Arterial hypertension

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Hypertension (HTN) or high blood pressure, sometimes called arterial hypertension.

Epidemiology

Hypertension affects more than a quarter of the world's adult population.

Types

Essential, or primary, or idiopathic hypertension is historically defined as a rise in blood pressure (BP) without any known causes, which still accounts for ≈95% of all hypertension [1)].

Stages

Stage One of Hypertension

This first stage of the four stages of hypertension is referred to as the “normal” stage. A person’s systolic will be at less than 130 mm Hg and their diastolic will be less than 80 mm Hg. At this point, a person will not require treatment, as their blood pressure is normal. It is important, however, to monitor the blood pressure to ensure that it is staying normal.

Stage Two of Hypertension

This stage is referred to as prehypertension. Systolic will be between 130 and 139 mm Hg and diastolic will be between 80 and 89 mm Hg. Prehypertension is exactly what it sounds like, the stage before someone crosses into hypertension. A person who is at stage two of hypertension is at risk for developing high blood pressure, but still has a chance to avoid it.

At this stage, a person has some risk of experiencing heart disease or a stroke. Medication is typically not used at this point because it hasn’t been proven to help against potential strokes or heart disease at this stage. However, a person should still try to make lifestyle changes to avoid hypertension. This could mean quitting smoking or changing the way you eat. Exercise is a great way of lowering your blood pressure, as is trying the DASH diet.

Stage Three of Hypertension

Stage three of hypertension is actually referred to as “stage 1.” Systolic is between 140 and 159 mm Hg and diastolic is between 90 and 99 mm Hg. A person at stage 1 is in danger of a variety of health complications due to moderate hypertension. At this point, a person would be expected to try medication to reduce their blood pressure and risk of heart disease and/or stroke. These drugs include ACE inhibitors, angiotensin receptor blockers, beta blockers, thiazide diuretics, and calcium channel blockers. They would also be expected to make diet and lifestyle changes.

Stage Four of Hypertension

Stage four is known as “stage 2” hypertension. Systolic is at 160 mm Hg or higher and diastolic is at 100 mm Hg or higher. At this point, a person’s hypertension would be classified as severe. Due to this, they would most likely be recommended a two-drug therapy to try and bring their blood pressure down. A person at stage 2 hypertension is at high risk for coronary heart disease, which can lead to a heart attack or stroke. You will have to have your blood pressure checked regularly and follow a strict regimen that will likely include dietary changes, exercise, and lifestyle changes.

Etiology

Ever since the identification of hypertension in 1872, researchers have struggled to find its cause(s) with only minor successes [2)].

Whereas multiple risk factors for hypertension, including genetic variations, obesity, insulin resistance, high alcohol intake, and stress, have been identified, primary causes for hypertension remain elusive. Also, the predictive factors for its development are unclear [3) 4) 5)].

Despite medical advancements, no underlying cause can be found in more than 9 out of 10 patients with hypertension. Although elevated sympathetic nervous activity contributes to the development of hypertension, the mechanism by which this occurs remains poorly understood [6)].

The so-called Cushing reflex has been suggested to explain arterial hypertension. According to this mechanism, hypoperfusion of the rostral ventrolateral medulla induces sympathetic nervous system activation and a pressor response. The pressor response then increases perfusion of a primary brain area regulating sympathetic activity, but in doing so heightens systemic blood pressure. The initial hypoperfusion could arise as a result of narrowed vertebral arteries—evident as high resistance and low flow in these arteries. Although systemic hypertension might lead via remodeling to a narrowing of vertebral arteries, it has been suggested that hypertension is the result of narrowed vertebral arteries rather than the cause [7)].

There are anatomical and physiological evidences that the ventrolateral (VL) region of the medulla plays an important role in blood pressure regulation and that dysfunction at this level may generate hypertension (HT). Vascular compression by a megadolicho-artery from the vertebrobasilar arterial system at the root entry/exit zone (REZ) of the glossopharyngeal (IXth) and vagal (Xth) cranial nerves (CNs) and the adjacent VL aspect of the medulla has been postulated as a causal factor for HT from neurogenic origin. The first attempts at microvascular decompression (MVD) of the IX-Xth CNs together with the neighbouring VL brainstem was revealed promising.

Established criteria for indication of MVD as an aetiological treatment of apparent essential HT are still needed [8)].

Renovascular disease is a well-described cause of hypertension, which is caused by the increase in renin secretion with subsequent increase in angiotensin and aldosterone but is found to be a primary cause in a minority of cases [9)].

Outcome

Hypertension is refractory to treatment in ≤20% to 30% of cases despite the availability of numerous classes of antihypertensives, and finding primary cause could improve treatment of refractory hypertension [10)]..

Complications

Arterial hypertension complications.

Hypertension as hemodynamic management of subarachnoid hemorrhage

Volume expansion and hypertension are widely used for the hemodynamic management of patients with subarachnoid hemorrhage to prevent delayed cerebral ischemia.

Given the suggestion of possible worse neurobehavioral outcome with augmented blood pressure (ABP), a larger trial to determine the optimal blood pressure management in this patient population is warranted (ClinTrials.gov NCT01414894.) [11].

Hypertension is an independent risk factor for intracranial aneurysm.

Treatment

see Arterial hypertension treatment.

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