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Review Article

Hypertension in the Elderly: A Perspective

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Abstract

The elderly is the most rapidly growing demographic subset of world population. Not only does the prevalence of hypertension (HT) increase with age but elderly patients also have existent comorbidities such as coronary artery disease (CAD), congestive heart failure, chronic renal impairment, stroke, and cognitive decline. Although it may be difficult to provide an exact definition of elderly, ACCF/AHA guidelines have defined age-specific subgroups as "young old" (65–74 years), "older old" (75–84 years), and the "oldest old" (>85 years). Due to age-related reduction in vessel distensibility and enhanced vascular stiffness, systolic blood pressure rises, while diastolic blood pressure plateaus in late middle age, with a slight decline thereafter. Consequently, most elderly individuals have isolated systolic HT. Managing HT in elderly patients represents a therapeutic challenge for physicians, and till recently, the overall benefits of treating these patients remained unclear. The following review focuses on salient features of HT in the elderly population along with reappraisal of blood pressure management principles in them.

Key words: Hypertension, elderly, diagnosis and management

Introduction

Hypertension (HT) as defined by a blood pressure over 140/90 mmHg is frequently encountered in elderly individuals and is an important risk factor for cardiovascular morbidity and mortality. Due to an overall longer life expectancy, elderly patients, especially those older than 80 years, currently represent the fastest growing stratum of society. It is estimated that by 2050, approximately 1–5th of the world population will be older than 80 years.[1] Due to the age-associated increased prevalence of HT, most of the elderly are hypertensive. Data from the Framingham Heart Study demonstrated that 90% of those who were normotensive at age 55 developed HT and nearly two-thirds of males and three-fourths of females develop HT by 70 years of age.[2,3] Management of HT in elderly patients is complex and challenging because of existent comorbidities and concerns related to drug dosages and resultant adverse effects, often leading to poor blood pressure control. Moreover, till recently, evidence-based data on management of HT (especially in those older than 80 years) were lacking since most trials had not exclusively studied patients in this age group.

What is Elderly

Since there is heterogeneity among different individuals with regard to aging, giving an exact definition of elderly is difficult. Although, in general, individuals with age >65 years are considered as elderly, the ACCF/AHA guidelines for the 1st time subclassified these into age-specific subgroups, namely the "young old" (65–74 years), "older old" (75–84 years), and the "oldest old" (>85 years).[4]

The basic pathophysiology of HT in elderly involves age-related changes in arterial structure and function due to increased collagen deposition, calcification with accompanying cross-linking, and degradation of elastin fibers. The resultant reduction in vessel distensibility leads to heightened pulse wave velocity, higher peripheral vascular resistance, and late systolic blood pressure (SBP) augmentation.[5] The late SBP augmentation is primarily due to the early returning reflected waves from the periphery which summate with the anterograde waves. This late systolic peak imposes an additional load on the heart which further increases the myocardial wall tension. Compared to younger patients, these patients often have wider pulse pressure,

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lower intravascular volume, and greater degree of endothelial dysfunction. There is reduction of forward flow due to fall in cardiac output (secondary to decreased stroke volume and high peripheral resistance), limiting organ perfusion. Orthostatic dysregulation is common with aging, leading to orthostatic hypotension because of associated impaired baroreflex function, reduction in venous capacitance, and increased venous insufficiency. Orthostatic HT, where BP increases with postural change, can also occur. Impaired neurohormonal mechanisms are also common in elderly including age-related decline in plasma renin activity and increase in peripheral plasma norepinephrine concentration possibly secondary to the reduction in responsiveness to β-adrenergic receptors.[6] Existent comorbidities such as CAD, heart failure, atrial fibrillation, renal dysfunction, cerebrovascular disease, cognitive impairment, and peripheral vascular disease further confound the underlying physiology.

Isolated Systolic HT

Due to reduction in vessel distensibility and enhanced vascular stiffness, SBP rises gradually with aging, while DBP plateaus in late middle age, with a slight decline thereafter. Expectedly, the prevalence of ISH increases with age and >90% of patients over the age of 70 years have ISH.[7,8] Previously, the elevation of SBP was thought to be an age-dependent physiological adaptive response considered a prerequisite for normal organ perfusion. However, now, elevated SBP is rightly perceived to be an independent risk factor for CV events and evidence supports treating ISH in older patients.[9,10]

Diastolic BP and Pulse Pressure

The decline in DBP with aging is related to the blunted ability of the stiff capacitance vessels to adequately expand and contract in systole and diastole, respectively. Due to the age-related plateau and subsequent fall in DBP, only 10–15% of elderly individuals have diastolic HT. In older individuals, the CV risk associated with DBP is bimodal; values >90 mmHg and <65–70 mmHg both have a similar increased risk. Moreover, the age-related fall in DBP implies that with increasing age there is an increase in pulse pressure (SBP-DBP), which increases the pulsatile stress on the arterial system.[11] Hence, in younger individuals, DBP is the strongest correlate of CV risk, which is in contrast to that in the elderly. With increasing age due to the inverse correlation of DBP to CV risk, pulse pressure is a stronger risk factor for predicting CV events than SBP, DBP, or mean arterial pressure.[12]

White coat HT, masked HT, pseudo-HT, and orthostatic hypotension are all more commonly observed in the elderly.

1. White coat HT is characterized by BP readings that are consistently higher than normal (>140/90 mmHg) only in the clinical setting, while the readings recorded outside, either by ambulatory monitoring or self-measurement at home, are normal. Age-specific trends indicate a 30–50% prevalence of WCH in 2–4th decades of life, which reaches up to nearly 75% in the eighth decade of life.
2. Masked HT, on the other hand, is the term used for normal office BP readings with high home BP recordings. It is also known as reverse white coat HT, white coat normotension, or isolated ambulatory HT.
3. Pseudo-HT is common in elderly patients and a common cause of falsely high SBP reading. It is due to failure of the non-distensible, sclerotic arteries to collapse during sphygmomanometer cuff inflation. This can lead to spuriously high BP readings resulting in overtreatment and often over escalation of therapy, leading to adverse effects. The possibility of pseudo-HT should be considered when persistently high BP readings are documented without obvious target organ damage or if the BP is difficult to control with usual medications, especially when associated with postural hypotension. The presence of radial artery pulse that is still palpable after the cuff has been inflated above the SBP (Osler maneuver) should be performed in such cases, although its usefulness is doubtful. Often, direct intra-arterial measurement of BP may be required to confirm pseudo-HT.
4. Orthostatic hypotension: May be seen in about 15–30% of the elderly hypertensives. Normally, on standing, there is a small increase in DBP accompanied by a small decrease in SBP. Orthostatic hypotension is diagnosed when there is a drop of >20 mmHg (SBP) or >10 mmHg (DBP) in changing from supine to standing position with or without symptoms which may include dizziness, lightheadedness, giddiness, or even syncope. Postulated causes include age-related baroreflex dysfunction, autonomic insufficiency, hypovolemia, or drug-related adverse effects (especially with the vasodilator group of anti-HT drugs). Therefore, standing BP measurements are recommended in all elderly patients as a routine, before institution of therapy.

Diagnosis of HT

As per previous recommendations, an SBP >140 mmHg and/or a DBP >90 mmHg (at least three different BP measurements taken on ≥2 separate occasions) is sufficient to diagnose HT, using an appropriately sized cuff.[13,14] The 2017 ACC/AHA categorizes BP levels into four levels.[15]

- Normal: <120/80 mmHg
- Elevated: SBP 120–129 mmHg, DBP <80 mmHg
- Stage 1 HT: SBP, 130–139 and DBP 80–89 mmHg
- Stage 2 HT: SBP >140 and DBP >90 mmHg.

No separate diagnostic criteria are listed for the elderly in these latest guidelines.

Evaluation for postural hypotension or HT is mandatory for all elderly patients. At the time of initial evaluation, it is essential to measure BP in each arm, and the arm with the highest BP should be used for future BP measurements.

As for all patients with HT, evaluation of elderly patients with HT essentially involves identification of treatable or secondary causes, if any; assessing for target organ damage and paying special attention to assessment of overall CV risk and other

comorbid associations. Most guidelines recommend estimating global CV risk before initiating therapy. Commonly used global risk assessment scoring systems emphasize the importance of age and most individuals older than 70 years would be classified as having high CV risk (>10% risk of CAD in next 10 years).[16,17] According to the ACCF/AHA consensus document, routine extensive laboratory testing in elderly patients with HT is not advisable.[4] Recommended tests include urinalysis for albuminuria or microalbuminuria, blood chemistry (fasting blood sugar or A1c if diabetes mellitus is suspected, serum potassium, creatinine, eGFR, and lipids including total cholesterol, low-density lipoprotein, high-density lipoprotein, and triglycerides), and an electrocardiography.

When to Initiate Therapy

The threshold for initiation for drugs for HT is largely independent of age and previous guidelines recommended that even in elderly patients, pharmacological treatment should be started according to the same criteria as used for younger patients (SBPs >140 mmHg or DBP >90 mmHg).[4,18] However, these recommendations are not actually evidence based (especially for octogenarians) since none of the initial trials of anti-HT drug therapy in older patients enrolled patients with Grade 1 HT (SBP 140–159 mmHg).[19-27] While the previous ACC recommendations stated that for those older than 80 years of age, antihypertensive drugs may be initiated if SBP is >150 mmHg, NICE 2011 guidelines also recommended that for those older than 80 years, pharmacological treatment for HT be initiated only when they have Stage 2 HT.[4,28] For elderly patients, who are already receiving anti-HT therapy and tolerating it well, therapy should be continued when once they attain the age of 80 years. Patients older than 80 years and Stage 1 HT should receive drug treatment only if there is associated target organ damage, diabetes, established cardiovascular or renal disease, or an estimated 10-year CV risk >20%.[28]

Based on previous data from trials of antihypertensive therapy in older subjects which consistently found that even intensive treatment safely reduced the risk of CV outcomes in persons >65, 75, and even 80 years, the 2017 ACC/AHA guidelines state that BP-lowering goals in elderly need not differ from those in persons <65 years of age.[15] Since ASCVD risk assessment is mandatory in all adults with HT and most older adults (>65 years) have a 10-year ASCVD risk ≥10%, indicating a high-risk category, initiation of antihypertensive drug therapy at BP ≥130/80 mmHg is now recommended. For elderly patients with multiple comorbidities who may have higher risk of adverse events, a cautious approach to BP reduction and higher targets may be considered.

Non-pharmacological Treatment

As in younger patients with HT, lifestyle modification is an important part of management. Surprisingly, elderly patients with HT are less likely to receive advice about lifestyle modification. Measures such as weight reduction, cessation of smoking, restriction of excess sodium and alcohol intake, increase in fruit and vegetable intake, and increased physical activity help not only in direct reduction of BP but may also help reduce doses of anti-HT drugs and thus limit adverse effects. Weight loss and reduced sodium intake are particularly beneficial in older people. Interestingly, taste sensitivity is often reduced in elderly and they paradoxically increase their salt intake, hence, making a recommendation to reduce salt intake very important. The trial of non-pharmacologic interventions in the elderly study reported that weight loss of ~3.5 kg was effective in lowering SBP/DBP, respectively, by 4.0/1.1 mmHg in patients with HT in the 60–80-year-old age group.[29,30] Dietary sodium restriction is particular effective in lowering BP in older individuals, probably reflecting the fact that they are more sodium sensitive as compared to younger patients.[31] Increased potassium intake (~90 mmol/day), achieved by enhanced consumption of fruits and vegetables, is also effective in lowering BP in older individuals, especially those with higher dietary sodium intake. However, one may need to monitor serum potassium levels in elderly patients, especially when potassium supplementation is instituted in those with impaired renal function.

Trials in Elderly Patients with HT

Most initial trials of elderly hypertensive patients provided evidence of reduction of CV outcomes with pharmacological management, irrespective of whether the patients had isolated systolic HT or both systolic and diastolic HT.[19-27] Although almost all of these included patients aged 60–70 years or more, the number of patients older than 80 years was limited. Specific long-term outcome data for octogenarians were made available only after the publication of the HT in the Very Elderly Trial (HYVET).[32]

Pre-HYVET Trials

- The European Working Party on high blood pressure in the elderly recruited patients older than 60 years with SBP of 160–239 mmHg or DBP of 90–119 mmHg. Active treatment with hydrochlorothiazide and triamterene resulted in significant reduction in MI, cerebrovascular events, and cardiovascular mortality.[19] There was a significant interaction between age and treatment for CV death with little or no benefit demonstrable in patients older than 80 years.
- Among patients older than 60 years with SBP >160 and DBP <90 mmHg enrolled in the SHEP trial, it was observed that those treated with chlorthalidone 12.5–25 mg (with or without stepped care treatment with atenolol 25–50 mg), there was significant reduction in stroke (36%), heart failure (54%), MI (27%), and overall CVD (32%) over a follow-up of 4.5 years.[21]
- The Swedish trial in old patients with HT studied hypertensive patients aged 70–84 years (mean BP 195/102 mmHg) randomized to active therapy (with either of three beta-blockers or a fixed-ratio combination of hydrochlorothiazide and amiloride). Treatment was associated with significant

reduction in fatal and non-fatal stroke, myocardial infarction, and total mortality.[22]

- The Medical Research Council trial randomized patients aged 65–74 years and HT (SBP 160–209 mmHg and mean DBP <115 mmHg) to receive hydrochlorothiazide 25–50 mg plus amiloride 2.5 mg or 5 mg daily, atenolol 50 mg daily, or placebo. There was significant risk reduction in stroke (31%), coronary events (44%), and all cardiovascular events (35%) in the diuretic group compared to placebo; while the beta-blocker group demonstrated no significant reduction in these end points.[23]
- The European Trial in Systolic HT (Syst-Eur Trial) randomized patients aged >60 years with ISH, to treatment with the calcium channel blocker, nitrendipine (10–40 mg daily), with addition of enalapril (5–20 mg daily) and hydrochlorothiazide (12.5–25.0 mg daily), or matching placebo if required. Active treatment was associated with significant reduction in stroke (42%), all fatal and non-fatal cardiac endpoints including sudden death (26%) and all fatal and non-fatal cardiovascular endpoints (31%). In addition, there was a non-significant reduction in cardiovascular and all-cause mortality.[24]
- The JATOS study included elderly patients (65–85 years) treated primarily with long-acting dihydropyridine calcium antagonist (efonidipine) either to SBP <140 mmHg or SBP >140 but <160 mmHg. Addition of other drugs was allowed as required to reach the assigned treatment goals. The trial demonstrated no clinical benefit of strict BP control in reducing stroke, coronary heart disease, vascular disease, or renal impairment. Intensive BP control in elderly patients was in fact associated an increased incidence of CV events.[27]

Meta-analysis

A meta-analysis of these initial trials comprising more than 15,000 patients older than 60 years reported that treating isolated systolic HT (SBP >160 and DBP <95 mmHg) substantially reduced coronary events by 23%, strokes by 30%, CV deaths by 18%, and total mortality by 13%. The benefit was greater in those older than 70 years, males and those with previous cardiovascular complications or wider pulse pressure.[33] However, a subgroup meta-analysis of patients older than 80 years from the trials of elderly patients with HT (the INDANA subgroup) revealed that although strokes were reduced by 36%, heart failure by 39%, and major CV events by 22%, there was a trend toward increased all-cause (+14%) as well as CV mortality.[34]

Hence, despite epidemiological evidence that HT is a potent CV risk factor across all age groups, the overall benefits of treating octogenarians with HT remained uncertain. Therefore, based on these data, the JNC 7,8,[13,14] and ESC 2007[35] guidelines stated that in patients older than 80 years, benefit if any, of anti-HT drug therapy were inconclusive and no clear-cut recommendations were provided for them. However, results of the HYVET led to a reappraisal of principles of HT management in the elderly.

The HYVET trial exclusively reported on the efficacy of anti-HT therapy in patients >80 years.[32] Patients with SBP >160 mmHg were randomized either to placebo or non-thiazide diuretic (indapamide) plus, when required, an ACEI (perindopril). Treating to a target SBP of 150 mmHg, led to significant reduction in fatal and non-fatal stroke (30%), deaths due to stroke (39%), heart failure (64%), CV mortality (23%) and all cause death (23%). Not only was drug therapy well tolerated, but fewer serious adverse events were noted in treated elderly patients. This trial demonstrated for the 1st time that drug therapy for HT was beneficial in patients >80 years of age. Since the HYVET trial included only patients without associated cardiovascular disease who were in good physical and mental health, the extent to which its results can be extrapolated to more fragile elderly patients remains to be seen.

Subsequent Meta-analysis

Meta-analysis post-HYVET study revealed favorable outcomes of treating hypertensive patients older than 75–80 years. Better clinical outcomes with significant reduction in stroke (35%), heart failure (50%), and CV events (27%) were noted among people aged ≥80 years randomized to antihypertensive drug treatment versus placebo.[36] In patients aged >75 years, Schall *et al*. also concluded that treating moderate-to-severe HT reduces non-fatal strokes, cardiovascular morbidity and mortality, and heart failure even though the total mortality rate was not affected.[37]

SPRINT study: The SPRINT study assigned 9361 patients with SBP >130 mmHg (and an increased cardiovascular risk, but without diabetes) to an intensive treatment arm (SBP <120 mmHg) versus standard treatment (<140 mmHg). The trial was prematurely terminated at median follow-up of 3.26 years due to significantly lower primary composite outcome (myocardial infarction, other acute coronary syndromes, stroke, heart failure, or CV death) in the intensive treatment group. The mean age of the SPRINT population was 68 years, and 28% of participants were >75 years; hence, the results add to the evidence of benefits of lowering SBP, especially in older patients with HT.[38]

Recommendations regarding drug therapy: It is important to individualize drug therapy in elderly patients because they are predisposed to develop drug-induced adverse effects due to altered drug pharmacokinetics and excretion secondary to underlying renal and hepatic dysfunction. Since elderly patients tolerate rapid changes in BP poorly, drugs should be started in the lowest possible doses and gradually uptitrated, depending on BP response before adding a second agent. If a drug from another class has been prescribed as the first line, the second drug should always be a diuretic.[4] In cases of inadequate BP response even after reaching a maximally tolerated dose of the first drug, the second drug from another class may be added. The third drug from a different class should be added if the blood pressure remains outside the optimal range on two drugs. Before changing or adding new drugs, possible reasons for inadequate BP response including drug or diet non-compliance, volume overload, and white coat and pseudo-HT should be ruled out.

Although most elderly persons with HT will require >2 drugs to achieve optimal control of blood pressure, the usual strategy of initiating two drugs when the baseline BP is >20 mmHg above goal should probably be avoided to reduce the risk of adverse effects.

The choice of initial drug used is less important than the degree of BP reduction achieved, and different classes of antihypertensive drugs have been shown to be equally effective in reducing clinical outcomes in both young and old patients.[39] The use of specific classes of drugs is often influenced by the presence of any compelling indications (outlined below) as well as known adverse effects to individual drugs or drug combinations.

The ACCF/AHA guidelines recommended that for elderly patients with Stage 1 HT (SBP 140–159 and DBP 90-99 mmHg), the first-line treatment may include an angiotensin-converting enzyme (ACE) inhibitor, an angiotensin receptor blocker (ARB), a calcium channel blocker, a diuretic, or a combination thereof.[4] However, beta-blockers should not be used as the first-line therapy without a compelling indication to do so (e.g. such as coronary heart disease, myocardial infarction, congestive failure, or associated arrhythmias).

For those with Stage 2 HT (SBP >160 and DBP >100 mmHg), most patients will require two or more drugs to adequately control the BP. This is especially likely if the initial BP is >20 mmHg higher than the target BP and consideration must be given to start with combination therapy. The advantages of combination therapy include better patient compliance and superior efficacy at lower doses of individual drugs, leading to reduction in adverse effects. However, whenever combination therapy is used in elderly patients, caution must be exercised to avoid orthostatic hypotension. Of the various drug combinations, evidence for clinical outcome reduction is available with diuretic-ACEI, diuretic-ARB, and diuretic-CCB and recently with ACEI-CCB combination.[4,40,41]

The NICE 2011 guidelines[28] recommend that for all patients older than 55 years, the initial treatment should be with a CCB or a "thiazide-like" diuretic (indapamide/chlorthalidone) in case of adverse effects or intolerance with the former. An ACEI or ARB may be added as the second drug if BP remains uncontrolled.

Indications for the Use of Specific Drug Classes

CAD

In elderly patients with HT and associated CAD/previous myocardial infarction, beta-blockers are the drug of choice, followed by addition of a long-acting dihydropyridine calcium channel blocker if required. An ACEI may be added in patients with impaired LV function/heart failure. Although it is advisable to lower BP to <130/80 mmHg in patients with CAD, there is limited evidence to support this lower target in elderly patients with CAD. Among individuals aged 70–80 years, higher risk was observed if BP is lowered <135/75 mmHg, while for those >80 years of age, nadir BP for higher risk was 140/70 mmHg.[42]

Heart failure

Drugs of choice for elderly patients with HT include diuretics, beta-blockers, ACEI (ARB if intolerant to ACEI), and an aldosterone antagonist if needed. In patients with recurrent or refractory heart failure, renal artery stenosis should be actively ruled out.

Diabetes

Optimal BP control is necessary to reduce the macrovascular and microvascular complications in elderly hypertensives with concomitant diabetics; specific drug choice is dictated by the associated comorbidities. Elderly patients with HT, diabetes, and nephropathy should be treated initially with ACEIs or ARBs. Although thiazides may potentially increase the risk of hyperglycemia, in the ALLHAT trial, diuretics conferred a similar degree of benefit in reducing coronary events in patients with preexisting diabetes mellitus as compared to those without diabetes.[43]

Renal Impairment

Although specific trial data on clinical outcomes in elderly patients with HT and CKD are not available, ACEIs/ARBs may be preferred especially in those with associated proteinuria. Efforts should be made to lower the BP to <130/80 mmHg, if tolerated.

Previous Stroke

In these cases, initial treatment choices include a diuretic plus an ACEI. It is important to remember that reduction of stroke risk is related more BP reduction, rather than the use of a specific class of antihypertensive drug.

Goals of Therapy

Target recommendations vary with different guidelines and usually reducing the SBP <150 mmHg in fit elderly patients is reasonable (if not associated with side effects) and is supported by JNC 8 and the 2013 ESC/ESH guidelines.

The treatment goals for the elderly as recommended by the ACCF/AHA guidelines differ from those of JNC (according to which target BP for the elderly was similar to that of the general population).

- For patients <80 years of age, goal BP of <140/90 mmHg is advisable. When SBP <150 mmHg is readily and safely obtained with 1 or 2 drugs, further treatment intensification to <140 mmHg could be considered in patients aged <80 years. For patients ≥80 years, while the ACC recommends a goal of 140–145 mmHg as acceptable.[4]
- The ESH-ESC 2009[18] and NICE 2011[28] guidelines also recommend target SBP <150 mmHg in patients older than 80 years since target BP of <140 mmHg in these patients may be associated with intolerable adverse effects.
- The lowest safely achieved SBP ≥150 mmHg is acceptable for

patients under three circumstances:

- Goal is not achieved despite taking a regimen of four well-selected and appropriately dosed drugs;
- Prescribed therapy is causing unacceptable side effects;
- The DBP is being reduced to a potentially dangerous level of <65 mmHg.

According to the ESC 2013 guidelines, in elderly hypertensives <80 years old with SBP ≥160 mmHg, it is recommended that SBP be reduced to 140–150 mmHg. In fit elderly patients, <80 years old, antihypertensive drugs may be considered at SBP >140 mmHg with a target SBP <140 mmHg if no side effects are noted and the treatment is well tolerated. In patients >80 years, with an initial SBP >160 mmHg, it is recommended to reduce SBP to 140–150 mmHg, provided they are fit physically and mentally. In the frail elderly, SBP goals should be individualized.[44]

How Low To Go?

Although the usual recommended BP goal in uncomplicated HT is <140/90 mmHg (with lower intended targets for people with established cardiovascular or renal disease or diabetes), the efficacy and safety of such targets in patients older than 80 years have been an area of concern. In a retrospective cohort study of more than 4000 patients with HT and aged >80 years, it was observed that lower BP targets (SBP <139 and DBP <89 mmHg) were associated with lower 5-year survival.[45] Whether elderly patients with associated comorbidities (including chronic renal disease, heart failure, and diabetes) require more intensive BP targets also remain unanswered. The Cardio-Sis study demonstrated that elderly patients (65–74 years) treated to a target SBP <130 mmHg had lower event rates than those with SBP <140 mmHg.[46] However, the ACCORD study in contrast which reported no reduction in fatal and non-fatal major CV events among older patients with type 2 diabetes mellitus targeting SBP <120 mmHg, as compared with those with target BP <140 mmHg.[47]

The importance of lowering the DBP below a certain level also cannot be overemphasized. Although the optimum DBP to be achieved by treatment is not clear, the risk of adverse events rises when DBP is lowered to <55 or 60 mmHg, especially in those with CAD.[48,49] Excessive reduction of BP can increase cardiovascular risk and adversely affect quality of life, especially in the elderly and as a general guideline one should avoid lowering SBP below 130 and DBP below 65–70 mmHg.

Conclusions

All elderly patients irrespective of their blood pressure levels are at risk of cardiovascular events, not only due to their age but also due to existent comorbid medical conditions. High blood pressure is an important modifiable CV risk factor in the older patient population and anti-HT therapy should be considered in all aging hypertensive patients, including the very elderly (>80 years old). Before initiating drug therapy, it may be necessary to confirm HT with ABPM due to higher prevalence of white coat effect in the elderly. Guideline-directed medical treatment is safe and reduces clinical outcomes including stroke, heart failure, coronary heart disease, as well as CV and all-cause mortality. Available evidence indicates that although most antihypertensive drugs can be safely used in elderly, beta-blockers should be avoided as the first-line agents in the absence of any compelling indications. Most patients need multiple drugs or combination therapy to achieve recommended BP goals. Drugs should be started in lowest possible doses and gradually uptitrated while closely monitoring for adverse effects. Despite the data from SPRINT and the 2017 ACC/AHA guidelines which state that BP-lowering goals in elderly need not differ from those in persons <65 years of age, for most elderly hypertensives the goal BP should be below 140/90 mmHg. For those older than 80 years, an achieved SBP 140–145 mmHg is reasonable. It is vital to remember that in elderly an excessive fall in BP could be hazardous and important factors to remember in care for the elderly are frailty, the presence of comorbidities, and safety profile of the drugs being used.

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