

Diagnosis and Management of Hypertension in Primary Care Setting

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Received: December 12, 2019; **Published:** December 27, 2019

Abstract

Hypertension is one of the most common causes of cardiovascular morbidity and mortality worldwide. For that, extensive literature searches of different databases using the medical subject headings (MeSH) terms; has been performed. Papers discussing diagnosis and management of hypertension in the primary care setting were screened for relevant information. There were no limits on date, language, age of participants or publication type. About half of the patients with high blood pressure stay undiagnosed in their early stages. The need for effective screening programs among the primary health care setting along with incorporation of self-screening would be a great asset. A combination of lifestyle modification and medical treatment should be used for the best outcomes. In complicated cases and those with treatment resistance, the best approach is to refer these cases into secondary care.

Keywords: Hypertension; Primary Health Care; Diagnosis; Management

Introduction

According to the WHO, hypertension is considered one of the most common causes of morbidity and mortality worldwide and responsible for nine million deaths annually [1]. Moreover, hypertension is a significant risk factor for cardiovascular diseases [2-4]. The National Institute for Health and Care Excellence (NICE) defines hypertension as the increased blood pressure up to 140/90 mmHg or that has been confirmed by multiple measurements with a daytime mean of 135/85 mmHg [5]. However, there are controversies about when to start hypertension treatment and the target blood pressure to aim for [6].

The high blood pressure problem is not restricted to only old patients. About 2.1 million individuals below the age of 45 have been diagnosed with high blood pressure during 2015 in the UK alone. Hypertension is responsible for 12% of consultation in the primary

health care setting [7]. Proper management of hypertension is a very significant matter due to the subsequent reduction in cardiovascular diseases [3,4]. In spite of the evidence for the efficacy of the current hypertension treatments, a lot of people remain sub-optimally controlled [8]. For that, a comprehensive literature review has been conducted to provide an overview of the diagnosis and management of hypertension in the primary care setting.

Methods

We performed an extensive literature search of the Medline, Cochrane, and EMBASE databases on 1 October 2019 using the medical subject headings (MeSH) terms. Papers discussing diagnosis and management of hypertension in the primary care setting were screened for relevant information. There were no limits on date, language, age of participants or publication type.

Diagnosis of hypertension in primary care

The diagnosis of increased blood pressure is mainly based on the clinic blood pressure monitoring (CBPM) along with the ambulatory blood pressure monitoring (ABPM) readings [7,9]. In the primary health care setting, whenever the readings are 140/90 mmHg or higher, a follow-up measurement should be always conducted [9]. If the second reading is substantially different from the first one, a third one should be performed [7,9]. Then, the lower reading of those last two is recorded as the clinic blood pressure [7,9]. Whenever anyone has a clinic blood pressure reading of 140/90 mmHg or more; they should undergo ABPM readings recorded to make a hypertension diagnosis [7,9].

The ABPM is the most accurate and reliable method of hypertension diagnosis confirmation with a low cost [7,9]. A mean of 14 measurements, in total, of ABPM should be performed during the ordinary working hours of the patients at a rate of one time every two hours [7,9]. Noteworthy, a patient with a CBPM ≥ 180 mmHg systolic and/or 110 mmHg diastolic; should be given treatment as soon as possible without waiting for the ABPM readings [7,9].

In some cases, like in patients with atrial fibrillation, the ABPM will not be suitable and the home blood pressure monitoring (HBPM) would be a good alternative [7,9]. For the HBPM, four readings daily (two in the morning and two in the evening) should be performed over a period of four days to one week [7,9]. The first-day reading should not be recorded [7,9].

Definition of hypertension

The American College of Cardiology (ACC) and American Heart Association (AHA) has lowered the threshold for hypertension definition to be ≥ 130 mmHg for systolic blood pressure and ≥ 80 mmHg for diastolic blood pressure [10]. However, this definition was not adopted by the last European Society of Cardiology (ESC) and European Society of Hypertension (ESH) guidelines, released in 2018 [11]. Similarly, UK still defines hypertension, as per the British and Irish Hypertension Society, as clinic systolic BP ≥ 140 mmHg and/or diastolic BP ≥ 90 mmHg and ambulatory systolic BP ≥ 135 mmHg and/or diastolic BP ≥ 85 mmHg [7]. The definition as per different guidelines is summarized in table 1.

Screening for hypertension

Hypertension is usually described as the “silent killer” due to the asymptomatic nature in the early stages of the disease [1]. For that, routine screening of hypertension is highly recommended among normotensive individuals, at least once yearly [9]. Using this way, hypertension is mainly identified by primary health care physicians, whether routinely or in purpose [12]. However, better screening programs are still needed since about half of the patients with high blood pressure stay undiagnosed [13].

The incorporation of the new technology, to help in the non-physician-based blood pressure measurements, maybe a great asset in improving the detection of hypertension [1]. The patients participating in the self-screening with measuring their own blood pressure will help a lot in detecting more patients at the early stages of the disease [12]. One in ten British normotensive patients has measured their

	BIHS/NICE 2019 [9]	ACC/AHA 2017 [10]	ESC/ESH 2018 [10]
Normal	-	< 120/80	Systolic 120 - 129 and/or diastolic 80 - 84
Elevated	-	Systolic 120 - 129	Systolic 130 - 139 and/or diastolic 85 - 89
Stage/grade 1	Systolic 140-159 and/or diastolic 90 - 99	Systolic 130 - 139 or diastolic 80 - 89	Systolic 140 - 159 and/or diastolic 90 - 99
Stage/grade 2	Systolic 160 - 179 and/or diastolic 100 - 109	Systolic ≥ 140 or diastolic ≥ 90	Systolic 160 - 179 and/or diastolic 100 - 109
Stage/grade 3 (severe)	Systolic ≥ 180 and/or diastolic ≥ 110	-	Systolic ≥ 180 and/or diastolic ≥ 110

Table 1: Summary of different guidelines for the definition of hypertension.

BIHS: The British and Irish Hypertension Society; NICE: The National Institute for Health and Care Excellence; ACC: The American College of Cardiology; AHA: American Heart Association; ESC: The European Society of Cardiology; ESH: The European Society of Hypertension.

own blood pressure at some point in the past [14]. Recently, many smartphone software has emerged as helpful tools as well. As example, the Cardiogram® application on the Apple® watch; has shown a good ability to predict hypertension among its users [15].

Hypertension management

Lifestyle modification

There are many risk factors that can increase the risk of hypertension; including diet, alcohol drinking, overweight, stress, and physical inactivity [16]. It has been shown that patients with higher salt consumption (> 10 g/day) tend to be resistant to antihypertensive treatments and usually requiring ≥ 3 antihypertensive drugs [17,18]. Moreover, patients with resistant hypertension who have reduced their sodium intake; found a reduced ABP by 20 mmHg systolic pressure and 10 mmHg diastolic [19].

In the same context, alcohol consumption is associated with a high risk of increased blood pressure [20]. A structured intervention aiming to decrease alcohol intake; has resulted in a significant decrease in blood pressure [21,22]. Furthermore, obesity has been also associated with the risk of increased blood pressure; mostly due to the associated sodium retention, renin-angiotensin-aldosterone system activation, sympathetic nervous system overactivity, and the associated obstructive sleep apnea [17,23,24].

Medical treatment

Patients with hypertension below the age of 40 years old should not be treated with the primary care physician and rather be referred to a specialist to exclude causes of secondary hypertension [25,26]. The initial treatment for the majority of patients would be a single-pill combination treatment [10]. This combination includes angiotensin-converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARB) along with a diuretic or a calcium channel blocker (CCB) [10]. To avoid acute renal injury, ACE inhibitors and ARBs should not be given with each other [27]. Patients with resistant hypertension despite the use of three antihypertensive drugs; should not be treated with the primary care physician and rather be referred to a specialist for further evaluation and treatment [25,26].

The blood pressure treatment target as per ACC/AHA guidelines is < 130/80 mmHg [10], while the target according to the ESC/ESH guidelines is to reach a systolic blood pressure < 140 mmHg and close to 130 mmHg [10]. Both guidelines advice to restrict beta blockers only to patients with comorbidities or other indications [10].

Treatment intolerance

Multiple drug intolerance is an indication of the patients’ referral to secondary care [28]. As an example, patients aged > 55 years and those of a black ethnicity; are given CCBs as the first line of treatment [29,30]. However, some patients may show intolerance with peripheral edema, which in turn will cause the treatment discontinuation [31]. The shift into ACE inhibitors or use of ARB will not be effective in this cohort of the patients [32]. A treatment algorithm for patients intolerant to amlodipine is summarized in figure 1 [6].

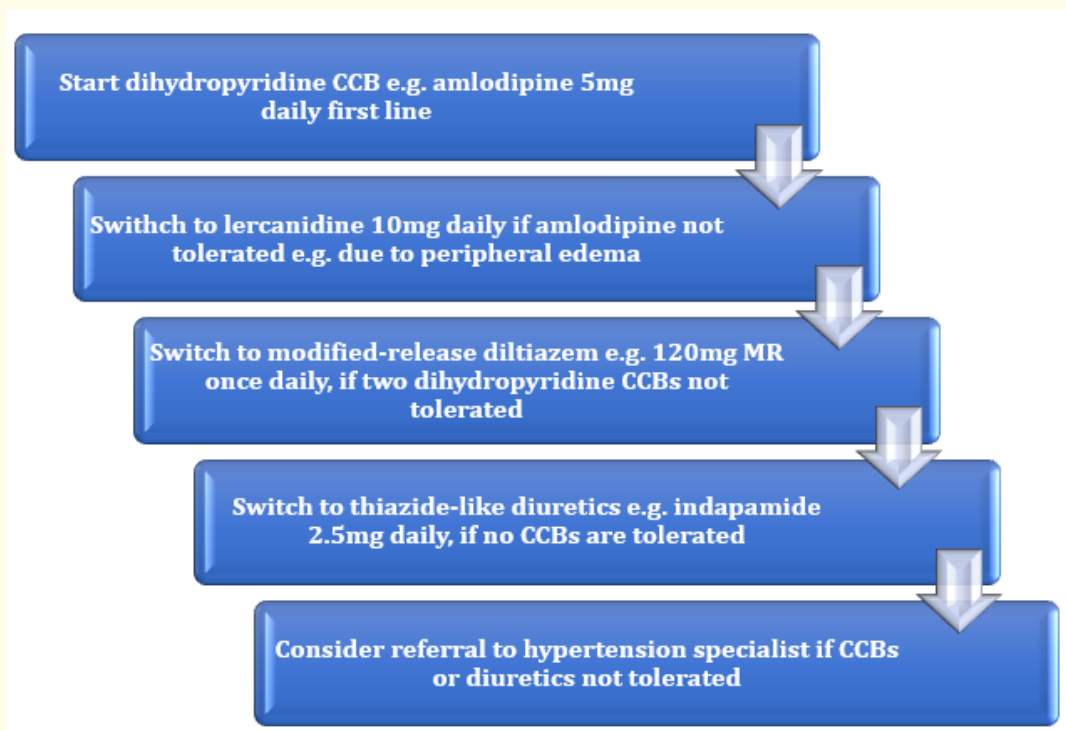


Figure 1: Suggested treatment algorithm for hypertensive patients over 55 years of age or of Black African/Caribbean ethnicity, who are intolerant to first-line treatment with a dihydropyridine calcium-channel blocker (CCB) [6].

Conclusion

Hypertension is a global health care problem that is associated with high morbidity and mortality. Primary health care physicians can play a very important role in the screening and early detection of increased blood pressure. A combination of lifestyle modification and medical treatment should be used for the best outcomes. In complicated cases with treatment resistance, the best approach is to refer these cases into a hypertension specialist to give a full evaluation.

Funding

None.

Conflicts of Interest

No conflicts related to this work.

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Volume 16 Issue 1 January 2020

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