A study of the consistency between hypertension medications prescribed by general practitioners and 2018 ESC/ESH guidelines for the management of hypertension

Un estudio de la consistencia entre los medicamentos para la hipertensión prescritos por los médicos generales y las pautas de la ESC/ESH de 2018 para el tratamiento de la hipertensión

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Abstract

Introduction: Prescription of the right antihypertensive drug plays a key role in treatment and prevention of serious side effects for patients. The present study aims to identify the types of hypertension medications prescribed by general practitioners and the degree to which they agree with 2018 ESC (European Society of Cardiology) and ESH (European Society of Hypertension) Guidelines for the management of hypertension in the health centers of villages near a city in the province of Fars, south of Iran.

Materials and Methods: The present study is a descriptive, cross-sectional work where 300 individuals with hypertension were selected from 30 villages according to the cluster sampling method. Data were collected using a checklist which addressed the respondent's demographics, underlying disease, and type of hypertension medication. Subsequently, the extent of consistency between the prescribed medications and the hypertension guidelines were examined. The collected data were analyzed using SPSS-23.

Results: The participants ranged from 37 to 59 years of age with an average age of 47.23±15.1 years. 60% of the patients studied had stage 1, 30% stage 2, and 10% had stage 3 hypertension. Beta blockers were found to be the medications most frequently prescribed by the general practitioners. Most of the patients with cardiac disorders, diabetes, and kidney failure had been prescribed beta blockers, which was not in accordance with the new hypertension guidelines.

Conclusion: Medications prescribed for patients with hypertension are usually not consistent with hypertension guidelines. It is recommended that general practitioners' awareness of hypertension guidelines be raised through workshops in order to decrease or prevent the serious consequences of hypertension in patients by treating them correctly.

Keywords: Hypertension, Prescription Drugs, Hypertension Guidelines.

Resumen

Introducción: la prescripción del fármaco antihipertensivo correcto juega un papel clave en el tratamiento y la prevención de los efectos secundarios graves para los pacientes. El presente estudio tiene como objetivo identificar los tipos de medicamentos para la hipertensión prescritos por los médicos generales y el grado en que están de acuerdo con 2018 ESC (Sociedad Europea de Cardiología) y ESH (Sociedad Europea de Hipertensión) para el manejo de la hipertensión en los centros de salud de Pueblos cerca de una ciudad en la provincia de Fars, al sur de Irán.

Materiales y métodos: El presente estudio es un trabajo descriptivo y transversal en el que se seleccionaron 300 individuos con hipertensión de 30 aldeas según el método de muestreo por grupos. Los datos se recopilaron mediante una lista de verificación que abordaba los datos demográficos, la enfermedad subyacente y el tipo de medicamento para la hipertensión del encuestado. Posteriormente, se examinó el grado de coherencia entre los medicamentos prescritos y las pautas de hipertensión. Los datos recolectados fueron analizados utilizando SPSS-23.

Resultados: Los participantes oscilaron entre los 37 y los 59 años de edad, con una edad promedio de 47.23 ± 15.1 años. El 60% de los pacientes estudiados tenían estadio 1, 30% estadio 2 y 10% hipertensión estadio 3.

Se encontró que los bloqueadores beta son los medicamentos más frecuentemente recetados por los médicos generales. A la mayoría de los pacientes con trastornos cardíacos, diabetes e insuficiencia renal se les habían recetado bloqueadores beta, lo que no estaba de acuerdo con las nuevas pautas de hipertensión.

Conclusión: los medicamentos recetados para pacientes con hipertensión generalmente no son compatibles con las pautas de hipertensión. Se recomienda aumentar la concienciación de los médicos generales sobre las pautas de hipertensión a través de talleres para disminuir o prevenir las graves consecuencias de la hipertensión en los pacientes al tratarlos correctamente.

Palabras clave: Hipertensión, medicamentos recetados, pautas de hipertensión.

Introduction

Hypertension is a dangerous and life-threatening disease that often doesn't have any clinical signs[1]. Hypertension is a major medical and general health issue which is becoming increasingly prevalent[2]. Prevention of and controlling hypertension is a primary challenge to general health in many countries[3]. Hypertension is known as a silent killer with multiple clinical, economic, and social consequences[4]. Hypertension is the leading preventable contributor to cardio- vascular morbidity and mortality, affecting 1 billion people and linked to more than 9 million deaths globally[5].

According to World Health Organization (WHO), hypertension accounts for 47% of strokes and 37% of ischemic heart diseases[6]. 50% of the total medical costs is spent on treatment of hypertension in patients with cardiovascular diseases; thus, treatment of and controlling the condition can lead to a reduction in medical costs and fewer disabilities and fatalities[7].

Studies show that less than 50% of patients with hypertension are aware of their condition, 25% are undergoing treatment, and less than 12% have been able to control their disease[8]. The purpose of treating hypertension is prevention of injury to vital organs (brain, heart, kidneys, etc.). According to studies, reduction of systolic blood-pressure (SBP) by 10 mmHg and diastolic blood pressure (DBP) by 5 mmHg decreases the risks of cardiovascular diseases and brain strokes by 20% and 32% respectively[9].

Prescription of the correct hypertension medication is the most important part of a hypertension treatment plan and is key to recovery and controlling the consequences of the disease[10]. The results of various studies show that effective treatment of hypertension by medication decreases the risks of stroke, heart attack, and cardiac disorders by 30%, 20%, and 50% respectively[11]. The greatness of the variety of hypertension medications with different mechanisms of action, patients' various responses to different categories of medications, and the variety of prices have caused[12]. Physicians to occasionally select and prescribe medications based on personal taste Moreover, general practitioners' unfamiliarity with new hypertension guidelines has occasionally led to their prescribing the wrong medication[13].

Different types of medications are prescribed in different countries for treatment of hypertension; for example, in the U.S. and Canada, angiotensin-converting-enzyme inhibitors (ACEI) and calcium channel blockers are usually prescribed, while in Germany and England, physicians prefer beta blockers and diuretics[14].

A study reports that the chances of success of a single-medication treatment plan for average hypertension are between 50% and 60%, while the probability of success of a combination therapy is 80% to 90%[15]. According to the study of Pasty et al., the majority of hypertension patients (60%) use only one type of medication for their condition and only 30% of patients are given a combination therapy[16]. According to the study of, Taddei (2015) the chances of success of a combination therapy are considerably higher than those of single-medication treatment. This approach should improve BP (Blood pressure) control and provide better cardiovascular protection[17].

As the prescription of suitable medications is essential to treating and controlling the consequences of hypertension and physicians' awareness of hypertension guidelines can help them choose the right medication, the present study was conducted to identify the types of hypertension medications prescribed by general practitioners and the degree to which they are consistent with 2018 ESC/ESH Guidelines for the management of hypertension in the health centers of villages near a city in the province of Fars, south of Iran.

Materials and methods

The present study is a descriptive, cross-sectional work conducted in 2018 on 300 patients aged over 30 who were undergoing treatment for hypertension in health centers. Sampling was executed in two stages: initially, 30 villages were selected according to the cluster sampling approach; subsequently, random sampling was applied to select patients from the villages. As most of the available research on hypertension in Iran has been conducted in urban areas, the subjects for the present study were selected from rural areas. Having acquired written permission from the department of health, the researcher visited the health centers of the

villages under study. For ethical considerations, the subjects were shown the researcher's introduction papers, informed that participation was on a voluntary basis, and assured of their anonymity and confidentiality in the study. Data were collected using a checklist which addressed the patients' demographics and the types of hypertension medications prescribed by their general practitioners. Subsequently, the extent of consistency between the prescribed medications and the 2018 ESC/ESH Guidelines for the management of hypertension was measured. Descriptive statistics and SPSS-23 were employed for data analysis.

Results

The participants were aged between 35 and 59 years old, with the mean being 47.23±15.1 years; 120 were male and 180 were female. 90 (30%) of the patients did not have a history of a primary disease. Among 210 (70 %) the patients with a history of an underlying disease, 130 (61/9%) had a history of myocardial infarction, 10 (4/76 %) had a history of a chronic kidney disease, 40 (19.04%) had a history of heart failure, and 30 (14/38%) had diabetes. 60% of the participants had stag 1 hypertension, 30% stage 2 and 10% had stage 3 hypertension (Table 1).

Table 1: Classifications of high blood pressure: ESH/ESC 2018

Optimal	SBP [mmHg] <120	DBP [mmHg] <80
Normal	120–129	<80
Upper range of normal	130–139	80–89
Grade I hypertension	140–159	90–99
Grade II hypertension	160–179	100–109
Grade III hypertension	≥ 180	≥ 110

The most frequently prescribed medications for stage 1 were found to be beta blockers (Atenolol), and the most frequently prescribed medications for stage 2 were ACE inhibitors and thiazide diuretics. The majority of the patients with the underlying conditions of heart disorders and diabetes had been prescribed beta blockers (Atenolol). Beta blockers were found to be the most frequently prescribed medications. 60% of the patients were taking beta blockers (Table 2-3).

Table 2: Distribution of type of antihypertensive drugs in hypertensive patients

Percentage	Number	Drug
60	180	Beta-blockers
25	75	Calcium Channel Blocker
6	18	ACE inhibitors
4	12	ARBs
5	15	Diuretics (thiazides)
100	300	Overall

Table 3: The type of prescription medication used in underlying diseases

Diuretics (thiazides)		ARBs		ACE inhibitors		Calcium Channel Blocker		Beta-blockers		Diseases
%	n	%	n	%	n	%	n	%	n	Myocardial infarction
3.84	5	5.38	7	6.15	8	23.10	30	61.53	80	
%	n	%	n	%	n	%	n	%	n	Chronic kidney disease
20	2	10	1	10	1	20	2	40	4	
%	n	%	n	%	n	%	n	%	n	Heart failure
15	6	10	4	12.5	5	25	10	37.5	15	
%	n	%	n	%	n	%	n	%	n	Diabetes
6.68	2	10	3	16.66	5	20	6	46.66	14	

Discussion

Hypertension is an increasingly prevalent and serious issue in healthcare in most countries. Correct choice of treatment according to the new hypertension guidelines can play a key role in controlling and preventing the acute and chronic consequences of hypertension. The results of the present study showed that beta blockers were the general practitioners' first choice for treatment of hypertension. Hypertension guidelines suggest that thiazide diuretics and beta blockers should be the first-line medications for hypertension, which is relatively consistent with the findings of the present study. Here, however, atenolol was the most commonly prescribed beta blocker to the exclusion of other beta blockers. Also, thiazide diuretics were found to be rarely prescribed. According to the 2000 study of Wright et al., beta blockers were the most common group of medications taken by 48% of patients18. A study of 3777 patients in the U.S. over 18 months showed that 60% of patients were on a single medication and the most frequently prescribed medications were beta blockers and ACE inhibitors[19]. In their study of 128 family doctors in the state of Iowa in 1988, Carter et al. discovered that for 79% of patients with stage 1 hypertension, beta blockers were prescribed as the first-line treatment, which is similar to the findings of the present study[20]. In another study in the U.S. where physicians' prescriptions written between 1992 and 1995 were collected and examined, the results showed that calcium channel blockers were the most frequently prescribed medications in the first-line treatment, which is not consistent with the findings of the present study[21]. In 1999, Collin et al. studied 37000 patients with hypertension for 5 years and found beta blockers and thiazide diuretics to be the medications most frequently prescribed for them. Their results showed that the aforementioned medications resulted in an average decrease in diastolic blood pressure by 5-6 mmHg[22]. According to 2018 ESC/ESH Guidelines for the management of hypertension, beta blockers are recommended for patients with hypertension who have had myocardial infarction (MI)[23].

In the present study, the results showed that the guideline was being followed (in 61% of the cases, beta blockers had been prescribed). For patients with heart failure (HF), use of beta blockers (atenolol) following serious left ventricular dysfunction can aggravate the patients' condition. In the present study, beta blockers (atenolol) had been prescribed for 40% of patients with cardiac disorders, which was not consistent with the new guidelines[23]. Moreover, according to the new hypertension guidelines, in the case of patients with heart failure, administration of selective beta blockers, like Carvedilol, is preferred to atenolol. The new guidelines state that ACE inhibitors and angiotensin receptor blockers (ARBs) can significantly control hypertension and prevent acute left ventricular dysfunction in patients with heart failure[24]. In the present study, the most frequently prescribed hypertension medications for patients with diabetes were beta blockers (46%)[25]. Considering the side effects of beta blockers (restricting hormonal responses and masking the clinical symptoms of hypoglycemia), they are usually not selected as the first-line treatment for hypertension[26]. In a study comparing the effects of ACE inhibitors and ARBs on one hand with those of other common hypertension medications (beta blockers and calcium blockers) on diabetic patients with hypertension, the results show that the former medications have better therapeutic effects than beta blockers and calcium blockers do[27]. Also, studies show that, due to their role in reducing renal hypertension and preventing ventricular dysfunction[28]. According to the study of Rui (2015), compared to beta blockers and calcium blockers, ACE inhibitors and ARBs are more effective in reducing and preventing the side effects of diabetes, including proteinuria and diabetic nephropathy[26,29].

In the present study, the patients with diabetes had been prescribed only one type of medication for their hypertension, while studies show that a combination of medications (combination therapy) has better outcomes for diabetic patients in terms of treating and controlling the consequences of their hypertension[30,31]. In the present study, most of the patients with a chronic kidney disease had been prescribed beta blockers and calcium blockers for their hypertension, and only a small number of the patients were taking ACE inhibitors and ARBs,. Yet, according to hypertension guidelines, the latter groups of medications play a significant role in treating hypertension in patients with a chronic kidney disease and should be their first-line treatment[32].

Conclusions

The findings of the present study show that the medications prescribed for treatment of hypertension are not consistent with hypertension guidelines. Thus, it is recommended that workshops be planned to introduce general practitioners to new treatment plans which bring about more satisfactory results in treatment of hypertension.

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