

Atrial fibrillation and 24-h ambulatory blood pressure pattern

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1 | INTRODUCTION

This issue of the journal features a paper on the possibility to predict atrial fibrillation (AF) based on the 24-h blood pressure (BP) pattern¹

AF is the most common sustained cardiac arrhythmia and an important risk factor for ischemic stroke.² It is estimated that approx 25% of all ischemic strokes are caused by AF and these strokes are often more severe than non-AF related strokes with a higher risk of death and approximately 70% disability at discharge.³ The population average of AF is estimated at 1–2% of the general population^{4,5} but it increases quickly with age to 5% in persons over 65 years and 14% in those over 85 years^{6,7}. However, there is evidence that the true prevalence of AF is much higher^{8,9}. As an example, Turakhia and associates estimated that 13.1% of all AF cases in US are undiagnosed, an estimation based on a back-calculation methodology among patients identified with incident AF following an ischemic stroke in a 6-year time period.¹⁰ The reasons why AF often remains undetected are straightforward; Approximately one-third of persons with AF have no clear symptoms,^{11,12} but even in symptomatic cases, it can be difficult to detect it because, in the case of paroxysmal AF (pxAF), episodes of the arrhythmia may be of short duration^{11,13} and not present at the time of EKG performance.

This all has major consequences for patients and society with AF-related costs having a significant contribution to overall healthcare costs, mainly due to treatment costs for stroke. These costs will exponentially increase unless AF is detected early and effectively treated.⁵ On the contrary, AF detection at an early stage followed by the right treatment can reduce the risk of stroke by 64%¹⁴. This means that any tool that could help to detect AF or predict the occurrence of AF should be carefully considered.

Because nowadays 24-h ambulatory blood pressure monitoring (ABPM) is recommended by most hypertension guidelines for a.o. diag-

nosis of hypertension, a possibility to predict AF based on an ABPM pattern might dramatically improve AF detection. This is supported by the facts that hypertension increases the risk of AF by two-fold and that the majority of AF patients appear to have hypertension.¹⁵ This means that, if hypertension guidelines are followed,^{16,17} many patients at high risk of AF will undergo ABPM.

From ABPM it is well known that, particularly night-time blood pressure (BP), is an important cardiovascular risk predictor¹⁸ and reverse dipping, a higher BP at night than during daytime, has been associated with the poorest cardiovascular prognosis.¹⁹

For the paper in the present issue, the authors performed a study among 412 patients. After a mean follow-up period of almost five years, seven patients developed AF. It appeared that 24-h systolic BP, night-time systolic BP, and presentation of reverse dipping were independently associated with new-onset AF.

The fact that 24-h and night systolic BP were independently associated with new-onset AF should not come as a surprise due to the well-known relationship between hypertension and AF. However, as such a relationship with AF could not be found for office systolic and diastolic BP this suggests that office BP measurement has limited value in diagnosing hypertension. At the same time, this reveals a study limitation as the authors did not use ABPM for the diagnosis of hypertension. The study participants included were classified as hypertensive when having elevated BP in two consecutive visits. Therefore, some white-coat hypertensives might have been included, whereas at the same time masked hypertensives were excluded. In other words, the included patients population might not totally represent true hypertensives. The authors mentioned in their paper that all patients received antihypertensive medication. However, as is well known, office BP measurements may also lead to unnecessary treatment.²⁰

The authors found that reverse dipping was the strongest independent predictor for early onset AF. This finding adds another potential

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value to reverse dipping and is directly or indirectly supported by other findings; Domenech and associates demonstrated in a small patient study that night-time BP is associated with atrial remodeling,²¹ which may eventually lead to AF. Another study showed that sustained nondipping hypertensive patients had a two-fold greater risk of developing AF than dippers.²² In addition, reverse dipping showed to be independently associated with obstructive sleep apnea syndrome (OSAS),²³ whereas approximately one-third of AF patients appeared to have OSAS.^{24,25}

For interpretation of the outcome of the paper, some other items should also be considered; Because the aim of Huang and associates was to investigate AF incidence, patients with a history of AF had to be excluded from the study. However, some patients might have had pxAf which was not yet diagnosed by the time of inclusion and not present at the moment of 12-lead EKG measurement. The same applies to the follow-up measurement. Only if symptoms and/or signs of AF were identified, Holter EKG monitoring was performed. However, since between 25% and 65% of all AF cases are estimated to be pxAf,²⁶ which are often without symptoms, the chance that the presence of pxAf was missed is high. Seen in that perspective it would have been better if all patients had received 24-h Holter monitoring, although this is costly, less practical and neither guarantees the finding of all pxAf patients.²⁷

Finally, another matter of concern is the relatively small sample size and the very small numbers of patients with incident AF. However, as ABPM is implemented more and more in general clinical practice on a global scale, more information may be expected soon regarding the association of ABPM pattern and the risk of AF.

CONFLICT OF INTEREST

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How to cite this article: Verberk WJ. Atrial fibrillation and 24-h ambulatory blood pressure pattern. *J Clin Hypertens.* 2022;24:848–850. <https://doi.org/10.1111/jch.14522>