

Study participants were divided into the following categories: normotension: systolic blood pressure (SBP) < 135 mmHg and diastolic blood pressure (DBP) < 85 mmHg at doctor's office and ABPM vigil period mean; essential hypertension: SBP \geq 135 mmHg and/or DBP \geq 85 mmHg at doctor's office and ABPM vigil period mean; white coat hypertension – PAS \geq 135 mmHg and/or DBP \geq 85 mmHg at doctor's office and SBP < 135 mmHg and DBP < 85 mmHg as mean for vigil period of ABPM.

Patients records were collected including identification, previous history of morbidities, family history of heart diseases, exposure to risk factors, anthropometry, blood pressure measures, and waist and hip measures. The next step was to schedule the procedures patients would be submitted to: ABPM exam and blood collection for the investigation of biochemical changes.

Gamma Hein portable tensiometers were used for BP measures at the doctor's office through indirect method. Cuffs were appropriate to patient's arm circumference to reach 0 to 300 mmHg and \pm 3 mmHg accuracy. All technical requirements to obtain proper blood pressure measuring, as well as the definition of the cut-off point between hypertensive and normotensive individuals followed the specifications of Brazilian Guidelines on Hypertension – IV³.

ABPM exam was performed in compliance with ambulatory monitoring of blood pressure – III⁸. *Spacelabs/90207* and oscillometric method were used through indirect and intermittent measuring, with 15-minute intervals for day time and 30-minute intervals for the night period. Exams were considered valid whenever minimum duration was 21 hours, with 3 measures/hours in vigil and 2 measures/hour during sleep. Whenever 20% of automatic measures or more were invalidated exams were excluded.

Research participants were asked to be at the Health Unit on scheduled day and time after a 12-hour fasting period for blood sample collection and for serum levels of glucose, cholesterol, triglycerides, sodium, potassium, urea and creatinine.

Laboratorial analyses of those samples were the responsibility of a laboratory approved by State Health Secretariat – Unified Health System (SUS), since they were also used to treat patients enrolled in the Diabetes and Hypertension Prevention and Control Program carried out by the Federal Government (HIPERDIA)²⁰.

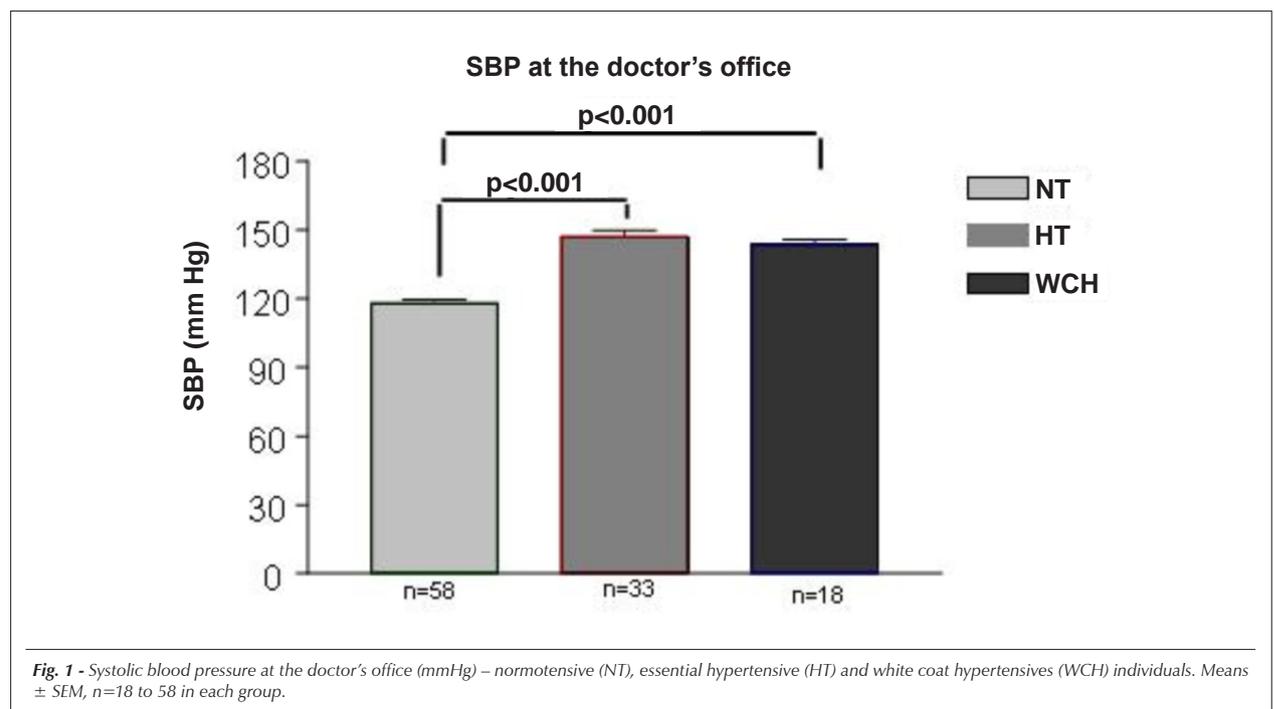
For statistical data, the following variables were analyzed by analysis of variance (ANOVA) for repeated measures and Tukey's test for multiple comparisons of means: body mass index (BMI), waist/hip ratio (WHR), glucose levels, total cholesterol, triglycerides, sodium, potassium, urea and creatinine. Results were expressed as means \pm standard errors of means. $p > 0.05$ was considered statistically significant. Our purpose was to test whether means varied between groups while considering variance in all groups.

The study was sponsored by the *Fundação de Amparo à Pesquisa do Estado de São Paulo* (FAPESP).

Results

After all exclusion criteria were considered, one hundred and nine (109) were selected for the study. In this group, 58 (53.2%) subjects were considered normotensive (NT) and 51 (46.8%) were diagnosed as hypertensive. From those, 33 (64.7%) were classified as essential hypertension patients (HT) and 18 (35.3%) as white coat hypertensives (WCH).

Systolic blood pressure (SBP) and diastolic blood pressure (DBP) measured at the doctor's office can be found in Figures 1 and 2, respectively. ABPM BP measures during vigil periods



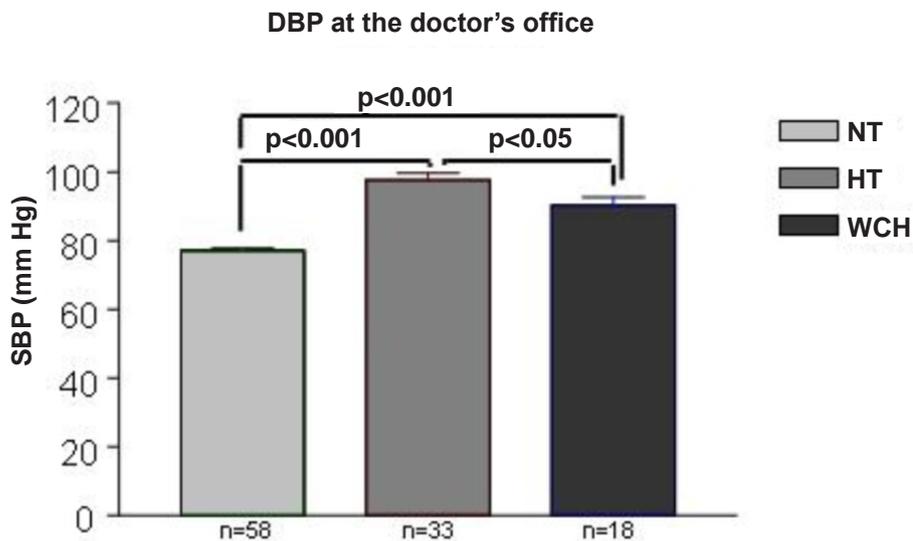


Fig. 2 - Diastolic Blood pressure at the doctor's office (mmHg) – normotensive (NT), essential hypertensive (HT), and white coat hypertensive individuals (WCH). Means \pm SEM, n=18 to 58 in each group.

can be found in Figures 3 (SBP) and 4 (DBP).

From the total number of 58 normotensive patients, 31 (53.4%) are females, and 27 (46.6%) are males. In regard to essential hypertension, 14 (42.4%) are females and 19 (57.6%) are males. From all white coat hypertension patients, 15 (83.3%) were females and 03 (16.7%) were males.

As for age range, most normotensives (53.4%) are in the

18-29-year-old range, with mean age found to be 32.2 ± 1.6 . Hypertensive patients are predominantly in the 50-59-year-old range (33.3%), with mean at 49.26 ± 2.7 years. As for white coat hypertensives, highest prevalence (27.8%) was found in the 40-49-year-old range (mean at 45.28 ± 2.9 years).

Findings related to BMI and WHR can be found in Table 1.

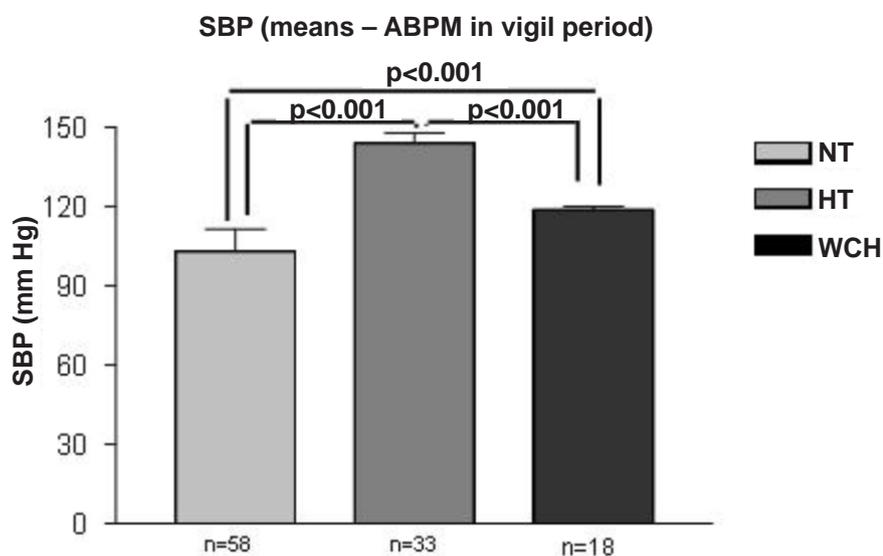


Fig. 3 - Systolic blood pressure (mmHg) – average ABPM vigil period for normotensive (NT), essential hypertensive (HT) and white coat hypertensive individuals (WCH). Means \pm SEM, n=18 to 58 in each group.

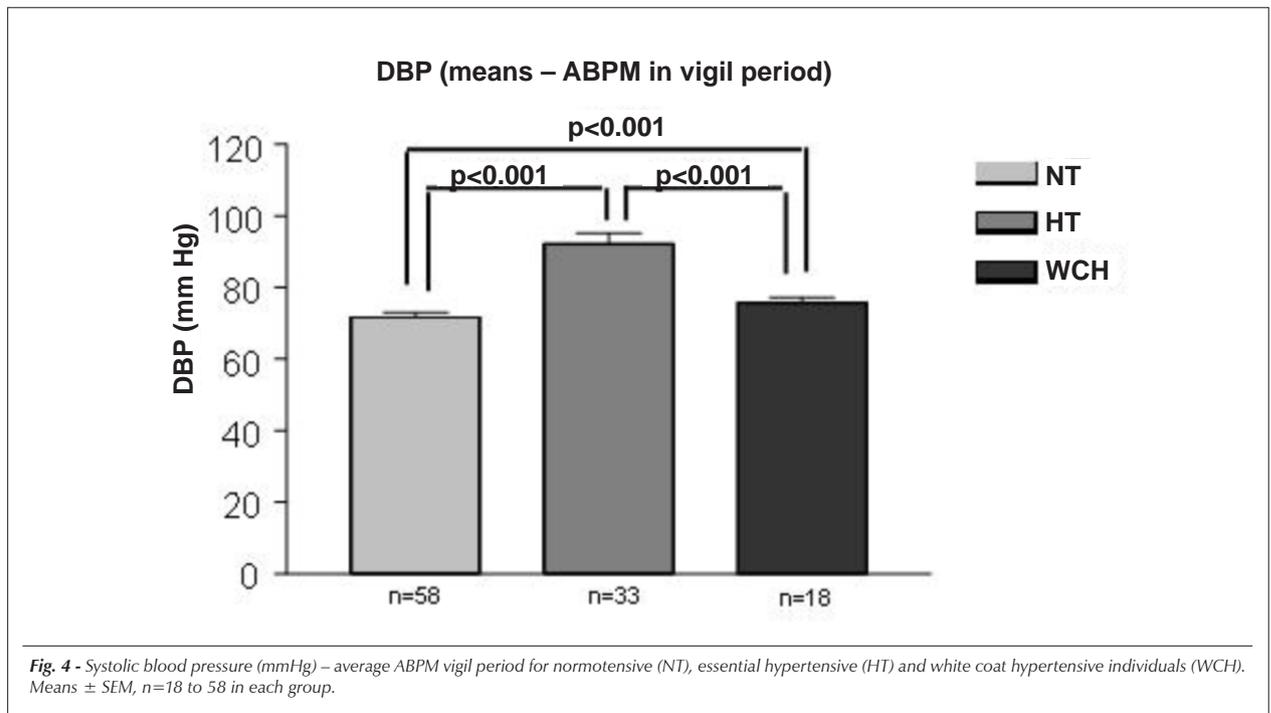


Table 1 - Means and SD for white coat hypertension (WCH), essential hypertension (HT) and normotension (NT) groups

Variable	NT (n=58)	HT (n=33)	WCH (n=18)
BMI (Kg/m ²)	25.3 ± 0.57	28.3 ± 1.00*	29.8 ± 1,31†
WHR (cm)	0.83 ± 0.01	0.91 ± 0.01§	0.89 ± 0.01*
Glucose (mg/dl)	85.0 ± 1.48	93.7 ± 3,46*	96.0 ± 3.75*
Total cholesterol (mg/dl)	176,6 ± 5.20	210.7 ± 9.17†	201.4 ± 9.16
Triglycerides (mg/dl)	99.14 ± 8.63	136.9 ± 15,85	155.4 ± 35.51
Sodium (mEq/ml)	139.1 ± 0.21	139.7 ± 0.37	139.9 ± 0.28
Potassium (mEq/ml)	4.3 ± 0.07	4.5 ± 0.09	4.47 ± 0.10
Urea (mg/dl)	28.2 ± 0.88	30.6 ± 1.63	28.5 ± 2.15
Creatinine (mg/dl)	0.7 ± 0.02	0.9 ± 0.04†	0.7 ± 0.06‡

*p < 0.05 x NT; † p < 0.01x NT; ‡ p < 0.05 x HT; § p < 0.001 x NT.

If the international pattern as indicated by the Brazilian Association for the Study of Obesity and Metabolic Syndrome (ABESO)²¹ is taken into account for BMI analysis, the study found that 41.2% of normotensives, 25.9% of hypertensives, and 21.4% of white coat hypertensives were found to be within the limits considered healthy weight. The overweight range comprised 35.3% of normotensives, 29.6% of essential hypertension patients, and 35.7% of white coat hypertensives. In the threshold measures, underweight patients were found among normotensives (7.3%) and grade III obesity was only found in the white coat group (7.1%). All the others were concentrated in the essential hypertensives (44.4%) and white coat hypertensives (35.7%) groups.

All participants were Dumont residents. Most patients were born in São Paulo State (63.8% normotensives, 66.7% hypertensives, and 66.7% white coat hypertensives), totaling 65.1% in the sample. It should be pointed out that 81.7% of the individuals under study were born in the Southeastern Region in Brazil.

In regard to schooling, most study participants (25.7%) were found to belong to functional literacy category. The number of individuals who have finished high school is significant: 24.8% of the sample. Normotensives reported higher schooling level (62.3% finished elementary school, and 34.3% finished high school), whereas hypertensives reported the lowest schooling level (78.6% participants finished elementary school, and only

36.3% are literate).

As for marital status, it was observed that most individuals were married, both in the total sample (64.2%) and in each of the categories. However, married individuals were practically standing alone among hypertensives (93.9%).

Family history of hypertension was found in 69% of normotensives, 78.8% of hypertensives, and 72.2% of white coat hypertension. All the others either refused to inform or were not aware of their family history.

Table 1 shows serum dosing of glucose levels, total cholesterol, triglycerides, sodium, potassium, urea, and creatinine.

Discussion

It was earlier referred that depending on study criteria white coat hypertension prevalence may vary²²⁻²³. Study results are within the range found in literature, since 35% of hypertensives in the study were diagnosed as white coat hypertensives.

We have noticed that pressure levels of study individuals clearly describe normotensive and hypertensive groups. Significant difference between BP values – both systolic and diastolic – could be found among individuals in both groups, both at the doctor's office and on ABPM vigil period. It is interesting to point out that in regard to SBP measure at the office groups of hypertensives show similarity. If we consider that BP increase is a major risk predictor for cardiovascular diseases²⁴, such finding suggests that white coat hypertensives are under higher risk for that event if compared to individuals whose BP is under control, or could present as high an exposure as primary hypertension patients.

In regard to gender, a predominance of female patients was found in the white coat hypertension subgroup only, thus confirming the results brought forth by quite a number of researchers^{11,25} who point out women report higher prevalence of the phenomenon.

As for participants' distribution in different age ranges, the prevalence of young individuals in the normotensive group may be explained by higher incidence of pathologic events directly associated to advancing age, which leads to higher age ranges in hypertension groups. Based on the vulnerability of studies such as this and the likelihood of biased results, especially screening, a pairing attempt was made for the comparison of cases and controls in regard to major constitutional factors. When some of the constituting factors were considered based on random sampling – such as participants' age – it was obvious that lower pressure measures were associated to lower age range. Taking into account that in order to attenuate that bias we would need to intentionally arbitrate on the sampling plan, the authors chose to keep participants' distribution as originally laid out.

By doing that, data are consistent with those found in the general population, where a tendency towards BP increase is found to be associated to age, and high incidence of hypertension among the elderly³.

Most individuals are from different towns and cities in the Southeastern region to reflect the system adopted for

patients' referral for hospital assistance. Most individuals in the sample work in the agroindustrial segment – either sugar cane or peanuts (peasants, grain selection, production of confections).

Although essential hypertension individuals did report lower schooling levels, the differences found seem to be related to age range rather than the condition. That means to say that the higher the age range – as that found in the hypertension group – the lower their schooling level. The reverse is also true. Such results confirm data published by IBGE¹⁹ showing that in the 45-59-age range illiteracy is significantly higher in Brazil if compared to the young population. In spite of that, Martinez et al¹¹ also found – as did the present study – that white coat hypertensives have lower educational level when compared to non-hypertensives.

When marital status is taken into account we see that most hypertensives and most white coat hypertension are married individuals or have a stable marital status. Some studies²⁶⁻²⁷ have shown that psychosocial stressors – such as marital life and marital life related factors - are directly associated to blood pressure increase.

High prevalence of family previous history was found for cardiovascular diseases in the three groups under study. That means to say that the present study does not show statistically significant association between white coat hypertension and family history investigation. Literature shows that family history hypertension is associated to white coat hypertension^{14,28}. However, the role played by family history in the genesis of increased blood pressure in association to such phenomenon is yet to be established⁶.

Previous smoking habits are a marked factor in both hypertension groups, while reporting low incidence among normotensives. Alcohol drinking, in its turn, was reported in essential hypertension patients' history. Although a positive association between those factors and the events described has been found, it is known that risks decrease proportionally to the time of discontinuation²⁹; all participants who had had a previous history of smoking and alcohol drinking habits also referred they had stopped smoking or drinking long before.

For BMI analysis – as in other investigations^{12,30} - individuals in both hypertension groups are more obese than normotensives, with no significant difference between white coat hypertensives and essential hypertensives.

When assessing WHR to detect the risk of metabolic and cardiovascular diseases³¹ hypertensives were found to report higher prevalence as compared to normotensives; white coat hypertensives were exposed as much as those in the essential hypertension group.

As mentioned earlier, hypertension-related metabolic risks contribute for the development of target organs lesions and atherosclerotic diseases. Hypertension is associated to glucose dyslipidemia and abnormal metabolism. Similarly, many studies show metabolic disorders in the white coat hypertension condition, but results are not consistent^{29,32}. The present study has shown that plasma glucose of hypertensives in both groups is higher as compared to normotensives, which is to say that white coat hypertensives are similar to essential hypertensives when that parameter is assessed, as observed in the study by

Björklund et al³³. The same discrepancy was found in regard to normotensives when plasma creatinine was assessed.

As demonstrated by Sandvik and Steine³⁴, total cholesterol levels indicated higher lipid level in essential hypertension patients when compared to normotensives, but the difference was not significant for white coat hypertensives. In spite of that, mean values for both hypertension groups is above ideal when cardiovascular risk classification and lipid profile control following Brazilian Guidelines on Hypertension³. This suggests that although graphically comparable to the individuals with no BP change, when lipemic levels are assessed white coat hypertensives are also exposed to the deleterious risks caused by hypercholesterolemia.

No statistically significant difference was found in the three groups in reference to triglycerides, sodium, potassium, and urea serum levels. It should be pointed out that when considering mean values for triglycerides isolatedly, it was shown that white coat hypertension patients not only showed higher means as compared to all other patients, but that – surprisingly – it is the only group to report results parameters above normal when compared to those found in literature.

Our results show that the risks may be either close to those reported by essential hypertension patients or comparable to normotensive patients, thus supporting the concept that white coat hypertensives are found to be in the intermediate risk category between essential hypertensives and individuals with no blood pressure condition change. But literature shows controversial results from the analysis of those variables^{6,12,14,23,35-38}.

The authors agree that the differences found between the groups in regard to clinical and biochemical variations demonstrate that white coat hypertension is a condition that must be assessed distinctively in regard to normotension and

to essential hypertension. The authors agree with previous studies^{22,39} stating that those abnormalities should lead to the conclusion that target organs lesions are increased when associated to white coat hypertension.

Although the authors have not found any correlation between white coat hypertension and demographic variables investigated, they are aware that the sample is not large enough for more solid conclusions.

Further studies are needed to help measure the prevalence and the risks associated to the white coat phenomenon. Based on all the peculiarities discussed to this point, the authors believe that strategies are to be raised in regard to the use of therapeutic actions for the control of blood pressure in those patients. The extension and the likelihood of the association between white coat hypertension and risk factors and comorbidities should also be investigated. Additionally, the need for further studies to reassess and possibly define the best conduct for the manifestation of such phenomenon is also undeniable.

Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Study Association with Graduate Work

This study is part of the thesis submitted to *Faculdade de Enfermagem de Ribeirão Preto da Universidade de São Paulo*, for the degree of doctorate.

Sources of Funding

This study was funded by grant from *Fundação de Amparo à Pesquisa do Estado de São Paulo – FAPESP*.

References

1. Pickering TG. Can ambulatory blood pressure monitoring improve the diagnosis of mild hypertension? *Curr Sci*. 1990; 8 (Suppl 6): S43-S47.
2. Pickering TG. White coat hypertension. *Curr Opin Nephrol Hypertens*. 1996; 5 (2): 192-8.
3. IV Diretrizes Brasileiras de Hipertensão Arterial. *Arq Bras Cardiol*. 2004; 82 (supl. 4): 1-40.
4. Pierdomenico SD, Cipollone F, Lapenna D, Bucci A, Cucurullo F, Mezzetti A. Endothelial function in sustained and white coat hypertension. *Am J Hypertens*. 2002; 15 (11): 946-52.
5. Gus M. Que valores devem ser adotados como limites de normalidade na Monitorização Ambulatorial da Pressão Arterial e na Monitorização Residencial da Pressão Arterial? *Arq Bras Cardiol*. 2005; 85 (3): 212-4.
6. Segre CA, Ueno RK, Warde KRJ, Accorsi TAD, Miname MH, Chi CK, et al. Efeito hipertensão e normotensão do avental branco na Liga de Hipertensão do Hospital das Clínicas, FMUSP: prevalência, características clínicas e demográficas. *Arq Bras Cardiol*. 2003; 80 (2): 122-6.
7. III Diretrizes Brasileiras para o uso da Monitorização Ambulatorial da Pressão Arterial. *Arq Bras Cardiol*. 2001; 77 (4): 390-3.
8. O'Brien E, Murphy J, Tyndall A, Atkins N, Mee F, McCarthy G, et al. Twenty-four-hour ambulatory blood pressure in men and women aged 17 to 80 years: the Allied Irish Bank Study. *J Hypertens*. 1991; 9 (4): 355-60.
9. Hoegholm A, Kristensen KS, Madsen NH, Syendsen TL. White coat hypertension diagnosed by 24-h ambulatory monitoring: examination of 159 newly diagnosed hypertensive patients. *Am J Hypertens*. 1992; 5 (2): 64-70.
10. Pickering TG. White coat hypertension – should it be treated or not? *Cleve Clin J Med*. 2002; 69 (8): 584-5.
11. Martinez MA, Garcia-Puig J, Martin JC, Guallar-Castillon P, Aguirre de Carcer A, Torre A, et al. Frequency and determinants of white coat hypertension in mild to moderate hypertension: a primary care-based study. *Monitorización Ambulatoria de la Presión Arterial (MAPA)-Area 5 Working Group*. *Am J Hypertens*. 1999; 12 (3): 251-9.
12. Julius S, Jamerson K, Gudbrandsson T, Schork N. White coat hypertension: a follow-up. *Clin Exp Hypertens A*. 1992; 14 (1-2): 45-53.
13. Lemne C, Lindvall K, Georgiades A, Fredrikson M, de Faire U. Structural cardiac changes in relation to 24h ambulatory blood pressure levels in borderline hypertension. *J Intern Med*. 1995; 238 (1): 49-57.
14. Hoegholm A, Bang LE, Kristensen KS, Nielsen JW, Holm J. Microalbuminuria in 411 untreated individuals with established hypertension, white coat hypertension, and normotension. *Hypertension*. 1994; 24 (1): 101-5.

Prevalence of White Coat Hypertension in Primary Health Care

Leila Maria Marchi Alves, Maria Suely Nogueira, Simone de Godoy, Miyeko Hayashida, Evelin Capellari Cárnio

School of Nursing, University of São Paulo at Ribeirão Preto, SP - Brazil

Summary

Objective: Assess the prevalence of white coat hypertension in the municipality of Dumont, in São Paulo State, and map study participants' demographics, and physiologic and metabolic changes.

Methods: One hundred and nine (109) users of the Municipal Health Service were selected and then divided into three groups: normotension, essential hypertension, and white coat hypertension after blood pressure was measured through oscilometry and blood pressure monitoring exam at outpatient unit. Variables found between the groups were compared based on interview, data measurements, and laboratory exams. ANOVA and Tukey tests were used for statistical data. Results were expressed as means \pm standard error of means. $p < 0.05$ was considered statistically significant.

Results: The prevalence of white coat hypertension was 34.1%. Females were predominant: mean age 45.3 years, increased body mass index, waist/hip ratio, plasma glucose level and creatinine when compared to hypertensives and/or normotensives. No correlation was found between white coat hypertension and demographic variables.

Conclusion: The differences found between the groups and clinical and biochemical variations lead to the conclusion that white coat hypertension is a condition that should be investigated in normotensive and hypertensive individuals distinctively. (Arq Bras Cardiol 2007; 89(1) : 25-31)

Key words: Blood pressure, hypertension, blood pressure monitoring, ambulatory; white coat hypertension.

Introduction

Blood pressure (BP) level is the most powerful sign for hypertension, although the inherent variability of BP levels must be taken into account in association with clinical measurements. Today, there is unequivocal evidence showing that at hospital environment BP levels are usually different from measures found at other settings. Discrepancy between individuals was also found to be significant. Therefore, ambulatory BP is expected to be more dependable, as well as to allow the identification of a relevant subgroup of white coat hypertension patients¹.

White coat hypertension is understood as persistent BP increase at the doctor's office or clinic, while when assessed at any other setting by blood pressure ambulatory monitoring (ABPM)² BP levels are normal. This new method of BP measuring has been increasingly used in medical practice since it provides additional information to those usually obtained from traditional methods of blood pressure measurement, in addition to acting as a tool to eliminate error factors related to measuring as well as wider-reaching diagnosis and therapeutic possibilities³.

As proposed by the authors, white coat hypertensives are those who are manifestedly hypertensive at the doctor's office, but report normal BP levels on ABPM⁴⁻⁶. It is important to point out that the criteria used to define white coat hypertension

are major determinants for prevalence and prognosis⁷. Based on those criteria, incidence ranges from 20% to 40%⁶⁻⁹. It has also been investigated whether patients who have been diagnosed with white coat hypertension could be at higher risk for cardiovascular morbidity, and whether drug therapy is the most appropriated¹⁰. It has been demonstrated that white coat hypertension may be affected by a number of demographic aspects¹¹⁻¹³. The pathophysiology of BP increase in white coat hypertensives is also yet to be clarified¹⁴⁻¹⁸. In the light of such questioning, the authors' proposal was to investigate the prevalence of white coat hypertension in the municipality of Dumont, in São Paulo State, and map study participants in regard to demographics, and physiologic and metabolic changes.

Methods

The present research was carried out at Dumont, a small town in Northern São Paulo State¹⁹, after having been submitted to and approved by the Ethics and Research Committee at the School of Nursing, University of São Paulo at Ribeirão Preto.

Four hundred and forty-one patients (441) were interviewed, with medical records having been collected between May, 2004 and January, 2006. Those patients had been to the Health Unit for medical visits and/or assistance at the Outpatient Unit: most of them hypertensives on long-time drug therapy, and therefore, excluded from the study.

A good number of individuals came from internal medicine units.

Mailing address: Leila Maria Marchi Alves •

Av. Bandeirantes, 3.900 - 14040-902 - Ribeirão Preto, SP - Brazil

E-mail: lmarchi@eerp.usp.br

Manuscript received July 3, 2006; revised received November 22, 2006;

accepted January 17, 2007.

15. Cerasola G, Cottone S, Nardi E, D'Ignoto G, Volpe V, Mule G, et al. White coat hypertension and cardiovascular risk. *J Cardiovasc Risk*. 1995; 2 (6): 545-9.
16. Chang NC, Lai ZY, Chan P, Wang TC. Left ventricular filling profiles in young white-coat hypertensive patients without hypertrophy. *Hypertension*. 1997; 30 (3Pt2): 746-52.
17. Floras JS, Jones JV, Hassan MO, Osikowska B, Sever PS, Sleight P. Cuff and ambulatory blood pressure in subjects with essential hypertension. *Lancet*. 1981; 2 (8238): 107-9.
18. Smith PA, Graham LN, Mackintosh AF, Stoker JB, Mary DA. Sympathetic neural mechanisms in white coat hypertension. *J Am Coll Cardiol*. 2002; 40 (1): 126-32.
19. Ministério do Planejamento, Orçamento e Gestão [homepage na internet]. Instituto Brasileiro de Geografia e Estatística. Banco de Dados [citado 2005 dez 14]. Disponível em: <<http://www.ibge.gov.br>>.
20. Ministério da Saúde [homepage na Internet]. Secretaria Executiva. Datasus. Informações de Saúde. Indicadores Municipais de Saúde. [citado 2006 jan 05]. Disponível em: <http://tabnet.datasus.gov.br/tabdata/cadernos/cadernosmap.htm>.
21. Associação Brasileira para o Estudo da Obesidade e da Síndrome Metabólica [homepage na internet]. Cálculo de IMC [citado 2005 set 17]. Disponível em: <<http://www.abeso.org.br>>.
22. Tsai PS. White coat hypertension: understanding the concept and examining the significance. *J Clin Nurs*. 2002; 11 (6): 715-22.
23. Celis H, Fagard RH. White-coat hypertension: a clinical review. *Eur J Intern Med*. 2004; 15 (6): 348-57.
24. Papademetriou V. Comparative prognostic value of systolic, diastolic, and pulse pressure. *Am J Cardiol*. 2003; 91 (4): 433-5.
25. Myers MG, Reeves RA. White coat effect in treated hypertensive patients: sex differences. *J Hum Hypertens*. 1995; 9 (9): 729-33.
26. Baker B, Helmers K, O'Kelly B, Sakinofsky I, Abelsohn A, Tobe S. Marital cohesion and ambulatory blood pressure in early hypertension. *Am J Hypertens*. 1999; 12 (2 Pt 1): 227-30.
27. Tobe SW, Kiss A, Szalai JP, Perkins N, Tsigoulis M, Baker B. Impact of job and marital strain on ambulatory blood pressure results from the double exposure study. *Am J Hypertens*. 2005; 18 (8): 1046-51.
28. Julius S, Mejia A, Jones K, Krause L, Schork N, van de Ven C, et al. White coat versus sustained borderline hypertension in Tecumseh, Michigan. *Hypertension*. 1990; 16 (6): 617-23.
29. Eliasson B, Hjalmarsen A, Kruse E, Landfeldt B, Westin A. Effect of smoking reduction and cessation on cardiovascular risk factors. *Nicotine Tob Res*. 2001; 3 (3): 249-55.
30. Kotsis V, Stabouli S, Bouldin M, Low A, Toumanidis S, Zakopoulos N. Impact of obesity on 24-hour ambulatory blood pressure and hypertension. *Hypertension*. 2005; 45 (4): 602-7.
31. Yusuf S, Hawken S, Ounpuu S, Bautista L, Franzosi MG, Commerford P, et al. Obesity and the risk of myocardial infarction in 27,000 participants from 52 countries: a case-control study. *Lancet*. 2005; 366 (9497): 1640-9.
32. Marchesi E, Perani G, Falaschi F, Negro C, Catalano O, Ravetta V, et al. Metabolic risk factors in white coat hypertensives. *J Hum Hypertens*. 1994; 8 (7): 475-9.
33. Björklund K, Lind L, Vessby B, Andren B, Lithell H. Different metabolic predictors of white-coat and sustained hypertension over a 20-year follow-up period: a population-based study of elderly men. *Circulation*. 2002; 106 (1): 63-8.
34. Sandvik E, Steine S. White coat hypertension in a general practice: prevalence, cardiovascular risk factors and clinical implications. *Scand J Health Care*. 1998; 16 (4): 222-6.
35. Gosse P, Promax H, Durandet P, Clementy J. White coat hypertension: no harm for the heart. *Hypertension*. 1993; 22 (5): 766-70.
36. Weber MA, Neutel JM, Smith DH, Graettinger WF. Diagnosis of mild hypertension by ambulatory blood pressure monitoring. *Circulation*. 1994; 90 (5): 2291-8.
37. Cavallini MC, Roman MJ, Pickering TG, Schwartz JE, Pini R, Devereux RB. Is white coat hypertension associated with arterial disease or left ventricular hypertrophy? *Hypertension*. 1995; 26 (3): 413-9.
38. Rizzo V, Cicconetti P, Bianchi A, Lorido A, Morelli S, Vetta F, et al. White-coat hypertension and cardiac organ damage in elderly subjects. *J Hum Hypertens*. 1996; 10 (5): 293-8.
39. Kuwajima I, Suzuki Y, Fujisawa A, Kuramoto K. Is white coat hypertension innocent? Structure and function of the heart in the elderly. *Hypertension*. 1993; 22 (6): 826-31.