

Review Article

White-coat Hypertension

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Abstract

The term white-coat hypertension (WCHT) comes from the reference to the white coats traditionally worn by the doctors. It is also called “isolated office or clinic hypertension.” Thomas Pickering coined the term WCHT to denote individuals who were not on the treatment for hypertension but who had elevated office blood pressure and normal blood pressure measured at home or with ambulatory blood pressure monitor. When your blood pressure is taken at home, the systolic value can be 10 mmHg lower than it would be if taken by a doctor and 5 mm lower on the diastolic blood pressure value. For some people, the difference can be even greater. The traditional definition of WCHT is based, therefore, on an elevated office blood pressure with a normal blood pressure during the awake period with ambulatory blood pressure monitoring. The most recent European guidelines propose an alternative definition of WCHT, which encompasses subjects with office systolic/diastolic blood pressure readings of >140/90 mmHg and 24 h blood pressure <130/80 mmHg. This condition cannot be considered as innocent since it is associated with metabolic abnormalities as well as cardiac and vascular end-organ damage. Evidence has been provided that WCHT state is characterized by an increased risk of fatal and non-fatal cardiovascular (CV) events as compared to normotensive individuals. People with WCHT were more likely to be female young less obese and more recently diagnosed with hypertension. The purpose of the review is to provide new insights into the definition, characteristics, CV risk assessment, therapeutic implications, and all-cause mortality in patients with WCHT.

Key words: Ambulatory blood pressure monitoring, white-coat hypertension, sustained HTN

Introduction

The term white-coat hypertension (WCHT) describes a subgroup of untreated individuals with persistently elevated office blood pressure but normal ambulatory blood pressure values. This isolated clinic hypertension is frequently diagnosed in current clinical practice. The prevalence of WCHT depends mainly on the demographic and clinical characteristics of the subjects as well as on the methods (including ambulatory or home blood pressures measurement) and the blood pressure cutoffs used to define normal out-of-office values. Majority of the clinical studies have reported that WCHT accounts for 25–30% of individuals and the phenomenon is reasonably reproducible; however, whether WCHT is a benign phenomenon is still under debate. Failure to identify the condition results in a large expenditure on necessary drugs. Years of investigation have shown that this condition cannot be regarded as “innocent”

nature but with a greater CV risk and, hence, retains important clinical implications.

The task force of the eighth international consensus conference on blood pressure monitoring recommends ambulatory blood pressure monitoring to exclude WCHT in untreated patients when

- Office blood pressure > 140/90 mmHg on >3 separate office visits.
- >2 Blood pressure measurements taken outside the office are <140/90 mmHg frequently using home blood pressure monitoring and
- There is no evidence of hypertensive end-organ damage.

The National Institute for Health and Clinical Excellence guidelines advocate that every person with elevated office blood pressure aged >18 years undergo ambulatory blood pressure monitoring to rule out a diagnosis of WCHT with the potential

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Received: 22-11-2018; Accepted: 17-12-2018
doi: 10.15713/ins.johtn.0143



for savings in health costs by virtue of unnecessary treatment with antihypertensive drugs.

Once ambulatory blood pressure has confirmed the diagnosis of WCHT, the European Society of Hypertension Working Group on blood pressure monitoring recommends that the diagnosis be reconfigured in 3–6 months and followed up yearly with ambulatory blood pressure monitoring to detect any evidence of progression to sustained hypertension.^[1-6]

Etiology

Emotional factors such as anxiety or stress may be responsible for the microneurographic response in which pronounced activation of skin nerves and associated sympathetic inhibition of muscle nerve traffic when physicians take the blood pressure. This anxious emotional response may act as a mechanism in the development of WCHT.^[2,3]

Implications

The studies have shown that there is greater risk of future sustained hypertension, high associated metabolic risk, and end-organ damage.^[4]

Future Hypertension Risk

There is a greater risk of developing hypertension in white coat subjects based on in-office blood pressure and out-of-office blood pressure values. The condition of sustained blood pressure >140/90 mmHg and mean 24 h blood pressure values <125/79 mmHg or home blood pressure <132/82 mmHg are white-coat hypertensives. 10-year follow-up study showed that 43% of them had progressed to sustained hypertension. Hence, sustained hypertension was 2.5-fold higher for WCHT, even after adjusted for age.

Metabolic Risk

Evidence has supported the association between WCHT and metabolic derangements which may precipitate CV events. When compared to the normotensive individuals, subjects with WCHT may have high triglycerides, uric acid, and glucose values. These subjects with increased waist circumference and body mass index show high blood pressure variability which all contributes to cardiac vascular and renal involvement. The persistent impairment in glucose metabolism has been reported in white-coat hypertensive subjects, and hence, the development of new-onset diabetes mellitus is much more high in white-coat hypertensive patients than in normotensives.

End-organ Damage

Studies show that the development of target organ damage in white-coat hypertensive subjects is intermediate between normotensives and sustained hypertensives. At CV level, there may be an increase in the left ventricular (LV) mass index, a

reduction in early to late mitral flow ratio (an index of the LV distensibility) and greater values of the left atrial diameter. Untreated white-coat hypertensive subjects show the high-risk development of intima-media thickness. Early renal damage may be assessed by urine microalbumin.

Treatment Strategies^[4-6]

Maintain a Good Patient-health-care Professional Relationship

WCHT may be addressed through the development of a therapeutic relationship between physician and patient. Effective communication and relationship building can reduce the patient's anxiety about their illness and about their interaction with a physician. Communication between physician and patient is often considered the cornerstone of good medical care.

Relaxation Techniques

Some relaxation techniques such as breathing exercises or meditation may help the patient to calm down before blood pressure checking.

Supportive Management

It mainly includes lifestyle modification, weight reduction, and proper management of other risk factors such as diabetes mellitus, dyslipidemia, and renal dysfunction.

Drug Treatment

Antihypertensive medications may be considered in addition to the lifestyle modifications if there are any associated risk factors including the end-organ damage. In unstable white-coat hypertensive patients, the CV risk has been noted to be low than a stable white-coat hypertensive patient. No any antihypertensive medication is recommended for a stable white-coat hypertensive patient with no additional risk factors and also for an unstable white-coat hypertensive patient.

Conclusion

WCHT is not considered as an innocent condition as it can be associated with metabolic derangements, high CV risks, and other target organ damages, it has to be diagnosed earlier to prevent further complications. Even though there is no evidence-based data regarding treatment of WCHT, the European Society of Hypertension/European Society of Cardiology guidelines suggest that antihypertensive medications to be restricted to high-risk patients.

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How to cite this article: Vijayan L. White-coat Hypertension. *Hypertens* 2019;5(1): 14-16.

Source of support: Nil, **Conflict of interest:** None

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