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## ARTERIAL HYPERTENSION: PATHOPHYSIOLOGICAL ASPECTS

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There is still much uncertainty about the pathophysiology of hypertension. A small number of patients (between 2% and 5%) have an underlying renal or adrenal disease as the cause for their raised blood pressure. In the remainder, however, no clear single identifiable cause is found and their condition is labelled «essential hypertension».

A number of physiological mechanisms are involved in the maintenance of normal blood pressure, and their derangement may play a part in the development of essential hypertension. Maintenance of a normal blood pressure is dependent on the balance between the cardiac output and peripheral vascular resistance. Most patients with essential hypertension have a normal cardiac output but a raised peripheral resistance. Peripheral resistance is determined not by large arteries or the capillaries but by small arterioles, the walls of which contain smooth muscle cells. Contraction of smooth muscle cells is thought to be related to a rise in intracellular calcium concentration, which may explain the vasodilatory effect of drugs that block the calcium channels. Prolonged smooth muscle constriction is thought to induce structural changes with thickening of the arteriolar vessel walls possibly mediated by angiotensin, leading to an irreversible rise in peripheral resistance. It has been postulated that in very early hypertension the peripheral resistance is not raised and the elevation of the blood pressure is caused by a raised cardiac output, which is related to sympathetic overactivity. The subsequent rise in peripheral arteriolar resistance might therefore develop in a compensatory manner to prevent the raised pressure being transmitted to the capillary bed where it would substantially affect cell homeostasis. In patients who suffer from treatment-resistant arterial hypertension, the blood pressure cannot be adequately controlled even if the patient does take the prescribed medication regularly.

In conclusion, arterial hypertension is a global health problem associated with increased risk of developing cardiovascular disease. Arterial hypertension is a leading risk factor for the development of cardiovascular diseases (myocardial infarction, stroke, coronary heart disease, chronic heart failure), cerebrovascular (ischemic or hemorrhagic stroke, transient ischemic attack) and renal diseases.