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Review Article

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Evaluation of Role of Family Physicians in Management and Diagnosis of Hypertension in Primary Health Care Centers: A Simple Literature Review

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ABSTRACT

Background: *Hypertension is a prevalent disease in many countries, either developing alone as essential hypertension or passing as co-morbid in atherosclerotic diseases and fibrodysplasia. Hypertension has a variable presentation, with most patients being asymptomatic; clinical signs do occur, such as headaches, and should alert the physician to the possibility of advanced disease or uncontrolled blood pressure.* ***Methods:*** *PubMed database was used for articles selection, and the following keywords were used in the mesh; "Hypertension"[Mesh] and "Evaluation"[Mesh] or "Management"[Mesh] or "Treatment"[Mesh] and "Family Physician" [Mesh]. Many articles on the topic were found, with further restriction by PubMed filters, and with reviewing the titles and abstracts of the articles, the final results were included in this paper.* ***Conclusion:*** *Family physicians should focus on maintaining blood pressure to appropriate levels by combining updated guidelines and clinical judgment. Beta-blockers, thiazides, and angiotensin-converting enzyme inhibitors continue to be the mainstay of treatment in hypertensive diseases; newer novel drugs are being tested with promising results.*

Key words: *Hypertension, Family physician, Blood pressure evaluation.*

INTRODUCTION

Hypertension continues to be a major modifiable risk for cardiovascular disease worldwide, as it is a leading mortality factor in the current medical world [1, 2]. It is an incredibly regular condition in diabetes, influencing ~20-60% of patients with diabetes, contingent upon obesity, ethnicity, and age [3]. Systemic hypertension is defined as having a systolic blood pressure of 140 or more and diastolic blood pressure of 90 or more. However, if self/home monitoring was used then the value of >135/85 mmHg or more are used and for ambulatory monitoring, 24-hour values are >125/80 mmHg or more [4]. The seventh report of the Joint National Committee

established that if the patients were not motivated then treatment would be irrefutably suboptimal. Trust in the clinician's plan and empathy towards their patients were all positive factors towards an aware hypertensive patient [5]. Family doctors are facing hypertensive individuals on a daily basis in the outpatient setting, as they would be in the frontier to evaluate and guide the newly diagnosed and maintain the chronically ill on appropriate medication and lifestyle modifications. This is important considering that attentively controlling hypertension by tailoring the treatment regimen to each patient would decrease the risks of major cardiovascular complications by at least 20% [6]. Family physicians recognize the role of managing a rather insidiously asymptomatic disease and its control should be a focus in the prevention of complications.

We looked objectively into epidemiology, clinical pathophysiology, diagnostic evaluation, and management by the family doctor. There is an increasing number of published papers on hypertension since it's a global burden. However, we focused on the evaluation of hypertensive illness by family physicians and included relevant studies.

METHODS

PubMed database was used for articles selection, and the following keywords were used in the mesh; "Hypertension"[Mesh], and "Evaluation"[Mesh] or "Management"[Mesh] or "Treatment"[Mesh], and "Family Physician"[Mesh]. Many articles on the topic were found, with further restriction by PubMed filters, and with reviewing the titles and abstracts of the articles, the final results were included in this paper.

In regards to the inclusion criteria, the articles were selected based on the relevance to the project which should include one of the following topics; hypertension evaluation, hypertension management, the pathophysiology of hypertension, and family physician in evaluation of hypertensive disease. Exclusion criteria were all other articles which did not have one of these topics as their primary endpoint, or repeated studies, and systematic reviews or meta-analysis.

DISCUSSION

Hypertension is a common chronic disease, with a majority of cases presenting as idiopathic or essential hypertension [7]. Only a small portion of hypertensives have identifiable aetiologies such as renovascular disease, primary aldosteronism, and obstructive sleep apnoea [8]. In Saudi Arabia, hypertension is known for its high prevalence, positively associated with obesity and overweight as risk factors [9, 10]. Other known risk factors are a sedentary lifestyle and advanced age [11]. There is a multitude of factors that come into play as humans progress from normal blood pressure into hypertension. The combination of obesity and hypertension, in particular, is known to increase morbidity and mortality in relation to cardiovascular events, renal injuries, and resistant arterial hypertension [12, 13]. Dietary factors known to lower blood pressure were fish oils [14], omega-3 fatty acid supplements [15], and beetroot juice [16]. The majority with idiopathic hypertension are known to have incremented renal sympathetic outflow and decreased parasympathetic drive [17, 18]. Inflammation promotes further disease by endothelial dysfunction, releasing abnormal nitric oxide amounts, increasing oxidative stress and hence an imbalance in systemic vasodilation ensues [19, 20]. Chronic inflammation prevails with aging [21], combined with secondary causes of hypertension occurring in the elderly [22] such as renal injury and obstructive apnoea. In patients with primary aldosteronism, medications that block the mineralocorticoid receptor, the primary target receptor of aldosterone hormone, are currently utilized to manage hypertension that is resistant to angiotensin-converting-enzyme (ACE) inhibition and angiotensin II receptor type 1 antagonism [23]. Mineralocorticoid receptor activation in the distal renal tubules leads to incremented amounts of sodium and water with decreased potassium, proceeding to an increased blood volume and blood pressure [24].

Clinical Features:

Usually, the patient with mild hypertension is asymptomatic, however, attacks of sweating, headaches, epistaxis, nocturia, and palpitation are observed. Patients with malignant hypertension may present with a headache, visual disturbances, fits, transient loss of consciousness and/or symptoms of heart failure. Some other symptoms may indicate a second pathology like breathlessness (which may hint to left ventricular hypertrophy or cardiac failure), and angina, or symptoms of peripheral arterial vascular disease (atheromatous renal artery stenosis). As a family physician, and while examining the patient you may find elevated blood pressure usually as the only abnormal sign. Other signs of an underlying cause should be looked for, such as renal artery bruits (renovascular hypertension), radiofemoral delay (coarctation of the aorta), loud aortic second sound (left ventricular

hypertrophy), sinus tachycardia and a third heart sound (cardiac failure). The Joint National Committee recommends in its seventh report [5] that certain investigations are in order when initially evaluating a hypertensive patient. These include a 12-lead electrocardiography, serum glucose level, fasting cholesterol panel, glomerular filtration rate, hematocrits level, serum calcium and potassium levels, and urinalysis.

Management:

Family physicians should aim for diastolic blood pressure (DBP) of less than 90 mm Hg, as it has been proven to have improved outcomes [25-27]. Advanced age patients with moderate hypertension and above had improved cardiovascular status and decremented mortality rates with active treatment, blood pressure below 150/90 mm Hg was linked to this betterment of health and decreased stroke risk [28-30]. Controlling hypertension is known to significantly reduce its unfavorable consequences. Gueyffier F et al. [6] investigated antihypertensive beta-blockers and thiazides drug therapy and showed that females had decreased risk of stroke and major cardiovascular complications, while men responded more in terms of reduced mortality, coronary problems, and also strokes and major cardiovascular complications. Generally, in the newly diagnosed patients that are under 60 and not African American descendants, we prefer to start the management with ACE inhibitors, or ARBs if side effects were noted. In African Americans or older patients (> 60 years old), calcium channel blockers (CCB) and/or Thiazide type diuretics are preferred as first-line agents over ACE inhibitors, as the former showed better ability in lowering blood pressure and effectiveness in decreasing strokes [31]. However, In both of these cases, the second-line therapy is always by means of combining both mentioned drugs or by combining ACE inhibitors with thiazide-type diuretics. Moreover, as the third step giving the patient the full regimen of ACE, CCB and thiazide are recommended [4]. Nevertheless, all patients with diabetes or chronic renal injury should tailor their treatment for a blood pressure below 140/90 mm Hg [32]. The recommended treatment for diabetic and renal injury individuals is an ACE inhibitor or angiotensin receptor blocker (ARB) regardless of racial origin. Concurrent administration of ACE inhibitors and ARBs could lead to disastrous consequences, mainly renal complications and thus shall be monitored [32]. The family doctor should consider giving two initial drugs simultaneously only in patients with comorbidities and severely elevated blood pressures [5, 32-34].

Table 1: Initial Therapy and Goals by Population Sample

Population	*Initial Therapy*	*Comment*	*Ref.*
Non-blacks (younger than 60 years)	ACE inhibitors or ARBs	They block the renin-angiotensin system resulting in blood pressure reduction. ACE inhibitors prevent the conversion of angiotensin I to angiotensin II which is a hormone that raises the blood pressure. ARBs reduce the blood pressure by blocking the action of angiotensin II on its receptors leading to the prevention of vasoconstriction. These drugs have better action on white patients than on black patients because the renin-angiotensin system is often less active in black patients.	[34]
Blacks (with no comorbidities)	CCBs or thiazides	CCBs work by stopping the influx of calcium ions on the arterial smooth muscle cells leading to vasodilation. Thiazides increase the excretion of sodium in the urine resulting in the reduction of vasoconstriction.	[31, 34]
Chronic renal injury and/or diabetes mellitus	ACE inhibitors or ARBs Lower blood pressure below 140/90 mm Hg		[32,34]
Elderly (above 60 years)	CCBs or thiazides Lower blood pressure below 150/90 mm		[31]

CONCLUSION:

Hypertension is a highly studied topic and widely discussed subject in the medical field and the updates in the management are considered always a highlight that needs to be known to all medical professionals and especially the family physician. Future studies should focus on a new and upcoming great opportunity for research such as novel methods to prevent hypertension, education of hypertensive patients and the new methods in the management with new drug classes (e.g., inhibitors of vasopeptidases, aldosterone synthase, and others) or others such as renal denervation and baroreflex activation therapy.

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