Hypertension Control at a Nephrology Clinic at Jordan University Hospital

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Abstract

Aim: To determine the degree of control of hypertension in hypertensive patients attending the nephrology clinic.

Methods: A cross sectional study carried out by examining the records of patients with hypertension attending the nephrology clinic.

Results: There were 335 subjects included with mean age of 58.8 ±13.4 years and 189 (56.4%) were women. The mean systolic BP was131±13 and mean diastolic BP was 79±7. Two hundred seventy three subjects (81.5%) had BP ≤140/90 and 170 subjects (50.7%) had BP ≤130/80. Seventy patients (20.9%) had diabetes mellitus **(**DM) with 29 (41.4%) having BP ≤130/80. Chronic kidney disease (CKD) was present in 96 (28.7%) with 50 (52%) had BP ≤130/80.

Conclusions: The findings of this study are reassuring, as they indicate that efforts to control blood pressure can yield substantially better results than have previously been reported. For patients with DM and CKD, there are some deficiencies and there is room for improvement.

Keywords: Hypertension, control, Jordan.

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Introduction

Hypertension is one of the most important modifiable risk factors for coronary artery disease, congestive heart failure, stroke and renal disease.[1] As baseline blood pressure increases from below 120/80 mm Hg, there is a stepwise increase in cardiovascular event rates.[2] The asymptomatic nature of this disease presents a substantial challenge to identifying people with high blood pressure and providing optimal care.[3] In addition, the absence of symptoms renders medication adherence even more challenging.[4]

Despite that, hypertension management has improved dramatically over the past decade, primarily in the areas of increased awareness and treatment. [5, 6] Most patients, however, do not reach therapeutic goals and continue to be at high risk of cardiovascular events.[6] In Jordan, a study showed that while 82% of hypertensive patients were aware of their condition, more than two-thirds (68.5%) of those aware did not achieve control of their hypertension.[7] The purpose of this study was to describe hypertension management and control at a nephrology clinic at Jordan University Hospital.

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Subjects and Methods

This was a cross-sectional chart review of patients attending the nephrology clinic at Jordan University Hospital from June 2008 through June 2009. Subjects were excluded if they had two or less recorded visits to the clinic and were younger than 18 years of age. Most of these patients were referred from the Ministry of Health but a large number of them had a temporary referral for a period of 6 months and were not included in the study. Patients were considered to be receiving treatment for hypertension if their medication history included one or more anti-hypertensive medications.

Controlled hypertension was defined as a blood pressure below 140/90 mm Hg or if the subject had diabetes or CKD below 130/80 mm Hg. [8, 9] CKD was defined as an eGFR less than 60 ml/min, measured by Cockroft-Gault formula, or the presence of proteinuria measured by urine protein to creatinine ratio of more than 200 mg/gm.

Blood pressure was measured by the physician using standardized sphygmomanometers with a 12-12.5 cm cuff to cover two-thirds of the upper arm, resting for at least 5 minutes in the sitting position with the back and legs supported. The average of the last 3-5 visit measurements was taken. All analyses of the extracted data were descriptive, using frequencies and means where appropriate.

Comparison of the means of BP was done by MedCalc Software version 10.0 (Demo version), and P value less than 0.05 was considered significant.

Results

There were 335 subjects included with a mean age of 58.8± 13.4 years, and 189 (56.4%) were women. All subjects were treated with antihypertensive medications. The mean systolic BP was131± 13 and mean diastolic BP was 79±7. Two hundred seventy three subjects (81.5%) had BP ≤140/90 and 170 subjects (50.7%) had BP ≤ 130/80. Seventy patients (20.9%) had DM with 29 (41.4%) having BP ≤130/80 and 51(72.8%) had BP ≤140/90. CKD was present in 96 patients (28.7%) with 50 (52%) having BP ≤130/80 and 74 (77%) had BP ≤140/90.

A single antihypertensive medication was prescribed to 47 (14%) subjects, two anti-hypertensive medications were prescribed to 113 (33.7%) subjects, and antihypertensive regimens with three or more medications were prescribed to 175 (52.3%) subjects (Figure 1). The specific anti-hypertensive medications prescribed in descending order were diuretics (D) in 77.3%, β-blockers (BB) in 57.6%, calcium channel blockers (CCB) in 54.6%, angiotensin-converting enzyme inhibitors (ACE) in 43.9%, an alpha-blocker (AB) in 17.9% and angiotensin receptor blockers (ARB) in 16.4% (Figure 2). As a monotherapy, ACE inhibitors were the most frequently prescribed (34%), followed by calcium channel blockers (29.8%), β-blockers (14.9%), ARBs (10.6%), and diuretics (8.5%).

In patients with DM, 44 patients (62.8%) were on CCB, 42 (61.4%) on BB, 47 (67.1%) on D, 38 (54.3%) on an ACE inhibitor or ARB and 24 (34.3%) were on AB. Those with CKD, 61 patients (63.5%) were on BB, 57 (59.4%) on CCB, 53 (55.2%) on D, 33 (34.4%) on AB and 30 (31.3%) were on an ACE inhibitor or ARB.

Table (1) shows the mean BP according to the number of drugs used and there was a statistically significant difference between the number of drugs used and the control of BP. The more drugs used, the less likely the control of BP. The difference in mean systolic BP for those on one drug was significant in comparison to those with 2, 3 and ≥ 4 drugs with P values of 0.0199, <0.0001 and <0.0001, respectively, and the difference in mean diastolic BP was also significant with P values of 0.0499, 0.022 and <0.0001, respectively.

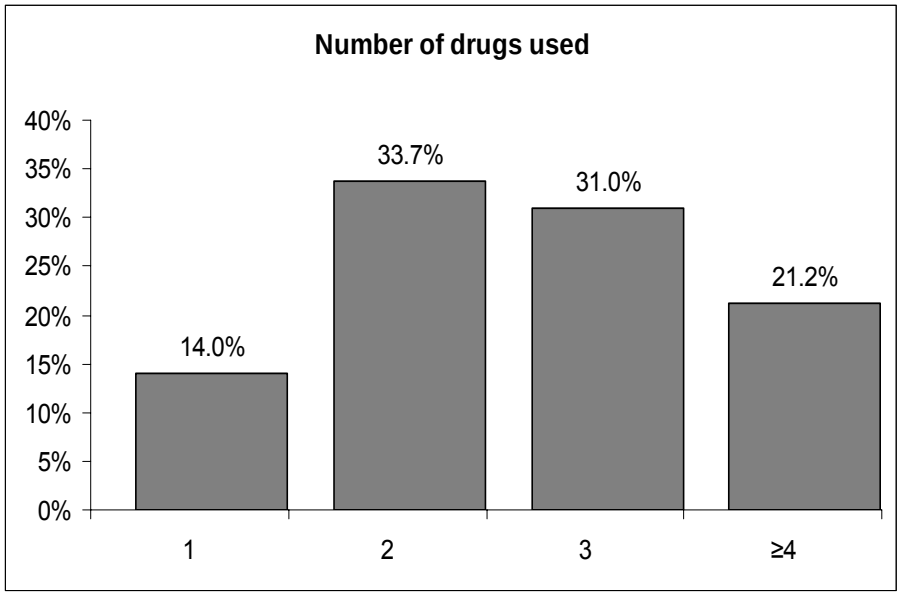

Figure (1): Antihypertensive Medication Regimens in 335 Hypertensive Subjects.

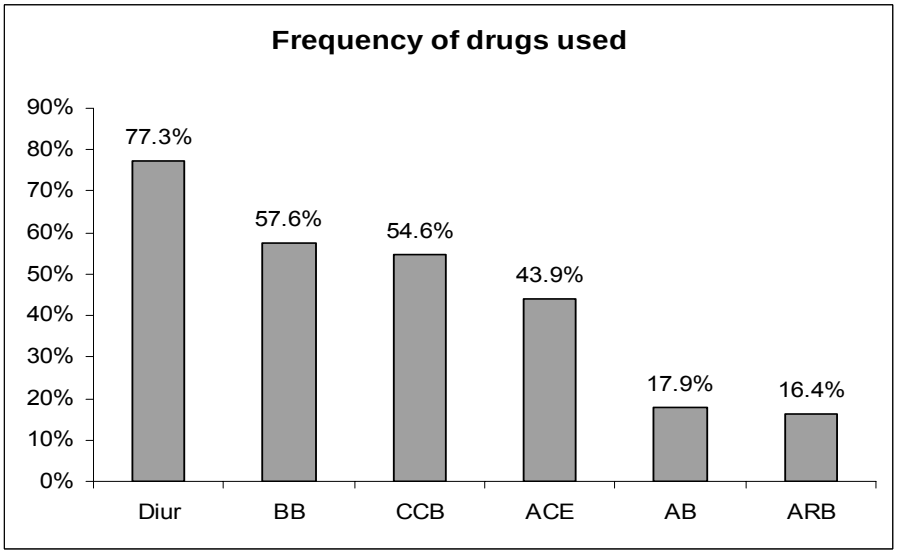

Figure (2): Antihypertensive Medications Prescribed in 335 Subjects.

Diur = Diuretics, BB= Beta Blockers, CCB= Calcium channel blockers, ACE= Angiotensin converting enzyme inhibitors, AB= Alpha blockers, ARB= Angiotensin receptor blockers.

Table (1): Mean Blood Pressure According to Number of Drugs Used.

No. of drugs	No. of Patients (%)	Mean Systolic BP	P Value	Mean Diastolic BP	P Value
1	*47 (14%)*	*123.4 ± 9.4*		*76.6 ± 5.8*	
2	*113 (33.7%)*	*127.8 ± 11.3*	*= 0.0199**	*78.7 ± 6.1*	*= 0.0459**
3	*104 (31.0%)*	*132 ± 13*	*< 0.0001#*	*79 ± 6*	*= 0.715#*
≥ 4	*71 (21.2%)*	*139 ± 16*	*< 0.0017$*	*82 ± 8*	*= 0.0052$*

**** Comparing the mean of those on 1 drug compared to those on 2 drugs***
 # Comparing the mean of those on 2 drugs compared to those on 3 drugs
$ Comparing the mean of those on 3 drugs compared to those on 4 drugs

Discussion

The major finding of this study was that 81.5% of all patients with hypertension had controlled blood pressure. Blood pressure control in patients with hypertension was much better than in the NHANES study.[10] One reason for these differences may be that the NHANES study involved individuals who were not seeking care, whereas this study involved patients attending a specialized care system. Lower levels of control, defined as the percentage of hypertensives whose measured BP is less than 140/90 mm Hg, have been reported elsewhere: 44% in the United States (2005-2006), [11] 28% in England (2006), [12] and (66%) in Canada. [13] In a study involving 715 hypertensive patients in Finland, their blood pressures were below 140/85 mm Hg in 25%. [14] A cross sectional study of 6,537 patients visiting 264 general practitioners in Sweden from 2002–2005 for hypertension follow-up found that only 28% had a blood pressure below 140/90 mm Hg.[15]

Evidence from clinical trials indicates that diastolic blood pressure control can be achieved in 80–90% patients, whereas systolic blood pressure control can be achieved in only 60%.[16] This level of control was achieved in this study; the median proportion of patients with controlled blood pressure was better than that reported in most other studies. There are several possible explanations for these findings. Better clinician awareness of hypertension guidelines and aggressive titration of therapy to achieve the set targets may be one reason, and frequent visits and follow ups in the clinic that stress the importance of hypertension control along with compliance to both drugs and low salt diet is another reason. We also encourage and stress the importance of self home monitoring of blood pressure which has proved to improve blood pressure control. [17] Continuity of health facility, health care provider, and blood pressure measurement within the past year have been associated with better hypertension control.[18] Since the practice in this study is small, continuity of care may have been better than in previous studies.

The JNC-VII recommended the use of thiazide-type diuretics as first line agents for most patients that have hypertension without compelling indication. This approach was advocated in other reviews in the late 1990s.[19, 20] In this study, only 23.4% of patients with no compelling indication that were receiving single-drug therapy had their therapy consistent with JNC-VII recommendation, [21] but 77% of all patients were on diuretics. More recent studies have confirmed the efficacy of ACE inhibitors in reducing cardiovascular events.[22] This evidence is reassuring, given the frequent use of ACE inhibitors as single-agent therapy in the 1995 NAMCS study, [23] the 1999 VA study, [24] the I-Target study [25] and this study, which probably reflects more contemporary trends in hypertension management. [26]

Our analysis of diabetics showed that, whereas 72.8% reached the HEDIS 2000 goal of <140/90 mm Hg, [27] 41.1% reached the ≤130/80 mm Hg goal set by JNC VII and ADA/NKF recommendations. [26, 28] Although the ACCORD study had shown that in patients with type 2 diabetes at high risk for cardiovascular events, targeting a systolic blood pressure of less than 120 mm Hg, as compared with less than 140 mm Hg, did not reduce the rate of a composite outcome of fatal and nonfatal major cardiovascular events. [29] A lot of data showed a clear benefit from lowering BP in diabetics, and this demands that we must be more aggressive when treating these patients. Whether we can reach these goals in a higher percentage of diabetic patients remains to be evaluated.

As for the patients with CKD, the results of this study were better than those in NHANES. Rates of control to blood pressure ≤130/80 mm Hg in the patients with CKD were poor at 31.2%, [10] compared to 52% in the current study. Another report from the USA showed that 37% of CKD patients had blood pressure <130/80.[30] Although ACE and/or ARB are recommended in DM and CKD, only 54.3% and 31.3%, respectively, were on these drugs. This pattern was similar to that in the 1995 NAMCS study and the 1999 VA study but lower than that reported in a study from Canada where 61.1% of patients with DM or

CKD were on ACE and 27.8% on ARB.[31]

Conclusion

The findings of this study are reassuring, as they indicate that efforts to control blood pressure can yield substantially better results than have previously been reported. Good control in this study may have been due to regular monitoring of blood pressure and motivation of the practice to improve patient care. For patients with DM and CKD. though the results are better than reported elsewhere, still there is much room for improvement.

Limitations

This was a cross-sectional chart review and we were unable to standardize the method used for measuring blood pressure. As such, there would be variance in the blood pressure measurements among clinicians. Also, as a specialty clinic, there might be a bias with both patient referral and physician attenuation to BP treatment, and the patient BP control may be biased in part due to a clinic or Hawthorne Effect.

Another limitation is that we restricted our definition of treatment to patients who were prescribed antihypertensive medications and did not include lifestyle modifications.

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انضـــــباط فرط ضغط الدم لدى المراجعين لعيادة الكلى في مستشفى الجامعة الاردنية

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الملخص

الأهداف: تحديد نسبة انضـــــباط فرط ضغط الدم لدى المراجعين لعيادة الكلى في مستشفى الجامعة الأردنية.

المرضى وطرق البحث: دراسة مقطعية تمت بمراجعة ملفات مرضى فَرْطُ ضَغْطِ الدَّم المراجعين لعيادة الكلى.

النتائج: تمت دراسة ملفات 335 مريض، معدل اعمارهم 58.8 ± 13.4 سنة، و 189 (56.4%) منهم نساء. كان معدل الضغط الانقباضي 131 ± 13 ومعدل الضغط الانبساطي 79 ± 7. كان عدد المرضى الذين يقل ضغطهم عن 140/90 هو 273 (81.5%) والذين يقل ضغطهم عن 130/80 هو 170 (50.7%). كان هنالك سبعون مريضا (20.9%) يعانون من داء السكري، (41.4%) 29 منهم كان ضغطهم أقل من 130/80. 96 (28.7%) كان عندهم فشل كلوي مزمن (52%) 50 منهم كان ضغطهم أقل من 130/80.

الخاتمة: إن نتائج هذه الدراسة مطمئنة، إذ تشير إلى أن القدرة على ضبط ضغط الدم ممكنة بالعمل الدؤوب والمتابعة الدورية للمرضى. لكن ما زال هناك نقص في ضبط ضغط الدم في المرضى المصابين بداء السكري ومرضى الفشل الكلوي المزمن.

الكلمات الدالة: فرط ضغط الدم، ضبط، الأردن.