

Review on Current Trends in Hypertension

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Abstract

Hypertension is one of the serious medical condition that has risk factor for developing cardiovascular diseases. Around 33% of individuals having hypertension are undiagnosed and those who are diagnosed are not taking proper treatment. One of the significant reason for hypertension is premature death. In this review, we focused on modern directions of hypertension management with an attention on screening, diagnosis and drug selection. In urban areas of India hypertension incidence is estimated upto 20 to 40% and in rural area it is upto 12 to 17%. Hypertension shows no symptoms and during routine check-ups we can diagnose it. For management of hypertension the guidelines were developed by ministry of health. Various threats were identified regarding management of hypertension.

Keywords -Hypertension, Screening, Pre-hypertensive Stage, Malignant Hypertension

Introduction

World Health Organization has defined Hypertension as increase in systolic and diastolic B.P above 140/90mm Hg or both. When blood Pressure is more than 140/90 mm Hg we define it as Hypertension according to AHA.¹

In world everyone is facing common problem known as HTN. About 1 billion of individuals are suffering from HTN and it is expected that this figure may increase up to 2025. HTN is known as quiet executioner because it shows no symptoms. Sometimes during routine check-

ups most of individuals are diagnosed as Hypertensive.² Systolic blood pressure is defined as contraction of pressure ventricles whereas when the ventricles are filling with the blood reflects is known as diastolic blood pressure. One of the most important determinant of cardiovascular, myocardial and coronary heart disease is systolic blood pressure.³

According to national committee on prevention, evaluation, detection and treatment of increased blood pressure classification of blood pressure is taken on 3 clinical visits.⁴

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Table 1 Classification of adult blood pressure

Definition	BP(Diastolic)	BP(Systolic)
Normal	<85	100-120
Borderline	90-94	141-160
Mild	95-104	161-180
Moderate	105-114	>180
Isolate Systolic HTN	<90	≥140
Severe	>114	
Malignant	>140	

Pre-hypertensive stage is defined as High normal hypertension. Stage 1 is defined as when patients B.P is mild or borderline. Hypertension Stage 2 is defined as when patients diastolic B.P is 100 & systolic is >140. When patient's diastolic B.P is more than 130 months & systolic B.P is more than 200 than it is termed as malignant HTN. This stage of hypertension can lead to renal failure as well as severe retinopathy. Some common Symptoms which may be seen in malignant

HTN are visual disturbance and headache.⁵

On basis of etiology hypertension is of two types i.e. primary and secondary HTN. About 95% of cases are seen of primary hypertension whereas 5% of cases accounts for secondary HTN. The exact cause of primary hypertension is unknown but there are some specific causes of secondary HTN which are listed below in table.⁶

Table 2: Causes of Secondary Hypertension

Causes	
Diseases of Renal system	Glomerulonephritis, chronic pyelonephritis, Reno parenchymal disease
Diseases of Endocrine system	Hyperaldosteronism, Cushing's syndrome, acromegaly, hyperparathyroidism, hyperthyroidism
	Cyclosporine, Adrenocorticosteroids, Phentothiazine, Alcohol
Drugs	Oral contraceptives, tricyclic antidepressants

Pharmacological Management of HTN

The initial step for the treatment of HTN is assessment. Pharmacotherapy & non pharmacotherapy are also used for the treatment of hypertension. Guidelines which are recommended by joint national committee include 3 blood pressure measurements of both arms at alternate health check-up visits.⁷ Assessment should be done before starting the treatment of HTN. Assessment mainly includes client's history, physical examination &

causes through which basic investigation can be done for determining the first line agent for treatment of HTN. We must be aware of condition like DM, thyrotoxicosis & pregnancy. Assessment and diagnosis of hypertension should be done appropriately in clients.⁸ For clients having DM Blood Pressure should be done appropriately in clients. For clients having DM blood pressure should be managed till readings of 130/80 mm Hg and for other clients of BP should be managed at the readings of <140/85 mm Hg. Rapid Reduction of blood pressure can

be fatal because it may cause risk for developing stroke . Clients who are in HTN stage 1 are recommended for lifestyle changes, pharmacology & non pharmacologic therapy. Blood pressure should be reassessed for about 3 to 6 months prior to prescribing drugs. If there is no reduction in B.P after reassessment then it is suggested to start drug therapy.⁹

Non –Pharmacological approaches for Hypertension¹⁰:

- Bland Diet
- Exercise (Aerobic)
- Dieting Reduction
- Stress Buster
- Decrease alcohol
- Smoking Cessation
- Decrease exacerbate factors example- pain
- Controlling factors of arteriosclerosis

Drug selection Principle -

Pharmacological treatment should be given to clients with HTN or sustained pressure. If readings of HTN is more than 140/90 mm of Hg than decision for prescribing drugs depends upon risk of presence of diabetes, coronary events or end organ damage.¹¹

Thiazides and blockers are agents for initiating treatment. Angiotensin receptor blockers are the agents

which are less studied but are effective.¹²

If client condition is not getting improving from one drug it’s better to switch to another drug. The various factors such as Sex, age and race are considered as the most appropriate for first line treatment.¹³

ACE-I may retard progression of nephropathy in diabetes mellitus condition while beta blockers may retard progression of palpitations associated increased level of thyroid hormones.¹⁴

Thiazides and beta blockers are the first line agents for treating HTN having less side effects. Beta blockers drugs should be avoided in conditions such as DM because it may create hyperglycaemic reactions. Atenolol, metoprolol and bisoprolol are the drugs which must be used by considering appropriate dose in cardiovascular conditions.¹⁴

ACE-I agents are the first line agents or clients having left-ventricular dysfunction. Methyldopa or labetalol are the drugs which are used as first line agents during pregnancy because these drugs do not cause any harmful effect to foetus.¹⁵

In some of clients pulmonary edema is seen for that loop diuretics are prescribed because of their short duration .The effective antihypertensive drugs are ACE inhibitors. Drugs such as Diltiazem and Verapril cause adverse effects such as heart blockage, sinus tachycardia. The drugs that should be avoided are short acting CCBs because of large variations in tachycardia & B.P.¹⁶

Table 4 Treatment for hypertension guidelines¹⁷

Patient Assessment		Target BP	Initial Drug Choice
AHA			
Primary prevention	Framingham risk score<10%	≤ 140/90	ACEI, CCB, thiazide diuretic or combining if needed.
	Framingham risk score<10%	≤ 130/80	1st – ARB 2nd – Thiazide diuretic 3rd- BB
ACEI – Angiotensin converting enzyme inhibitor, BB- beta blocker, CCB – calcium channel blocker, ARB – Angiotensin Receptor Blocker			

Source – Hypertension: Clinical Practice Updates, American College for Clinical Pharmacists

Table 5: Classes of Antihypertensive Agents¹⁸

α Blockers	ACE-Inhibitors	ARBs	Beta-blockers		CCBs	CAAs	Diuretics		Vasodilators
Doxazocin	Captopril	Irbesartan	Non-Selective	Nandolol	Diltiazem	Clonidine	Thiazide	HCTZ	Hydralazine
Phentolamine	Enalapril	Losartan		Oxprenol	Isradipine	Methyldopa	Loop	Bendrofluzide	Minoxidil
Prazosin	Fosinopril	Telmisartan		Pindolol	Nicardipine	Moxonidine		Torseמידe	
	Lisinopril	Valsartan		Propranolol	Nifepine	Reserpine	Potassium spairing		
	Ramipril			Sotalol	Nimodipine				
				Timolol	Verapamil				
			Cardio selective	Atenolol					
				Bisoprolol					
				Metoprolol					
			β- Blockers	Carvedilol					
				Labetalol					
			ISA	Acebutolol					
				Oxprenolol					
				Pindolol					

CCA- centrally acting anti-adrenergic, HCTZ- hydrochlorothiazide, ISA- intrinsic sympathomimetic activity

Hypertensive crises

The blood pressure in accelerated hypertension is equal to or greater than systolic 18mmhg or diastolic 110mmhg. Some patients may be asymptomatic but some of them may report headache, breathing difficulty visual failure, altered level of consciousness. The goal for management of hypertensive crisis is prompt which leads to sudden decrease in blood pressure. Hypertensive crisis does not have specific treatment, only furosemide plus hydralazine is advised every 15 minutes intravenously till the normal range of blood pressure is achieved.¹⁹

Major side-effects of antihypertensive drugs

The major side effects of thiazides are postural hypotension, hyperlipidaemia, impaired glucose tolerance, hypokalaemia, neonatal thrombocytopenia and hyperuricemia. Beta blockers have some adverse effects such as heart failure, cold peripheries, bradycardia, asthma, fatigue and bronchospasm.²⁰

Low doses of ACE inhibitors are well tolerated and may cause side effects such as hyperkalaemia, renal failure, skin rashes and dry cough. Hydralazine causes systemic lupus erythematosus if given to slow acetylators but is reversible on omission of drug. Hydralazine

causes fever, vascular headache, hepatitis and peripheral neuropathy. CCBs causes adverse effects such as gum hyperplasia, headache, flushing, ankle edema and fatigue.²⁰

Ethical Consideration: There was no involvement of subjects hence ethical permission is not required.

Funding:No external funding was provided for this review

Conflicts of Interest: None of the authors disclose any conflicts of interest, either real or perceived.

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