

## President's Page

# Arterial Hypertension

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**A**rterial hypertension (AH) is one of the most common chronic diseases in humans, affecting more than 1 billion people worldwide. Its complications, including cerebrovascular stroke, coronary artery disease, heart failure, and kidney disease, are major causes of morbidity and mortality, with significant consequences for public health. Blood pressure (BP) reduction in individuals with AH can prevent or drastically reduce these complications.

In the general population, the prevalence of AH is around 30-45%, but increases rapidly with advanced age. In the countries of Western Europe it is showing a tendency to drop, whereas in eastern European countries there is a clear increase in the prevalence of this disease. In Greece, the prevalence of AH shows large variations, from 28.4% in the Didima study<sup>1</sup> up to 69.1% in the Nemea study,<sup>2</sup> mainly because of heterogeneity in the study populations. Greece has an organised primary health care network in rural regions, but the lack of primary care in urban areas, together with the lack of a body for organising and managing epidemiological studies, has resulted in a paucity of data representative of the general population.

According to the latest data, the vast majority of patients with hypertension (95%) suffer from AH of idiopathic or unknown aetiology, while only in 5% of hypertensives can some specific cause be identified. Conditions that lead to secondary AH are the renal parenchymal and renal vascular diseases, diseases of the adrenal glands (primary hyperaldosteronism, Cushing syndrome, pheochromocytoma), together with endocrine diseases (thyroid, etc.), obesity, and sleep apnoea syndrome. The initial investigation of the hypertensive patient aims at both diagnosing

these conditions, which usually require specialised therapeutic management, and evaluating the extent of subclinical target organ damage.

Indeed, the recent guidelines of the European Society of Cardiology and the European Society of Hypertension,<sup>3</sup> following the same methods for the evaluation of overall cardiovascular risk that had already been established in the 2003 guidelines, recommend that all hypertensive patients should undergo an evaluation of both coexisting cardiovascular risk factors and subclinical target organ damage, given that multiple coexisting risk factors act synergistically, causing an exponential increase in the total cardiovascular risk. For the evaluation of the total risk, mathematical predictive models have been developed, such as the well-known HeartScore, which evaluates the 10-year risk of cardiovascular mortality and classifies patients as having low, moderate, high, or very high risk. However, for a full evaluation of hypertensive patients it is considered essential to evaluate the extent of subclinical target organ damage. The presence and severity of target organ lesions increases the hypertensive patient's risk even more, and usually requires specialised and intensive therapeutic interventions. The main organs that are vulnerable to the damaging effects of AH are the heart, the kidneys, the brain, the eyes, and the systemic arterial net that supplies blood to those organs. The investigation of symptomatic target organ damage is a priority and includes a detailed clinical and laboratory workup, which should not be omitted in any case.

The most useful tool for the detection and diagnosis of the hypertensive population is the measurement of BP, which also includes BP measurement in the office (OBPM) and at home (HBPM), 24-hour ambulatory monitoring (ABPM), as well as measure-

ment during stress testing. Even though OBPM was used traditionally for the diagnosis of AH, it is very poor at detecting cases of white-coat hypertension or masked hypertension, and it does not reflect the real haemodynamic load to which the patient is exposed. Therefore, in recent years HBPM and ABPM have been gaining ground, as they show clearly better prognostic value in evaluating both target organ damage and the overall cardiovascular risk. In addition, the means of recording BP outside the doctor's office are superior as regards the evaluation of circadian variations and the changes in BP that result from the patient's daily activities. Thus, recent years have seen the emergence of pathological states such as nocturnal hypertension, non-dipping, and the morning surge, which are characterised by an increased cardiovascular risk and require further investigation and aggressive management.

Based on the recent guidelines, AH continues to be defined as a systolic blood pressure (SBP) >140 mmHg and/or a diastolic blood pressure (DBP) >90 mmHg. When hypertension is diagnosed in any given patient the question automatically arises as to the achievement of the ideal BP target in each case. The latest guidelines recommend that a limit of SBP <140 mmHg is appropriate in all patients (low, moderate, and high cardiovascular risk). Only in patients with kidney disease and manifest proteinuria should a limit of SBP <130 mmHg be applied, while the estimated glomerular filtration rate should be closely monitored. Additionally, in elderly patients less than 80 years old with an initial SBP  $\geq$ 160 mmHg, an SBP between 150 and 140 mmHg is recommended, provided that they are in good physical and mental condition. Regarding DBP, the level should be maintained at <90 mmHg in all patients, the only exception being diabetic patients, where a limit of DBP <85 mmHg is preferred. In general, a DBP between 80 and 85 mmHg should be considered safe and well tolerated.

A host of large epidemiological studies have also confirmed that health and dietary interventions – smoking cessation, limiting salt consumption, daily moderate exercise (at least 45 minutes of brisk walking every day), loss of excessive body weight, avoidance of a sedentary lifestyle, and a diet rich in fruit and vegetables – lead to a significant reduction in blood pressure, independently of pharmaceutical interventions. However, the percentage of patients who comply with the above health and dietary guidelines is unfortunately disappointingly small.

So when the health and dietary interventions fail

to control BP, or we are dealing with patients with extra risk factors or who are at high cardiovascular risk, we must bring on the medication. According to the recent guidelines, all categories of antihypertensive drugs are recommended for initial treatment (diuretics, beta-blockers, calcium-channel blockers, angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers). Some categories are preferred for specific kinds of target organ damage or particular groups of patients, since they have shown their superiority in large epidemiological studies. Initial antihypertensive treatment with a combination of two drugs is preferable, especially in patients with a high initial BP or in those at high cardiovascular risk. The combination of two different antagonists of the renin–angiotensin–aldosterone system is not recommended and should be avoided, because of the high risk of side-effects. Any other combination of drugs may be used; nevertheless, combinations that have been used successfully in trials should be preferred.

Despite the plethora of antihypertensive medicines that are available, a non-negligible number of hypertensive patients are still unable to achieve their BP targets, being “resistant” to three drugs, including a diuretic, in adequate doses. In recent years, medical researchers have turned to the creation of alternative therapeutic strategies for managing these patients. Thus, when traditional measures fail, invasive therapies have matured sufficiently and are able to offer a solution. There are two main methods: the first is electrical stimulation of the baroreceptors in the carotid sinus with implantable devices,<sup>4</sup> and the second technique, which is gaining ground, and seems likely to become complimentary to pharmacological interventions in the treatment of resistant AH – and perhaps more – is percutaneous mechanical<sup>5</sup> or chemical<sup>6</sup> renal sympathetic denervation using special catheters. In recent large clinical trials, this technique proved to be safe and effective, being successful in controlling BP in the majority of patients with resistant AH.<sup>7</sup> Patients who respond to this technique manage to restore their BP to normal levels, either with less antihypertensive medication, or without any medication at all. In Greece, there are already specialised centres that use this technique in appropriate hypertensive patients.

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