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**Commentary**

## **COMMENTARY ON ANTIHYPERTENSIVE DRUGS**

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### **COMMENTARY**

Antihypertensives are a class of medications used to treat high blood pressure (high blood pressure). Antihypertensive therapy aims to avoid high blood pressure problems such as stroke and myocardial infarction. Evidence suggests that lowering blood pressure by 5 mmHg can reduce the risk of stroke by 34%, ischemic heart disease by 21%, dementia, heart failure, and cardiovascular death. Antihypertensives are divided into several categories, each of which lowers blood pressure in a different way (Laurent, 2017). Thiazide diuretics, calcium channel blockers, ACE inhibitors, angiotensin II receptor antagonists (ARBs), and beta blockers are among the most significant and extensively used drugs.

The primary goal of treatment should be to prevent critical hypertension outcomes such heart attack, stroke, and heart failure. The patient's age, accompanying clinical problems, and end-organ damage all factor into the dosage and type of drug prescribed. The adverse effects, effectiveness to prevent endpoints, and cost of the various antihypertensive classes vary. The use of more expensive drugs when less expensive ones would suffice could have a negative influence on national healthcare expenditures. Low-dose thiazide diuretics are the first-line treatment of choice for high blood pressure when medicines are required, according to the best available evidence as of 2018 (Tignanelli et al., 2020). Although clinical evidence demonstrates that calcium channel blockers and thiazide-type diuretics are the preferred first-line therapy for the vast majority of patients (in terms of efficacy and safety)

Hypertension is a complex disease that affects up to 30% to 40% of the general population, making it one of the most major cardiovascular risk factors. Depression is widespread in individuals with hypertension, as well as those with cardiovascular and cerebrovascular illnesses in general, and it has a deleterious impact on clinically significant outcomes. In hypertension, post-myocardial infarction, and post-stroke, the prevalence of major depression is 30% in each

illness, which is greater than in population samples. In these comorbid conditions, both major depression and depressed symptoms are linked to higher mortality, morbidity, lower quality of life, more health-care utilisation, and higher healthcare expenditures. Preventing the development of depression in patients with hypertension, cardiovascular disease, and cerebrovascular illness is particularly critical, and widely used therapy approaches should be thoroughly evaluated.

Angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers [ARBs], calcium antagonists, -blockers, and diuretics are the four primary groups of drugs currently used to treat hypertension and cardiovascular and cerebrovascular illnesses (Scott et al., 2019). According to epidemiological studies, the risk of depression varies depending on the drug class.

Antihypertensive medications are a group of compounds that have the therapeutic goal of preventing, regulating, or curing high blood pressure. Antihypertensive medication classes are structurally and functionally distinct. They're important in anaesthetic practise because they're commonly prescribed to the general public, with hypertension accounting for 31% of the population in the UK [defined by the National Institute for Health and Care Excellence (NICE) as a measurement of 140/90 mm Hg or higher in clinic, followed by ambulatory or home measurements of 135/85 mm Hg or higher]. 1 Antihypertensive medicines, such as -blockers for thyrotoxicosis and anxiety, or angiotensin-converting enzyme inhibitors (ACEIs) for heart failure, are widely used in unrelated illnesses. As a result, both the drug and its indication are relevant to the anaesthetic procedure.

### **Some of the more commonly prescribed drugs used in hypertension include:**

#### **Diuretics or water pills**

These are often the first agents used to control essential hypertension and examples include hydrochlorothiazide, thiazide, indapamide and chlorothalidone. As their name suggests, these drugs act on the kidneys to increase the amount of water expelled from the body in the urine, which lowers the blood volume inside the body and therefore the blood pressure (Kessing et al., 2020). In addition, some diuretics also help to dilate or relax the walls of the arteries meaning blood can flow more easily through these vessels, which also reduces blood pressure.

#### **Beta blockers**

Examples of beta blockers include atenolol, metoprolol, nadolol, pindolol, carvedilol and labetalol. These agents block the beta receptors of the heart and lower the force the heart pumps with. Beta blockers also lower the heart rate.

#### **Calcium channel blockers**

These agents block the flow of calcium in the muscles of the blood vessels causing them to relax and dilate. This reduces the pressure against which the heart has to pump and, in turn, the blood pressure. Examples of these agents are amlodipine, nifedipine, nicardipine and verapamil.

#### Angiotensin converting enzyme (ACE) inhibitors

These drugs stop the action of angiotensin II, which normally narrows blood vessels. Blocking its action dilates blood vessels and reduces blood pressure. Some examples of these agents are enalapril, captopril and ramipril (Kandzari et al., 2018).

#### Angiotensin receptor blockers

These drugs act by preventing the action of angiotensin II on its receptor and therefore exert similar effects to as ACE inhibitors. Examples include drugs such as losartan, candesartan, and telmesartan.

#### Centrally acting sympatholytics

These are substances that act on the central nervous system to induce blood vessel dilation and, in turn, blood pressure. Drugs in this class include methyldopa and clonidine. Methyldopa is suitable for pregnant women with hypertension.

#### Alpha blockers

These act by blocking the alpha adrenergic receptors, which relaxes and dilates the blood vessels. This reduces the pressure against which the heart has to pump and therefore the blood pressure.

#### Vasodilators

Drugs of this class include hydralazine and minoxidil which relax the smooth muscle of the blood vessels causing the vessels to relax and dilate. Again, this reduces the pressure against which the heart has to pump and therefore the blood pressure.

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