Prescription Pattern of Drugs in Hypertensive Patients-A Retrospective Study

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Abstract: Recommended guidelines and innovations in drug formulations change over time. Thus the changes in prescription pattern of drugs used for treating hypertension. In addition, the classes of antihypertensive drugs used vary among countries. The objective of this study was to analyze the prescription pattern of antihypertensive medications in a tertiary healthcare hospital in Kano, Nigeria. Retrospective analysis of prescription of hypertensive outpatients in Aminu Kano Teaching Hospital was conducted for a period of one year. Prescriptions for 285 hypertensive outpatients were analyzed on the basis of age, percentage of male and female patients, antihypertensive drug category, most frequently prescribed hypertensive drug and percentage of one/two drug combination. Angiotensin Converting Enzymes Inhibitors (ACEI) 27.7% (173) were the most commonly prescribed antihypertensive followed by calcium channel blockers 24.4% (152), Diuretics 23.9% (149), Angiotensin receptor blockers 12.0% (75), Beta-blockers 6.4% (39), Central acting 5.6% (35) and Vasodilator 0.2% (1) ranked last in this study. ACE-Inhibitors are the most commonly prescribed monotherapy antihypertensive agents 38.25% (153) and their prescription pattern was in consistent with JNC8 guidelines.

Keywords: Prescription, antihypertensives, ACEIs, Pattern, Drug.

INTRODUCTION

Hypertension is a chronic, incurable condition that affects 18.4% of Nigerian population [1]. There is evidence that prevalence of non-communicable diseases is increasing, including hypertension which if not adequately managed, can result in a wide range of complications that have clinical, social and economic implications [6]. Inappropriate drug prescribing has been known all over the world as one of the major problems of health care delivery [7]. Periodic assessment of the prescribing practices in a health facility will help to identify specific drug use problems, sensitize practitioners on rational drug prescription and provide policy makers with relevant information that could be useful in the review of drug procurement policies and implementation of policies on drug prescribing practices in the affected institutions and regions. The objective of this study was to analyze the prescription pattern of antihypertensive drugs in a tertiary care hospital.

MATERIALS AND METHODS

Setting

This descriptive retrospective study was conducted at specialty outpatient unit of the Aminu Kano Teaching Hospital (AKTH). AKTH is a tertiary health facility serving approximately over ten million
people across the three states of Kano, Katsina and Jigawa in the North-Western region of Nigeria. This health facility is a tertiary center in which most specialties in medicine are found. Also, it serves as the Teaching Hospital for the College of Clinical Sciences of Bayero University, Kano.

ETHICAL CONSIDERATION

Before the commencement of the study, ethical approval for the study protocol was granted by the Ethical Committee of the Aminu Kano Teaching Hospital.

SAMPLE SIZE

The sample size was calculated based on the objective of this descriptive study for identifying medications prescription patterns. Approximately 200 - 400 patient folders were recommended as sufficient sample size to provide precise (confidence intervals/margin of error) within 5-15% of the estimated proportion with 95% confidence level [8]. The calculated sample size (n) for this study from the estimated hypotensive population of 6,985 using 95% confidence level and 6% margin of error (confidence intervals) was 258 (https://www.surveysystem.com/sscalc.htm).

DATA COLLECTION

The data were abstracted from individual patient folders for one year from 1st January, 2017 to 31st December 2017. Data collection form was designed and used by the investigators to record data and information on the prescribed drugs in the facility. Two hundred of eighty five prescriptions containing at least one antihypertensive agent were selected using systematic random sampling. The brand names of the prescribed drugs in each prescription were decoded to generic names of drugs. Factors selected for present study includes age, gender, anti-hypertensive drug category, most frequently prescribed antihypertensive drug, percentage of one/more drug combination.

RESULTS

Out of the 285 prescriptions of antihypertensive drugs studied, 22.5% (64) were males, whereas females were 77.5% (221) See table 1.

The mean age was 50.9±17 years. Majority of patients were between 50-59 years age group (27.4%) See table 2.

The frequency of the oral antihypertensive drug classes were as follows: ACE-inhibitors 27.7% (173), calcium channel blockers 24.4% (152), diuretics 23.9% (149), Beta-blockers 6.4% (39), Angiotensin receptor blockers 12.0% (75), Vasodilator 0.2% (1) and Central acting 5.6 (35). For details, see table 3.
The number of drugs per prescription was between 1 and 3, with mean value of 2.6. While two drugs per prescription were the commonest (44.2%) 126, one drug per prescription was the least 11 (3.9%). See figure 1.

DISCUSSION

Treating a blood pressure above 140/90 mmHg has been shown to reduce cardiovascular risk. Physician may start treatment and nevertheless not reach target blood pressure values in their patients. Most patients will require more than one agent to achieve these target blood pressures. Medications for hypertension need to be taken for the entire life and factors like efficacy, side effects, drug interactions and cost of therapy need to be taken into consideration. Poor medication adherence may also lead to increased morbidity, mortality, and hospitalization admissions and escalated healthcare costs [9, 10]. It is therefore important that once the diagnosis of hypertension is established, blood pressure should be adequately controlled through regular follow-up, lifestyle modification, exercise and effective antihypertensive drugs [11]. This retrospective study was done for a period of 12 months to observe the drug-prescribing trends of antihypertensive agents in a tertiary care teaching hospital which indicated that the most commonly prescribed antihypertensive were ACEI’s and CCB’s and the prescribing pattern was rational as per the standard treatment guidelines (JNC VII) in this institution. A prescription-based survey is considered as an effective method to assess and evaluate the prescribing attitude of physicians and dispensing practice of pharmacists [12]. A continuous supervision is therefore required through such kinds of systematic audit that provide feedback from the physician and help to promote rational use of drugs. Our study findings are similar to those reported by other studies [13-15]. However in a study conducted by Adejumo et al. in southern part of Nigeria, the most common prescribe antihypertensive were thiazide diuretics [16]. This rise could be due to the beneficial effects it has on the heart; reduced adverse effects with these drugs and recent findings suggesting that they are beneficial in diabetics.

The choice of antihypertensive drug should be determined by the drug’s capacity to lower pressure and prevent complications. ACEIs have shown to be beneficial in patients with microvascular disease in kidney. This is due to their ability to decrease capillary perfusion, reducing trans-capillary leakage of albumin, and in long run decrease damage to both capillaries and arteries [17]. ACE inhibitors are also effective in decreasing cardiovascular mortality and morbidity in patients with congestive heart failure and post myocardial infarction [18, 19]. Reductions in cardiovascular end points were seen regardless of improvements in blood pressure, suggesting that ACE inhibitors have benefits that are independent of their antihypertensive effects [18-20]. This explains why ACEIs are the most frequently prescribed group and it is within JNC8 guideline.

DRUG CLASSES; MONOTHERAPY VERSUS POLYThERAPY

Majority of the studied patients were on polytherapy. This finding is similar to a study in Benin Nigeria that reported less than 20% of the study subjects were on monotherapy while the rest were on multiple drug therapy [16]. The findings on the prescription of antihypertensive medication are in consistent with guidelines as reflected by the significantly high use of ACEI with a low dose of diuretics in high risk groups for cardiovascular events. Use of multiple drugs in combinations is being increasingly recognized as critical to control hypertension in patients with diabetes. Several large clinical trials demonstrated that most patients with hypertension could achieve and sustain adequate blood pressure control only with the use of multiple
antihypertensive drugs [21]. In addition, it was intensified with increasing age, duration of diabetes, duration of hypertension or if complications/ comorbidities were present. This was in consistency with treatment pattern of the evidence based guidelines. Dual blockade of the renin-angiotensin system using ARBs and ACEIs (the Candesartan and Lisinopril Microalbuminuria [CALM] study) found that the combination of both agents reduced blood pressure and urinary albumin [21].

CONCLUSION

This study has revealed that ACEIs were the most utilized anti-hypertensive drugs. The incidence of polypharmacy was high, generic and essential drug prescriptions were high which depicted that the drug use in the hospital was quite rational. Also, continuous medical education with focus on rational drug use and evidence based medicine should form part of the programme of the hospitals.

REFERENCES

20. Dickstein K, Kjekshus J, OPTIMAAL Steering Committee, OPTIMAAL Study Group. Effects of