RESISTANT HYPERTENSION 2015

Gordon L. Fung, MD, PhD, FACC, FACP, FASH

Resistant hypertension is defined as BP that remains above 140/90 in patients adhering to an adequate an appropriate triple-drug regimen (including a diuretic), with all drugs prescribed at near-maximum or maximum recommended doses. The AHA Scientific statement definition adds to the definition – uncontrolled BP despite use of 3 medications and BP controlled but requiring at least 4 medications – "controlled resistant hypertension". The true prevalence of resistant hypertension is not known. Depending on locale, studies estimate the prevalence around 10-30% in general practice and > 50% in nephrology referral clinics. According to the NHANES (2003-2008) estimated prevalence of resistant hypertension is 8.9% (1 in 11) of US adults with hypertension; 12.8% (1 in 8) of all antihypertensive drug-treated US adults with hypertension; and more recent data estimates show the prevalence of resistant hypertension continues to increase.

Older age and obesity are 2 of the strongest risk factors for uncontrolled hypertension. The prognosis of resistant hypertension is unknown but cardiovascular risk is undoubtedly increased as patients often have a history of long-standing, severe hypertension complicated by multiple other cardiovascular risk factors such as obesity, sleep apnea, diabetes, and chronic kidney disease. The diagnosis of resistant hypertension requires use of good blood pressure technique. Pseudoresistance may account for 50% of patients referred for resistant hypertension evaluation.

Resistant hypertension is almost always multifactorial in etiology. Successful treatment requires identification and reversal of lifestyle factors contributing to treatment resistance, diagnosis and appropriate treatment of secondary causes; and use of effective multidrug regimens.

To date, use of interventions – including renal denervation or carotid body denervation have not proven effective resulting in more intensive medical management of this condition.

ORTHOSTATIC HYPOTENSION 2015

Gordon L Fung, MD, PhD, FACC, FACP, FASH

Orthostatic hypotension (OH) is a common cardiovascular disorder which presents with or without signs of underlying neurodegenerative disease. The diagnosis is based on an orthostatic challenge and with persistent systolic/diastolic blood pressure decrease of at least 20/10 mmHg upon standing. Age is the most significant risk factor with prevalence 5% at age < 50 years of age to 30% in those > 70 years of age. OH complicates treatment of hypertension, heart failure, and coronary heart disease. Although most patients with OH are minimally symptomatic, many patients will present with disabling symptom of faints or syncope and traumatic injuries and substantially reduce quality of life. The presence of OH independently increases mortality and the incidence of myocardial infarction, stroke, heart failure, and atrial fibrillation.

Current management is divided into two categories: non-pharmacological treatment and pharmacological treatment. Initially, remove all potential agents that might exacerbate this condition – including many anti-hypertensive agents and allow for moderate supine hypertension. Non-pharmacological treatment begins with education of the disease process and acceptance and understanding of orthostatic intolerance. Avoidance of immobilization, prolonged diurnal recumbence, and physical deconditioning are recommended. Training of patients to practice gradual rising from supine and sitting positions, especially in the morning, after meals, and after urination/defecation is key. Patients should also be taught physical counter-maneuvers (e.g., leg crossing, muscle tensing, squatting) during standing and prodromal symptoms, elevating the head of bed 10-30^{o} during sleep, and increasing salt and fluid intake. Pharmacologic management has the addition of a new agent droxidopa which is recently approved by the US FDA.