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DIAGNOSTIC CRITERIA FOR SYSTEMIC ARTERIAL HYPERTENSION (SAH)

CRITÉRIOS DIAGNÓSTICOS DE HIPERTENSÃO ARTERIAL SISTÊMICA (HAS)

CRITERIOS DIAGNÓSTICOS DE LA HIPERTENSIÓN ARTERIAL SISTÉMICA (HAS)

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ABSTRACT

High cardiovascular risk is one of the main determinants of morbidity and mortality in different populations. Systemic arterial hypertension (SAH), a chronic condition with high prevalence in Brazil, has well-established diagnosis and treatment, and the correct identification of its diagnostic criteria is essential for proper risk stratification and clinical management. This study consists of a narrative literature review aimed at synthesizing evidence on SAH, with emphasis on diagnostic methods and their different clinical presentations. The methodology was based on a search of scientific databases, followed by a critical analysis of the literature. The results highlight the relevance of ambulatory blood pressure monitoring (ABPM) and home blood pressure monitoring (HBPM) as fundamental tools for the diagnosis and follow-up of SAH. In addition, resistant hypertension is identified as a complex and often underdiagnosed condition, whose detection can be improved through the proper application of these methods.

Keywords: Systemic Arterial Hypertension (SAH). Diagnostic Criteria. Ambulatory Blood Pressure Monitoring (ABPM). Home Blood Pressure Monitoring (HBPM). Resistant Hypertension.

RESUMO

O alto risco cardiovascular é um dos principais determinantes de morbimortalidade em diferentes populações. A hipertensão arterial sistêmica (HAS), condição crônica de elevada prevalência no Brasil, possui diagnóstico e tratamento bem estabelecidos, sendo a correta identificação de seus critérios diagnósticos essencial para adequada

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estratificação de risco e manejo clínico. Este estudo consiste em uma revisão bibliográfica narrativa, com o objetivo de sintetizar evidências sobre a HAS, com ênfase nos métodos diagnósticos e suas diferentes apresentações clínicas. A metodologia baseou-se na busca em bases de dados científicas, seguida de análise crítica da literatura. Os resultados destacam a relevância da monitorização ambulatorial da pressão arterial (MAPA) e da monitorização residencial da pressão arterial (MRPA) como ferramentas fundamentais para o diagnóstico e acompanhamento da HAS. Além disso, a hipertensão arterial resistente é evidenciada como uma condição complexa e frequentemente subdiagnosticada, cuja identificação pode ser aprimorada por meio da aplicação adequada desses métodos.

Palavras-chave: Hipertensão Arterial Sistêmica (HAS). Critérios Diagnósticos. Monitorização Ambulatorial da Pressão Arterial (MAPA). Monitorização Residencial da Pressão Arterial (MRPA). Hipertensão Arterial Resistente (HAR).

RESUMEN

El alto riesgo cardiovascular es uno de los principales determinantes de morbimortalidad en diferentes poblaciones. La hipertensión arterial sistémica (HAS), una condición crónica de alta prevalencia en Brasil, cuenta con diagnóstico y tratamiento bien establecidos, siendo la correcta identificación de sus criterios diagnósticos esencial para una adecuada estratificación del riesgo y manejo clínico. Este estudio consiste en una revisión bibliográfica narrativa con el objetivo de sintetizar evidencia sobre la HAS, con énfasis en los métodos diagnósticos y sus diferentes presentaciones clínicas. La metodología se basó en la búsqueda en bases de datos científicas, seguida de un análisis crítico de la literatura. Los resultados destacan la relevancia de la monitorización ambulatoria de la presión arterial (MAPA) y la monitorización domiciliaria de la presión arterial (MDPA) como herramientas fundamentales para el diagnóstico y seguimiento de la HAS. Además, la hipertensión arterial resistente se evidencia como una condición compleja y frecuentemente subdiagnosticada, cuya identificación puede mejorarse mediante la adecuada aplicación de estos métodos.

Palabras clave: Hipertensión Arterial Sistémica (HAS). Criterios Diagnósticos. Monitorización Ambulatoria de la Presión Arterial (MAPA). Monitorización Domiciliaria de la Presión Arterial (MDPA). Hipertensión Arterial Resistente.

1 INTRODUCTION

Systemic Arterial Hypertension (SAH) is a chronic clinical condition of multifactorial etiology, characterized by persistent elevation of blood pressure levels and strongly associated with increased risk of cardiovascular, cerebrovascular, and renal events. It is one of the main causes of global morbidity and mortality, with a significant impact on health systems, especially in middle- and low-income countries, where blood pressure control remains suboptimal (MANCIA et al., 2023; PARATI et al., 2021).

The continuing relationship between high blood pressure levels and adverse outcomes reinforces the importance of early identification and standardization of diagnostic criteria. In this context, the definition of SAH has evolved over the last decades, based not only on absolute blood pressure (BP) values, but also on the estimation of global cardiovascular risk and the potential benefits of therapeutic intervention (WHELTON et al., 2017).

Currently, there is divergence among the main international guidelines regarding diagnostic thresholds. The recommendations of the American College of Cardiology/American Heart Association (ACC/AHA) established, in 2017, the cutoff point of ≥130/80 mmHg, with a focus on early intervention and reduction of cardiovascular risk over time. On the other hand, the European Society of Hypertension (ESH), in its 2023 update, maintains the classic criterion of ≥140/90 mmHg for in-office diagnosis, emphasizing the need for diagnostic confirmation and individualized risk stratification (MANCIA et al., 2023; WHELTON et al., 2017).

In addition to the values obtained in the clinical setting, the contemporary diagnosis of SAH incorporates complementary methods of out-of-office blood pressure monitoring, such as Ambulatory Blood Pressure Monitoring (ABPM) and Home Blood Pressure Monitoring (HBPM). These strategies are key to identifying relevant clinical phenotypes, such as white-coat hypertension and masked hypertension, which have distinct prognostic implications and can directly impact therapeutic decision-making (MANCIA et al., 2023).

In addition, clinical and metabolic factors have been progressively recognized as modulators of hypertensive risk. Recent evidence demonstrates an association between changes in body mass index and a higher incidence of hypertension, particularly in specific populations, such as people living with HIV using contemporary antiretroviral

therapies, suggesting the need for an individualized approach to screening and diagnosis (BYONANEBYE et al., 2024).

In view of this scenario, it is essential to understand the differences between the current diagnostic criteria, as well as their clinical applications and limitations. The adequate diagnostic definition of SAH represents a fundamental step for the effective management of the disease, allowing early and targeted interventions, with the potential to significantly reduce the global burden of cardiovascular diseases.

2 METHODOLOGY

The present study is characterized as a bibliographic review of a narrative nature, developed with the objective of synthesizing and critically analyzing the contemporary diagnostic criteria for systemic arterial hypertension (SAH).

The bibliographic search was carried out in the PubMed database and in clinical guideline repositories, using the descriptors "High Blood Pressure" and "Diagnosis", combined according to the terms of the Medical Subject Headings (MeSH). Publications and clinical guidelines available in full, in English and Portuguese, from 2017 to 2025 were included.

The exclusion criteria were: studies with low methodological rigor, duplicate publications, and articles that did not directly address the diagnostic criteria or the classification of SAH.

The selection process took place in two stages: initially, the screening of titles and abstracts was carried out, followed by the complete reading of the potentially eligible texts, in order to verify their relevance and scientific consistency.

Finally, the extracted data were organized, critically analyzed and presented in a descriptive manner, with emphasis on the synthesis of the main evidence related to the diagnosis of SAH.

3 RESULTS

The diagnostic criteria for SAH are segmented according to the measurement method used. According to the ESH guideline (2023), the in-office diagnosis is established when systolic BP (SBP) is $\ge$ 140 mmHg and/or diastolic BP (DBP) is $\ge$ 90 mmHg, after at least two or three visits (Mancia et al., 2023). In contrast, the ACC/AHA (2017) criterion defines hypertension (Stage 1) from $\ge$ 130/80 mmHg,

classifying values between 120-129 mmHg of SBP as "High" (Whelton et al., 2017). For measurements outside the office, the diagnostic thresholds are generally lower: in ABPM (24-hour mean), $\ge$ 130/80 mmHg is considered, and in HBPM (or daytime mean of ABPM), the reference value is $\ge$ 135/85 mmHg (Mancia et al., 2023; Whelton et al., 2017).

The literature highlights the importance of the classification of SAH for risk stratification. The ESH categorizes BP as: Excellent (<120/80), Normal (120-129/80-84), Normal-High (130-139/85-89), Grade 1 Hypertension (140-159/90-99), Grade 2 (160-179/100-109), and Grade 3 ($\ge$ 180/110) (Mancia et al., 2023). In addition to measurement, the identification of target organ lesions (LOA), such as left ventricular hypertrophy or albuminuria, is an integral part of the diagnosis to define therapeutic urgency.

In specific populations, metabolic risk factors influence diagnosis and progression. Recent studies demonstrate that in people living with HIV, weight gain and increased Body Mass Index (BMI) after initiation of certain antiretroviral regimens (such as integrase inhibitors) are strongly associated with the onset of new-onset hypertension, requiring more rigorous blood pressure monitoring in these patients (Byonanebye et al., 2024). With regard to diagnostic follow-up, the detection of resistant hypertension — that which does not meet the goals with three classes of drugs — requires verification of medication adherence. Evidence indicates that simplifying the regimen with fixed-dose combinations (single tablet) improves treatment persistence, helping to differentiate between true resistant hypertension and "pseudo-resistance" due to low adherence (Parati et al., 2021).

It is also essential to mention resistant hypertension (RH) and its detailed criteria, which is described as the persistence of blood pressure equal to or above 140/90 mmHg, after the institution of three or more classes of antihypertensive drugs, one of which is a thiazide diuretic. Among the causes, primary hyperaldosteronism stands out, which causes, in addition to hypertension, excessive production of aldosterone not suppressed by sodium intake, potassium excretion and, in more severe cases, hypokalemia, criteria that can favor agility in diagnosing RH, which today is the most complex phenotype of systemic arterial hypertension. (SANTOS et al. 2024). Other factors frequently observed in these patients are obesity, sedentary lifestyle, and dyslipidemia, but it is important to emphasize that RH is a condition resulting from the interaction of several factors such as

biological, behavioral, and organizational health factors. At a given moment, if the patient controls the blood pressure values with four or more medications, his diagnosis is configured as controlled resistant arterial hypertension. (Teles, H. V. et al; (2026).

4 DISCUSSION

The discrepancy between the threshold of 130/80 mmHg (AHA/ACC) and 140/90 mmHg (ESH) remains the central point of discussion in modern cardiology. The adoption of the American criterion significantly increases the prevalence of the disease, labeling a larger portion of young individuals as hypertensive, which aims to encourage early lifestyle interventions (Whelton et al., 2017). On the other hand, European caution focuses on avoiding overtreatment and diagnostic stigma in patients at low cardiovascular risk, although it recommends drug treatment for individuals with BP between 130-139/85-89 mmHg who already have established cardiovascular disease (Mancia et al., 2023).

In clinical practice, these criteria should not be applied automatically or disconnected from the individual context of each patient. For a young adult, without comorbidities and with low overall cardiovascular risk, the same blood pressure value may only indicate the need for lifestyle changes and continuous reassessment. On the other hand, in patients with established atherosclerotic disease or with target organ damage, this same pressure level tends to require earlier diagnosis and initiation of treatment, regardless of the threshold adopted (WHELTON et al., 2017; MANCIA et al., 2023).

The role of measurements outside the office (ABPM and HBPM) has been consolidated as indispensable. Mancia et al. (2023) reinforce that the "isolated office diagnosis" is insufficient in the current era, given the high prevalence of masked hypertension in patients with normal-high BP, who have a cardiovascular risk similar to those with sustained hypertension. The discussion on adherence brought by Parati et al. (2021) suggests that the diagnosis of treatment failure is often actually a diagnosis of failure in the dosing regimen, with the use of single-pill combinations being a diagnostic and therapeutic strategy to confirm actual resistance.

Finally, the epidemiological transition reveals new phenotypes, such as the one observed by Byonanebye et al. (2024), where iatrogenic changes in metabolism and body weight (lipodystrophy and weight gain) become diagnostic triggers for SAH. It is concluded that diagnostic criteria are not mere numbers, but dynamic tools that should

integrate continuous monitoring technology, the patient's metabolic profile, and the facilitation of adherence to reduce the burden of hypertensive complications (Mancia et al., 2023; Parati et al., 2021).

5 CONCLUSION

It is concluded that systemic arterial hypertension is a relevant public health problem, being directly associated with increased morbidity and mortality due to cardiovascular, cerebrovascular and renal diseases. Its high prevalence, combined with its often asymptomatic character, hinders early diagnosis and contributes to the silent progression of the disease.

Proper management of hypertension requires a comprehensive approach, which involves both pharmacological interventions and non-pharmacological measures, such as lifestyle changes, as recommended by current guidelines (WHELTON et al., 2018). Such strategies are essential for reducing blood pressure levels and preventing long-term complications.

However, despite advances in therapeutic options, blood pressure control is still insufficient in a significant portion of patients. In this context, low adherence to drug treatment stands out as one of the main limiting factors, directly impacting clinical outcomes and cardiovascular risk. Studies show that the simplification of the therapeutic regimen, especially through the use of fixed-dose combinations, is associated with improved adherence and blood pressure control (PARATI et al., 2021).

Thus, it is evident that coping with hypertension requires a multifactorial and continuous approach, based on the individualization of care, the strengthening of therapeutic adherence and the integration between different treatment strategies. The performance of health professionals, combined with patient engagement, is essential to improve disease control and reduce its impacts on the health of the population.

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