Original article

Effect of Angiotensin II Receptor Blockers and Dietary Pattern on Renal Failure for Hypertension Patients in Benghazi

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ABSTRACT

Background and aims. *Libya is experiencing a rapid health transition and is projected to become a major reservoir of chronic diseases like diabetes and hypertension. About 25–40% of these subjects may develop chronic kidney disease (CKD) and end stage renal disease (ESRD). The current study was aimed at analyzing the drug utilization pattern of antihypertensive in patients with chronic kidney disease and to detect the effect of other factors such as age and diet program on hypertensive patients.* **Methods.** *A cross sectional study was conducted in patients with chronic kidney disease at the department of nephrology in Al-Hwari hospital in Benghazi city, Libya, over a period of 6 months in 2018. After obtaining the clearance and approval from the Institutional Ethics Committee, a total of 150 inpatients who gave informed consent were included in the study. The information regarding demographic details and antihypertensive drugs prescribed were collected from the patient's case records. Descriptive statistics was done by measuring proportions using SPSS version 20.* **Results.** *It was found that 8.1% of individuals were aged between 19-25 years, 37.6% were between 26-40 years, 45.6% were 41-60 years, and 8.7% more than 60 years (M=43, SD=13). From statistical analysis we found that a significant difference between subjects who used Candesartan and other antihypertensive (p= 0.000<0,05). Related to dietary pattern, it was found that 28.9% of the patients drunk two glasses of water per day, 62.4% three glasses per day and 8.7% drank one glass per day.* **Conclusion.** *The prevalence of CKD was high in our subjects. The preferential drugs employed among antihypertensive were candesartan and telmisartan than other antihypertensive drugs. The overall impression about the prescription trends noted herein is suggestive of a modest and rational approach in prescribing practices.*

INTRODUCTION

Hypertension is the most common cardiovascular disease. In a National Health and Nutrition Examination Survey (NHANES) conducted in 2011 to 2012, hypertension was found in 29% of American adults and 65% of adults aged 65

years or older. The majority varies with age, race, education, and many other variables. According to some studies, 60–80% of both men and women will develop hypertension by age 80. Nevertheless, NHANES found that, unfortunately, only one-half of Americans with hypertension had adequate blood pressure control [1]. Raised arterial pressure causes hypertrophy of the left ventricle and pathological changes in the vasculature. Therefore, hypertension is the principal cause of stroke; a major risk factor for CAD and its attendant complications, MI, and sudden cardiac death; and a major provider to heart failure, renal insufficiency, and dissecting aneurysm of the aorta. The prevalence of hypertension increases with age. Hypertension is usually asymptomatic, and diagnosis is often made during opportunistic screening. For initial assessment, measure BP in both arms, if the difference in readings is >20mmHg then repeat measurements should be taken [2].

Drug induced Nonsteroidal anti-inflammatory drugs; amphetamines/cocaine; sympathomimetic (e.g., decongestants, dietary supplements); oral contraceptives; corticosteroids are most common causes of secondary hypertension. Chronic Kidney Disease elevated, creatinine, and potassium; low calcium; raised phosphate; anemia. These are late manifestations of renal failure; most patients are present at an earlier stage, with minimal signs and symptoms. Reno vascular disease Onset of hypertension at early age, especially in women. Atherosclerotic disease is often associated with cigarette smoking; flash pulmonary edema; coronary artery disease; flank bruits; advanced retinopathy; increased creatinine (usually with bilateral) [3]. This study aimed to analyze the drug utilization pattern of antihypertensive drug in patients with chronic kidney disease and to detect the effect of other factors such as age and diet program on hypertensive. Patients.

METHODS
Study setting
This study was conducted in the department of nephrology in Al-Hwari hospital and Benghazi medical center in Benghazi city, Libya, My sore over a period of 6 months in 2018. After obtaining the clearance and approval from the Institutional Ethics Committee,150 inpatients who gave informed consent were included in the study.

Inpatients that came for dialysis and diagnosed of having chronic kidney disease by the consultant Nephrologist according to KDOQI guidelines were included. Acute renal failure patients were excluded. The information required was collected from the patient's case records and the data compiled under the headings: demographic data, clinical data, and medication data. The subjects' sociodemographic features, medical history, treatment, diet programmer and biochemical parameter measurements (FBG, insulin, phosphorus (P), calcium (Ca), vitamin D, TG was analyzed through face-to-face interview method.

Questionnaire design
A standard interview-based questionnaire was used to obtain data on demography, clinical and family history. The questionnaire consists of 3 sections, each section including many questions. Section I including personal characteristics (age, occupation, income social status), section II including (illness and types, medication, using HTN drugs and another laboratories investigation such as FBS, HBAC1 and Lipid Profile). section III including diet.

Statistical analyses
Descriptive statistics is done by measuring proportions. All the statistical measurements are done in SPSS version 20. Graphical representation is done in using Microsoft Excel.

RESULTS
It was found that the most majority percent of patients was at age 41-60 year (45.6%) and the percent for subjects aged 26-40 (37.6%) and the lowest percentage was at age 19-25 and subjects aged more than 60 years 8.1% and 8.7% -60 years respectively (M = 43, SD = 13) (Table 1).

Table 1. Age distribution of CKD patients in Benghazi.

Age (years)	Count	Column N %
19-25 yr.	12	8.1%
26-40yr.	56	37.6%
41-60yr.	68	45.6%
>60yr.	13	8.7%
Total	149	100.0%

In this study, there were most subjects between 41-60 years. Hypertensive patients (n=150,100%) had renal failure. For most, the current hypertensive was (n=148, 99.3%). (n=23, 15.4%) was diabetic and (n=19, 12.8%) was heart failure (table2

Table 2. Medical history of the subjects.

Variables		Count	Percentage
Renal failure	Yes	149	100.0%
	Total	149	100.0%
Hypertensive	Yes	148	99.3%
	No	1	0.7%
	Total	149	100.0%
Diabetic	Yes	23	15.4%
	No	126	84.6%
	Total	149	100.0%
Heart failure	Yes	19	12.8%
	No	130	87.2%
	Total	149	100.0%

Among the antihypertensive commonly (n=147, 98.7%) were using HTN drugs, 28% were use Candesartan and 22.1% were use Telmisartan,100% take supplements (Vit D and folic acid). From data analyses there were 86% normal investigation and 31.5% abnormal. Related to dietary program found that 64.4% were following healthy dietary program and 35.6 % did not follow any diet. From statistical analysis were found that a significant difference between subjects who used Candesartan and other antihypertensive (p= 0.000<0,05) (figure 1).
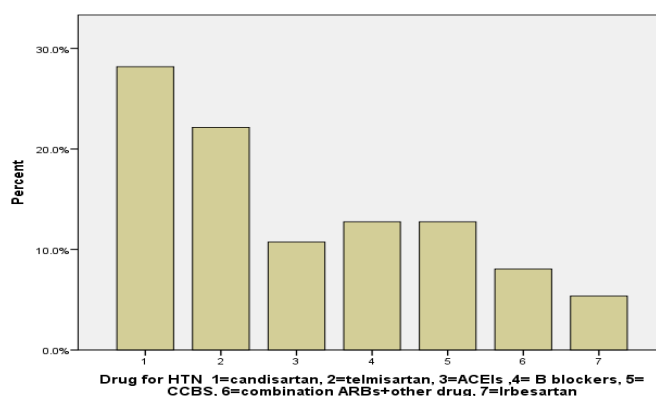

Figure 1. Pattern of antihypertensive prescribed in patients with CKD.

From analysis there was found that 64% of patients follow renal diet and 35.6% do not follow diet. About drinking water there were 28.9% from the patient drunk two glasses of water per day, most of the subjects drunk three glasses per day 62.4% and 8.7% were drunk one glass per day (table 4).

Table 3. Four dietary patterns used for CKD patients.

Variables		Count	Percentage
Investigation	Normal	102	68.5%
	Abnormal	47	31.5%
	Total	149	100.0%
Diet program	Yes	96	64.4%
	No	53	35.6%
	Total	149	100.0%
Water intake	One glass	13	8.7%
	Tow glasses	43	28.9%
	There are gasses	93	62.4%
	Total	149	100.0%

DISCUSSION

Number of epidemiological studies proving the relation between treatment by HTN drugs and hypertension is continuously increasing. An important study related to this issue is claiming that there is an adverse relation between body fat ratio and hypertension and that there is an independent relation between low consumption of water and renal failure.

In this study, there were most subjects between 41-60 years. Hypertensive patients (n=150,100%) had renal failure. For most, the current hypertensive was (n=148,99.3%). (n=23, 15.4%) was diabetic and (n=19, 12.8%) was heart failure. Among the antihypertensive commonly (n=147, 98.7%) were using HTN drugs, 28% were use Candesartan and 22.1% were use Telmisartan,100% take supplements (Vit D and folic acid). In addition, 86% normal investigation and 31.5% abnormal. Related to dietary program we found that 64.4% were following healthy dietary program and 35.6 % was not follow any diet. When compare this study with the study by Geleinse JM et.al., suggest that there is no preferential benefit of ACEI in nondiabetic patients with protein excretion <500 mg per day which is not same our result [11]. But the meta-analysis conducted by Mailloux et al., which included 11 studies with a total of 1860 nondiabetic patients with renal disease, confirms the benefits of ACEIs in renal function protection, especially in patients with greater urinary protein excretion at baseline [15].

From statistical analysis were found that a significant difference between subjects who used Candesartan and other antihypertensive (p= 0.000<0,05) In this study it was found that 28.9% from the patient drunk two glasses of water per day, 62.4% three glasses per day and 8.7% were drink one glass per day. When comparing these results with a study conducted by Asdraq et al., demonstrates the lack of evidence of the effectiveness of ACEIs or ARBs in patients with stage 1–3 CKD who do not have diabetes mellitus, which is the same as our results [2].

CONCLUSION

The goal of antihypertensive therapy should be to obtain optimal BP control. A variety of BP lowering agents is available for clinical use. Usually, a combination of two or more antihypertensive drugs is required to control hypertension. In fact, antihypertensive treatment is individualized to each patient depending on the tolerance, compliance, and specific clinical features. Data of a total of150 medical case records pertaining to CKD patients were assessed. The prevalence of CKD was higher in subjects. The preferential drugs employed among antihypertensive were candesartan and telmisartan than other antihypertensive drugs. The overall impression about the prescription trends noted herein is suggestive of a modest and rational approach in prescribing practices.

Recommendations

Decrease salt intake, diet program to body weight management with regular exercise as part of treatment of hypertension. Close checkup and regular investigation to early detect and treat any complication of long-standing hypertension and it is better to use ACE inhibitor or ARBs as part of treatment in patients with hypertension and CKD.

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تأثير حاصرات مستقبلات الأنجيوتنسين II والنمط الغذائي على الفشل الكلوي لدى مرضى ارتفاع ضغط الدم في بنغازي

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المستخلص

الخلفية والأهداف. تشهد ليبيا تحولاً صحياً سريعاً، ومن المتوقع أن تصبح مستودعاً رئيسياً للأمراض المزمنة مثل مرض السكري وارتفاع ضغط الدم. قد يصاب حوالي 25-40% من هؤلاء الأشخاص بمرض الكلى المزمن (CKD) ومرض الكلى في المرحلة النهائية (ESRD). هدفت الدراسة الحالية إلى تحليل نمط استخدام الأدوية الخافضة للضغط لدى المرضى الذين يعانون من مرض الكلى المزمن والكشف عن تأثير العوامل الأخرى مثل العمر وبرنامج النظام الغذائي على مرضى ارتفاع ضغط الدم. **طُرق الدراسة.** أجريت دراسة مقطعية على المرضى الذين يعانون من مرض الكلى المزمن في قسم أمراض الكلى في مستشفى الحواري في مدينة بنغازي، ليبيا، على مدى 6 أشهر في عام 2018. وبعد الحصول على موافقة وموافقة لجنة الأخلاقيات المؤسسية، تم تضمين ما مجموعه 150 مريضا داخليا الذين أعطوا موافقة مستنيرة في الدراسة. تم جمع المعلومات المتعلقة بالتفاصيل الديموغرافية والأدوية الخافضة للضغط الموصوفة من سجلات حالة المريض. تم إجراء الإحصاء الوصفي عن طريق قياس النسب باستخدام برنامج SPSS الإصدار 20. **النتائج.** وتبين أن 8.1% من الأفراد تتراوح أعمارهم بين 19-25 سنة، و37.6% تتراوح أعمارهم بين 26-40 سنة، و45.6% تتراوح أعمارهم بين 41-60 سنة، و8.7% أكثر من 60 سنة (الذكور=43، الانحراف المعياري=13). من التحليل الإحصائي وجدنا أن هناك فرق كبير بين الأشخاص الذين استخدموا كانديسارتان وغيره من الأدوية الخافضة للضغط (ع = 0.000 <0,05). فيما يتعلق بالنمط الغذائي، وجد أن 28.9% من المرضى يشربون كوبين من الماء يوميًا، و62.4% ثلاثة أكواب يوميًا، و8.7% يشربون كوبًا واحدًا يوميًا. **الخاتمة.** كان معدل انتشار مرض الكلى المزمن مرتفعًا في موضوعاتنا. كانت الأدوية التفضيلية المستخدمة بين الأدوية الخافضة للضغط هي الكانديسارتان والتيلميسارتان مقارنة بالأدوية الخافضة للضغط الأخرى. الانطباع العام حول اتجاهات الوصفات الطبية المذكورة هنا يوحي باتباع نهج متواضع وعقلاني في ممارسات الوصفات الطبية.

الكلمات الدالة. مرض الكلى المزمن، ارتفاع ضغط الدم، استخدام المخدرات، النظام الغذائي.