



Editorial

Morning surge blood pressure as a phenotype of systemic hemodynamic atherothrombotic syndrome

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Aumento de la presión arterial matutina como fenotipo del síndrome aterotrombótico hemodinámico sistémico

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Cardiovascular diseases remain the leading cause of morbidity and mortality globally [1]. The burden of disease

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caused by cardiovascular disorders is unfortunately increasing around the world, despite the availability of screening and early diagnosis tools, as well as medicines and control and resolution interventions [1]. Hypertension remains one of the main risk factors for the development of cardiometabolic diseases and major cardiovascular events, especially in low- and middle-income countries [1, 2]. Mills et al [2] mention that in 2010, 31.1% of adults in the world (1.39 billion) were found to have hypertension. Compared to high-income countries, the prevalence of risk factors for hypertension (high sodium intake, low potassium intake, obesity, alcohol consumption, physical inactivity and unhealthy diet) and of the cardiovascular disorder itself (any phenotype of hypertension) was much higher in low- and middle-income countries (28.5%, 349 million people vs. 31.5%, 1.04 billion people) [2]. This requires immediate, constant and effective actions to understand this behavior, the increase in the incidence and prevalence of arterial hypertension and any other condition that may cause morbidity, mortality and disability among the global population.

Blood pressure exhibits different variability and elevations with different phase times, and which may or may not be sustained, depending on the triggering factor [3-5]. The systemic hemodynamic atherothrombotic syndrome (SHATS) is a recently described pathological entity, which is based on a hypothesis called: hypothesis of resonance of blood pressure variability [4-6]. It states that there is a vicious pathological cycle based on a neurobiological blood pressure disorder, which in the absence of essential hypertension or other cardiometabolic disorders, has the potential to generate vascular disease and trigger major cardiovascular events [3-7]. This hemodynamic stress mainly affects the medium and branch arteries by increasing the pulse wave velocity, generating persistent vascular injury in the main target organs (brain, heart and kidney). Unlike other cardiovascular pathologies, SHATS is difficult to recognize and manage because it consists of a neuroendocrine disorder of diverse phenotypes, with silent multisystem involvement and no specific diagnostic tools [8]. However, it is already being taken into account in Asia for the design of programs for the strict control of arterial hypertension, regardless of its phenotype, to reduce the burden of cardiovascular diseases and for the creation of staging and risk scales, new diagnostic and therapeutic tools, which will lead to the longed-for personalized medicine [6]. However, SHATS also has some phenotypes, among which the following stand out: sudden nocturnal or morning elevation of blood pressure [3-6]. Evidence suggests that sudden elevation of blood pressure is a common event even

in the young population without traditional cardiovascular risk factors, so it is presumed that SHATS appears at an early age and substantially increases the risk of presenting a higher cardiovascular risk later in life, developing severe morbidity and dying [9]. Specifically, morning elevation of blood pressure is strongly associated with an increased risk of developing stroke. Kario K [9] describes the importance of considering morning elevation of blood pressure as a key element in making decisions about the use of antihypertensive drugs. This elevation is independent of the 24-hour blood pressure curve, so it appears to be a masked impulsive disorder difficult to identify, except through screening tests. Therefore, Kario K [9] defines morning elevation of blood pressure as one of the described phenotypes of SHATS, which has the potential to cause disease of both large, medium and small vessels.

A 10 mmHg increase in blood pressure during morning elevation is sufficient to increase the risk of stroke by more than 10% [9]. Currently, there is a propulsion plan in the design of a scale applicable in the Asian population to reduce cardiovascular events secondary to the lack of control of essential hypertension to 0 [6, 10]; and SHATS is one of the innovative points that has been considered, and that seems to have a substantial impact on global outcomes. In addition, it has allowed us to know with greater precision the physiopathology of other vessel and heart diseases, as well as the true impact of risk factors such as temperature, time of day, emotional state, season of the year, among others, on the development of complications due to uncontrolled blood pressure [3-7].

This is a topic of general interest, which should be disseminated among the medical and academic community, as well as researchers in cardiovascular sciences, to produce better quality evidence to further understand SHATS and its relationship with other diseases or complications associated with the cardiovascular system. As more evidence is published and it is possible to synthesize more studies and perform subgroup analyses of treatment and effect, questions remain about how to further improve the efficacy of therapeutic plans, and the search for new pathophysiological concepts to understand causal relationships is one of the many solutions [11]. Therefore, SHATS translational research should be an active research field to answer new questions in the management of cardiovascular diseases.

1. CONFLICT OF INTERESTS

The authors have no conflict of interest to declare. The authors declared that this study has received no financial

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