem. Worldwide prevalence of hypertension has been estimated to be as much as 1 billion individuals, and approximately 7.1 million deaths per year may be attributable to hypertension (Chobanian et al, 2003). It is becoming increasingly common in developing countries as emerging facts identify hypertension as a major cause of morbidity and mortality in sub-Saharan Africa (Cappuccio et al, 2004; Cappuccio et al, 1997; Cooper et al, 1997; Olatunbuson et al, 2000). Available evidence showed that about 75% of hypertensive patients do not have optimal blood pressure control (Psaty et al, 2002; Marques-Vidal and Tuomilehto, 1997; Primastesta et al 2001). The situation might be worse in Nigeria since there are sparse data on control of hypertension. Although the reason for this poor control is complex, some factors have been noted as the most probable cause and they include failure to detect hypertension; failure of patients or doctors to initiate and/or continue with treatment; incomplete adherence to treatment by patients and to guidelines by doctors; and lack of adequate therapy to control blood pressure (Psaty et al, 2002; Marques-Vidal and Tuomilehto, 1997; Primastesta et al 2001; Okano et al, 1997; Monae et al, 1997)

Different studies conducted in Nigeria have examined the pattern of physicians' prescription of antihypertensive drugs and its possible effects on blood pressure control as well as physicians' compliance to recommended guidelines (Etuk et al, 2008; Yusuff and Balogun, 2005; Alebiousu, 2004; Olanrewaju et al, 2010; Amira and Okunbadejo, 2006). These studies focused on describing the most utilized antihypertensive medications for management of hypertension and compliance to established guidelines. However, no study in Nigeria have assessed the treatment of hypertensive patients with compelling indications (i.e. when hypertension co-exists with other comorbidities like diabetes mellitus, heart failure e.t.c.) with the view of establishing whether prescribers follow evidence based practice in management of hypertensive patients in such situations.

The aims of this study therefore were (1) to establish the most prescribed antihypertensive medication and (2) to describe pattern of antihypertensive drugs among patients with compelling indications in two health facilities located in Nsukka, a city in South-Eastern Nigeria.

METHOD

The study was a retrospective, cross sectional and descriptive survey. It was designed to determine antihypertensive agents frequently prescribed especially

to patients with compelling indications in two hospitals in Nsukka. Nsukka is a town located in South-Eastern Nigeria and has an estimated population of 111,017 (Anonymous, 2008). Christianity is the main religion while farming, transportation and trading are the major commercial activities. The most prominent feature in Nsukka is the University of Nigeria Nsukka, which attracts people of different ethnic and linguistic group to the area. There are 19 public health facilities and over 20 private health facilities in Nsukka.

The two biggest public secondary hospitals in Nsukka were purposively selected for the study. Ethical approval was received from the Research Ethical Board of the University of Nigeria, Nsukka and the Management Board (Medical) of Bishop Shanahan Hospital. Out-patient folders of hypertensive patients with or without compelling indications visiting the hospital from July 2008 to July 2009 were retrieved for the study. Using a pre-tested data collection form, patient data retrieved included patient demographic data, drug name, dosage form, strength, dose, frequency of administration and duration of treatment. Drugs retrieved were of C02 Anatomical Therapeutic Class (ATC) (WHO, 2010).

Statistical Package for Social Sciences (SPSS, version 14, Chicago, USA) and Microsoft Excel (Microsoft Corporation, 2007) were used for data analysis. Data entry was double checked for consistency by the principal investigator. Results were presented in frequencies (percentages). Drug use was expressed in DDDs/1000 inhabitants/year. Defined daily dose [DDD] is the assumed average maintenance dose per day for a drug. Only drugs that represent 90% of the total prescriptions (DU 90%)

were presented. Adherence to a 2003 World Health Organization International Society of Hypertension (WHO/ISH) guideline on management of hypertensive patients with compelling was assessed (WHO, 2003). Adherence refers to number of patient with a compelling indication treated according to WHO/ISH guideline divided by total number of patients with that compelling indication, expressed in percentage.

RESULTS

A total of 106 cases of hypertensives were retrieved from the two hospitals. Fifty six of these patients were males while 50 were females. Average age of the patients was 53 ± 15 years. A total of 42 patients had hypertension and other compelling indication concurrently. Majority (67%) of these hypertensive patients with compelling indications had diabetes mellitus, 9 patients had congestive heart failure, 4 patients had cerebrovascular accident and 1 patient had diabetes and cerebrovascular accident combined.

Figure 1 shows the drug utilization ninety percent (DU 90%) of antihypertensive drugs in the two hospitals studied. Nifedipine and Hydrochlorothiazide/amiloride were the most widely used drugs for managing hypertension. Other antihypertensives which fall under the DU90% were reserpine/chlorpamide/dihydroergocristine, lisinopril, alpha-methyldopa and amlodipine.

In Table 1, percentage adherence to World Health Organization/International Society of Hypertension (WHO/ISH) management guideline in relation to treatment of hypertensive patients with compelling indication(s) is shown. Management of hypertensive patients with diabetes mellitus (DM) and congestive heart failure were not completely in-line with stipulated WHO/ISH guideline. However, all the hypertensive patients with cerebrovascular accident (CVA) and DM/CVA comorbidities were managed according to WHO/ISH guideline.

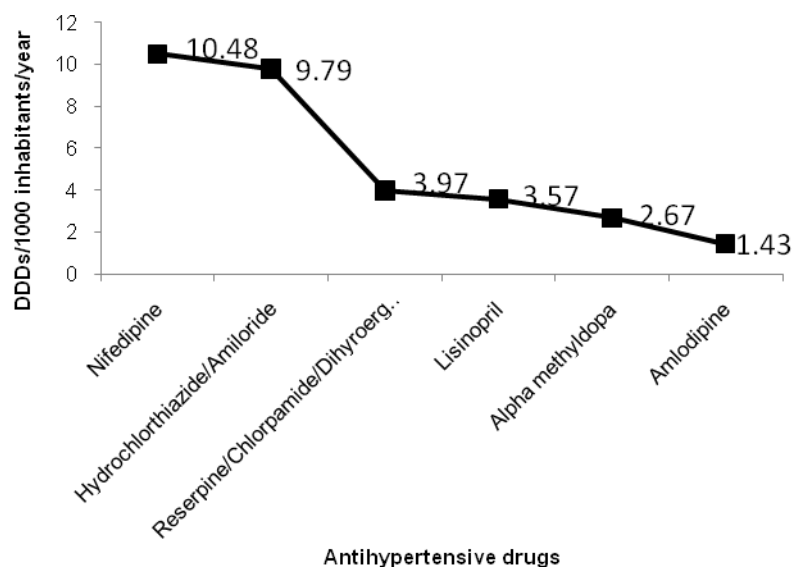


Figure 1: Drug utilization ninety percent (DU90%) of antihypertensive drugs in two Nigerian hospitals

Table 1: Treatment of hypertensive patients with compelling indications according to WHO/ISH guideline

Compelling indications	% Compliance		% Compliance (Total)
	Bishop Shanahan Hospital	University of Nigeria Medical Clinic	
Diabetes mellitus	29	73	46
Congestive heart failure	63	100	67
Cerebrovascular accident	100	-	100
Diabetes and ceberbrovascular accident	100	-	100

DISCUSSION

WHO/ISH guideline was used as a reference document in this study because of its global outlook and consideration of limited resource settings in its recommendations (WHO, 2003). WHO/ISH guideline proposes that diuretic should be considered as the first line therapy for management of hypertension because of its availability and cost. It further states that other antihypertensive drugs should be considered for compelling indications where they provide additional benefits.

The widely prescribed drugs used for management of hypertension in this study were all indicated in Nigerian Standard Treatment Guidelines published by the Nigerian Federal Ministry of Health in 2008 (FMOH, 2008) and were similar to results of other studies in Nigeria (Etuk et al, 2008; Yusuff & Balogun, 2005; Olanrewaju et al, 2010). However, recent hypertension specific treatment guidelines advocates the use of thiazide diuretics, angiotensin converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), calcium channel blockers and beta-blockers as first line antihypertensives due to evidence that suggest that they proffer greater benefits when compared to other classes of antihypertensive medications (Chobanian et al, 2003; WHO, 2003). Cost consideration might be one of the reasons for the choice of drugs used in the two hospitals. High cost of some ACEIs and ARBs pose particular problems for healthcare systems like the case of Nigerian hospitals that receive patients with limited resources. WHO/ISH recognizes this fact and advices that cost of drug therapy should be kept low by using least expensive drugs and generic formulations (WHO, 2003).

Management of hypertensive patients with diabetes mellitus and congestive heart failure, were not in congruent with WHO/ISH guidelines. Long-term randomized trials have shown a greater reduction in various fatal and non-fatal major-disease endpoints complications with some particular specific drugs for comorbid situations in patients with hypertension. For instance, clinical trials with diuretics, ACEIs, ARBs, beta-blockers and calcium antagonists have demonstrated benefit such as reduction in the risk stroke and renal disease in the treatment of hypertension in both type 1 and type 2 diabetics (Hansson et al, 1998; ADA, 2003; ALLHAT, 2002; Maki et al, 1995; Nelson et al, 1996; Remuzzi et al, 2002; Parving et al, 1987; Mogensen et al,

1995). In the same vein, diuretics, beta-blockers and spironolactone have been found to be beneficial in patients with congestive heart failure as they decrease mortality in this subset of patients (Metra et al, 2000; Pit et al, 1999). It is imperative for health professionals to adhere to stipulated therapeutic options to ensure optimal health outcome. Managers of hospitals could facilitate the use of these guidelines by ensuring that they are readily available. Periodic in-service training for health professionals with monitoring of adherence to clinical guidelines could also help the utilization of clinical guidelines.

Our study had some limitations. Retrospective design used in this study made it impossible for clinical outcome data such as control of BP to be collected. Thus, drug utilization could not be related to medical outcome. Only secondary hospitals were used which may affect the generalizability of the results. However, exclusion of primary health care centers was due to the fact that most of these primary health care centers are not functional and those which are, often times do not keep records properly. Tertiary hospitals were not used because they are referral centres where complicated cases are managed.

CONCLUSION

Nifedipine and hydrochlorthiazide/amiloride were the most frequently prescribed antihypertensive drugs. Prescription of antihypertensive drugs for some patients with compelling indications (specifically diabetes mellitus and congestive heart failure), were not in congruent with WHO/ISH guideline. This study highlights some therapeutic rationality in these two health centres. However, targeted education of the prescription-givers and dissemination of treatment guideline could facilitate rational use of drugs and adherence to treatment guidelines.

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