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## **CHALLENGES OF TREATMENT OF HYPOTENSION IN ELDERLY**

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Excessive decrease of blood pressure is a serious problem among the elderly. Hypotensive syndromes can be caused by autonomic failure and may occur secondary to a disease or its treatment. Aging is associated with increased number of several comorbidities that influence significantly the prevalence of hypotensive syndromes such as neurodegenerative disorders (e.g., Parkinson's disease, dementia with Lewy bodies, multisystem atrophy), diabetes, hypertension, congestive cardiac failure, prior myocardial infarction, carotid artery disease, various forms of autonomic neuropathy, and post-acute illness. Overtreatment of hypertension, especially in the frail elderly, can also result in Orthostatic hypotension and Post prandial hypotension.

There exists no absolute treatment for hypotension in elderly patients. Sympathomimetic drugs like amphetamine, ephedrine, cocaine can increase the blood pressure but the risks and harmful effects outweighs their positive effects. Amphetamine (an indirect adrenomimetic) can cause hypertension, behave as a respiratory stimulant and exhibit appetite depressant actions but in chronic use, amphetamine is associated with tolerance and psychologic dependence and even acute severe intoxication with these agents can cause hallucinations, delusions, and alterations in affect and thought processes. Direct adrenomimetics like epinephrine, norepinephrine can not be used in elderly patients with hypotension because they also increase the inotropic and chronotropic effect of heart and often elderly patients with hypotension has weak heart and can not tolerate these stimulations and will eventually be heart failure.

Current medications use different mechanisms to try to combat hypotensive syndromes. Midodrine, pyridostigmine and yohimbine exert their effects by increasing peripheral resistance. Fludrocortisone sensitizes alpha-adrenoreceptors and increases sodium and water resorption. In clinical practice, to combat hypotensive syndromes, these medications are titrated to their highest tolerable dose and/or given in conjunction with other blood pressure increasing drugs. However, these medications are slightly limited in their clinical use as they tend to severely increase blood pressure, especially when supine. Droxidopa is a synthetic norepinephrine prodrug that is converted into norepinephrine in both central nervous system and peripheral tissues, causing peripheral vasoconstriction. It can be considered as an additional therapy for Orthostatic hypotension if medical management with other antihypotensive drugs has failed. Atomoxetine is a noradrenaline reuptake inhibitor which acts akin to a vasopressor. Atomoxetine may be a reasonable alternative when other medications fail to improve hypotensive symptoms. Mirabegron is a beta-3 adrenergic receptor agonist primarily used to treat overactive bladder. Given its stimulatory effects on the cardiovascular system, it has been considered for the treatment of Orthostatic hypotension. Some study also shows use of herbal preparations to treat hypotension in elderly. One such example is use of Licorice intake induces physiological effects similar to aldosterone and corticosteroids. Resembling steroid-like structures, it binds to the mineralocorticoid receptor in the distal tubules of the kidney. Water and sodium retention in the kidney increase the blood volume and elevate blood pressure.