Biopsychosocial Variables and Attitudes towards Treatment Influence Complicated Hypertension

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Abstract

Background: Complicated hypertension can be influenced by the characteristics of hypertensive patients.

Objective: To associate the condition of complicated hypertension with biosocial variables such as attitudes and beliefs about the disease and treatment and subjective well-being.

Methods: We studied 251 uncomplicated hypertensive patients (SBP ≥ 140 mmHg and/or 90 ≤ DBP < 110 mmHg for patients under no treatment and DBP < 110mmHg for patients under treatment without target organ damage and other diseases) and 260 complicated hypertensive patients (DBP ≥ 110 mmHg with or without treatment, with target organ damage or other diseases).

Results: Complicated hypertensive patients were significantly different from uncomplicated ones (p <0.05) in relation to: 1 - Prevalence of men, not white (53.0%), higher body mass index (29.5 ± 4.6 *vs* 28.5 ± 4.0 kg/m²), over 10 years of disease (54.0%), completion of previous treatment (53.0%) and reports of sadness about life as a whole (74.0%) 2 - Complicated hypertensive patients never bring the drugs when they travel (59.0%), nor do they buy them before running out the drugs (71.0%) and rarely follow eating guidelines (69.0%) 3 - Uncomplicated hypertensive patients showed no more migraines, joint pain and, among women, menopausal status and hormone replacement therapy, and 4 - Of those who had pressure control (< 140/90 mmHg), 61.9% were uncomplicated hypertensive patients; and 5 - Complicated hypertensive patients were not aware that treatment can prevent kidney problems and they thought that young people do not have high blood pressure.

Conclusion: Complicated hypertensive patients showed more negative structural and psychosocial characteristics, more negative attitudes towards treatment and are unaware of the disease. (Arq Bras Cardiol 2010; 95(5): 648-654)

Keywords: Hypertension/complications/therapy; treatment refusal; hypertension/psychology.

Introduction

Epidemiological studies show that high levels of blood pressure increase the risk of cerebrovascular disease[1], coronary artery diseases[2], congestive heart failure[3], chronic renal failure[4] and vasculitis[5]. Furthermore, hypertension has a high prevalence and in our country, its frequency varies from 22.3% to 43.9%[6]. However, rates of disease control are low, around 30.0%[7,8], among other factors, mainly due to poor adherence to treatment. Thus, it is important to identify factors that may affect the adherence process, related to the patient, to the disease, to the treatment and institutional aspects, among others.

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Among the aspects related to hypertension that may influence adherence to treatment, we emphasize the gender, age, ethnicity, marital status, educational level and socioeconomic status. Health beliefs and lifestyle are noteworthy. In relation to the disease, knowledge, chronicity, absence of symptoms and late consequences are relevant. Cost, side effects of drugs, complex schemes and poor quality of life relate to antihypertensive drug treatment[9]. In this sense, the methods used to reduce blood pressure should not adversely affect the quality of life of the patient[10].

Another point that stands out is that hypertensive patients usually may have comorbidities or target organ damage ("complicated hypertensive patients") that require other specific treatments that may increase the difficulty of controlling high blood pressure. Among the most common comorbidities, are diabetes mellitus, heart and kidney failure, coronary heart disease and cerebrovascular accident, which increase the risk of cardiovascular mortality.

In this context, health professionals, who work together with hypertensive patients, play a fundamental role in order

to characterize the problem of hypertension, taking into consideration all aspects relating to their characteristics, so that, based on real and concrete data, they are able to plan and provide individualized assistance to promote adherence to treatment, with effective control of the disease.

Thus, this study aims at associating the condition of complicated and uncomplicated hypertension with the following variables: 1) biosocial, 2) attitudes and beliefs on the disease and treatment, 2) blood pressure control; and 4) feeling about life as a whole.

Methods

The study was conducted in the outpatient clinic of the League of Hypertension of the Hospital of the Faculty of Medicine, University of São Paulo (Brazil), after approval by the Ethics Committee. The study adopted the following inclusion criteria: hypertensive patients older than 18, from both sexes, without race restriction, with patient's consent to participate in the study and signing the consent form. A convenience sample consisted of 511 hypertensive patients, with minimal refusal to participate in the study.

Hypertensive patients were classified as complicated or uncomplicated. The uncomplicated group included 251 patients with systolic pressure ≥ 140 mmHg and/or diastolic pressure < 110 mmHg and ≥ 90 mmHg for untreated patients, and diastolic pressure < 110 mmHg for patients with drug treatment, or hypertensive patients under stage one or 2[6], which showed no target organ damage clinically evident or associated diseases (myocardial infarction, acidente vascular cerebral, diabetes mellitus, heart failure, kidney failure and/or nephropathy). The complicated group included 260 hypertensive patients with diastolic pressure ≥ 110 mmHg with or without treatment, or hypertensive patients under stage three[6], or hypertension with diastolic pressure ≤ 110 or > 110 mmHg, which showed clinically evident target organ damage or other diseases, as previously described.

Data were collected through interviews with patients, using a form provided with identification data, economic and social aspect, factors that may interfere with treatment adherence, beliefs and knowledge about the disease and treatment. Blood pressure values considered were the average result of the 4th and 5th measurements of a sequence of five performed with validated automatic device (DIXTAL DX2710)[11], oscillometric type, with the patient seated, arm resting at heart level, using a cuff of appropriate size, in a quiet environment, with no full bladder, without having smoked, had caffeinated beverage or meal at least 30 minutes before, and without having practiced any physical activity for 60 to 90 minutes. To assess hypertensive patients' feeling in relation to their life, we used a diagram with seven pictures of faces, Andrews' Faces Scale, which is a visual scale with intervals of 7 points, consisting of stylized faces, referring to the mood that prevailed before the question "Which of these faces best represents your life as a whole?"[12].

Categorical variables are presented descriptively in tables with absolute (n) and relative (%) frequencies. The relationship between variables was assessed with chi-square test, likelihood ratio test or Fisher's exact test.

Quantitative variables are presented in tables with mean and standard deviation. Quantitative variables included age, waist circumference, body mass index and blood pressure values. The means, according to the factors, were compared with parametric tests (Student t test or analysis of variance) or nonparametric tests (Wilcoxon or Kruskal-Wallis' rank sum test). The level of significance was 0.05. The data were processed using the SPSS 7.5 system.

Results

Characteristics of hypertensive patients

We studied 511 hypertensive patients, predominantly female (67.9), white (56.4%), married (66.9%), educational level of Primary Education (57.9%), homemakers (43.2%) and family income of up to five minimum salaries (56.0%). Average age remained in the 5th decade (53 ± 11 years), body mass index remained at the upper limit of the overweight range (29.04 ± 4.35 kg/m^2). In relation to the waist, 32.9% of men had waist circumference greater than 102 cm and 74.1% of women above 88 cm, which is the maximum permissible levels. Mean blood pressure was 151/92 mmHg. As for lifestyle, 13.4% were smokers and one third were former smokers; 9.0% were alcoholics and 15.0% former alcoholics. Only 22.6% reported practicing regular physical activity. Regarding the diagnosis of disease, the majority (65.8%) was aware of being hypertensive for more than five years and about half of them (51.5%) had the habit of measuring blood pressure, and those who did so, were used to do that in health centers, at home or at the pharmacy.

Variables associated with complicated and uncomplicated hypertensive patients

In biosocial and anthropometric characteristics, complicated hypertensive patients ($p < 0.05$) were mostly male, non-white, responsible for the family income, with higher blood pressure levels, body mass index and waist circumference (Table 1).

Regarding attitudes towards treatment of hypertension, complicated hypertensive patients reported more negative attitudes ($p < 0.05$), for never or rarely bringing drugs when traveling, not getting the drugs before running out of them, and never or rarely following eating guidelines (Table 2).

It was also found that complicated hypertensive patients were significantly different ($p < 0.05$) from the uncomplicated ones for reporting more difficulties with erection and weight loss. In contrast, uncomplicated hypertensive patients reported more symptoms such as headache and joint pain. Among women, uncomplicated hypertensive patients were more in menopause and were under hormone replacement therapy ($p < 0.05$). As expected, blood pressure levels were higher in complicated hypertensive patients and, among the total number of hypertensive patients who had pressure control (< 140/90 mmHg), the majority (61.9%) was uncomplicated hypertensive patients (Table 3).

Note also that the condition of being a complicated hypertensive patient was associated with the following variables ($p < 0.05$): sought help on their own, have had hypertension for a longer time, had previous treatment, are

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Table 1 - Biosocial and anthropometric characteristics, and blood pressure of complicated and uncomplicated hypertensive patients

Variables	Hypertensive patient				p value
	Complicated		Uncomplicated		
	n	%	n	%	
Sex					0,001
Male	102	62.2	62	37.8	
Female	158	45.5	189	54.5	
Ethnicity					0.017
White	135	46.9	153	53.1	
Black	66	58.9	46	41.1	
Mulatto	54	56.8	41	43.2	
Mestizo	2	100.0	0	0.0	
Yellow	3	23.1	10	76.9	
Responsible for family income					0.009
Patient	144	57.1	108	42.9	
Spouse	72	48.0	78	52.0	
Couple	10	26.3	28	73.7	
Son/daughter	25	48.1	27	51.9	
No information	0	0.0	1	100.0	
Other *	9	60.0	6	40.0	
	Mean ± standard deviation				
BMI (kg/m^2)	29.5 ± 4.6		28.5 ± 4.0		0.0140
Waist circumference (cm)	99.5 ± 12.8		95.9 ± 11.2		0.0008
Blood pressure					
Systolic (mmHg)	155.8 ± 21.7		147.1 ± 17.3		0.0001
Diastolic (mmHg)	97.2 ± 16.7		87.2 ± 11.1		0.0001

** Father, mother, siblings, brother-in-law, niece.*

Table 2 - Attitude to treatment and disease of the groups of complicated and uncomplicated hypertensive patients

Variables	Hypertensive patient				p value
	Complicated		Uncomplicated		
	n	%	n	%	
Bring drugs when traveling					0.023
Never	10	58.8	7	41.2	
Rarely	14	82.3	3	17.7	
Always	236	49.5	241	50.5	
Purchase the drugs before running out of them					0.017
Never	20	71.4	8	28.6	
Rarely	48	58.5	34	41.5	
Always	192	47.9	209	52.1	
Follow diet guidelines					0.008
Never	19	57.6	14	42.4	
Rarely	40	69.0	18	31.0	
Always	201	47.9	219	52.1	

Table 3 - Associated diseases, signs and symptoms reported by groups of complicated and uncomplicated hypertensive patients

Variables	Hypertensive Patient				p value
	Complicated		Uncomplicated		
	n	%	n	%	
Have you had or have ...?					
Diabetes	65	100.0	0	0.0	0.001
Cerebrovascular accident	25	100.0	0	0.0	0.001
Symptoms					
Migraine	46	41.8	64	58.2	0.032
Erection difficulties	80	59.3	55	40.7	0.001
Weight loss	45	71.4	18	38.6	0.001
Joint pain	109	44.1	138	55.9	0.003
Menopause	95	42.2	130	57.8	0.001
Hormone replacement therapy	10	21.7	36	78.3	0.001
Blood pressure controlled	45	38.1	73	61.9	0.002

under antihypertensive drug treatment and have used other treatments such as homemade medicines and tea. On the other hand, uncomplicated hypertensive patients measured blood pressure and it had been normal for a shorter time. In relation to awareness about the disease, the complicated group had little knowledge, believing that the treatment cannot prevent kidney problems and that young people do not have high blood pressure (Table 4).

According to the data contained in Table 5, when asked how they felt about their life as a whole, most uncomplicated hypertensive patients pointed out face 1, which relates to a greater degree of satisfaction, and most complicated hypertensive patients pointed out face 7, which characterizes a lower degree of satisfaction with their life as a whole ($p < 0.05$).

Discussion

This study reported a distinction among groups of complicated and uncomplicated hypertensive patients as to socio-structural characteristics, hypertension control, attitudes and knowledge about the disease and treatment, predominantly in the complicated group. These variables may interfere with a successful treatment.

The main results showed that complicated hypertensive patients were mainly male, nonwhite, and responsible for family income. The gender variable deserves attention because it may be supported by the fact that women, due to their specific condition,

Table 4 - Characteristics of diagnosis, treatment and knowledge about hypertension in complicated and uncomplicated hypertensive groups

Variables	Hypertensive patient				p value
	Complicated		Uncomplicated		
	n	%	n	%	
Time of hypertension (years)					0.023
< 1 year	16	31.4	35	68.6	
1 to 5 years	55	53.9	47	46.1	
> 50 to 10	51	49.0	53	51.0	
> 10	138	54.3	116	45.7	
Underwent previous treatment for hypertension					0.041
	236	52.6	213	47.4	
Undergoes antihypertensive drug treatment currently					0.001
	241	54.2	204	45.8	
Undergoes other treatments for hypertension					0.026
	76	59.4	52	40.6	
Last time pressure was measured it was normal (age)					0.002
< 1	108	43.7	139	56.3	
1 to 5	152	57.6	112	42.4	
Treating hypertension can prevent kidney problems					0.041
	210	50.4	207	49.6	
Young people do not have hypertension					0.010
	45	65.2	24	34.8	

** Campaigns/Blood Bank.*

Table 5 - Assessment of feeling about life in hypertensive patients in complicated and uncomplicated groups

Variables	Hypertensive patient				p value
	Complicated		Uncomplicated		
	n	%	n	%	
Which of these faces represents how you feel?					0.005
1 	23	32.9	47	67.1	
2 	84	53.2	74	46.8	
3 	52	50.5	51	49.5	
4 	39	61.9	24	38.1	
5 	33	50.8	32	49.2	
6 	12	41.4	17	58.6	
7 	17	73.9	6	26.1	

demonstrate greater awareness about their health, which may result in greater adherence to treatment. Studies have revealed the relationship between hypertension and gender[13-15].

Research on the prevalence of reported hypertension, on the perception of its origin and forms of control in a metropolitan area of São Paulo, showed that women were the ones who most sought out assistance. Women seem to have a more accurate perception of their health condition and also develop greater links with health services because of their attributes and reproductive functions[16]. Another study, performed in an outpatient clinic of a teaching hospital in São Paulo, showed that lack of knowledge about the disease and treatment was also associated with male sex and higher blood pressure levels[17].

Just as gender, ethnicity has also been associated with hypertension. In this study, most complicated hypertensive patients were non-white (black, mulatto, mestizo), which confirms the prevalence of major complications in these ethnic groups, as revealed in the study in which the prevalence of cerebrovascular accident was significantly higher in hypertensive blacks or mulattos than in whites assisted at a referral center for hypertension in the city of Salvador, BA[18]. Also in that same city, race and treatment adherence was related at a hypertension outpatient care center. The data showed that white patients adhered more to the medical appointments and treatment than black patients. Blacks attended less to treatment and had higher blood pressure[19].

It should be emphasized that the association between ethnicity and hypertension is closely related to the unfavorable socioeconomic conditions to which such persons are subject, which can be exemplified by the fact that in the complicated hypertensive group, those responsible for the family income were the patients. Such a situation may demand more concerns, which may perhaps be due to greater responsibility in their daily lives, sometimes leaving aside cares with their own health.

Several lifestyle factors seem to directly influence the levels of blood pressure, obesity being one of the most important ones, which can be endorsed by the finding that average body mass index of hypertensive patients studied was in the upper range limit of overweight. By analyzing both groups, complicated hypertensive patients showed higher levels of blood pressure, body mass index and average waist circumference.

The current pandemic of obesity is of great importance because it profoundly affects the quality of life, becoming a major problem in society, being an important cardiovascular risk factor. The literature on this subject is broad and firm.

Research conducted by Carneiro et al[20] showed a higher prevalence of hypertension among individuals with morbid obesity (67.1% hypertensive patients with BMI $\geq$ 40 kg/m^2) than in those with overweight (23.0% hypertensive patients with BMI $\geq$ 25 and $\leq$ 29.9 kg/m^2). After stratification by age, the highest increased risk of hypertension occurred among young people, where this risk was 7.5 times higher than in individuals with body mass index between 25 and 29.9 kg/m^2 [20].

In relation to abdominal obesity, data evaluated in a study that analyzed waist circumference and body mass index as predictors of hypertension, indicated a significant increase in the prevalence of hypertension with increased waist circumference, for total men. For women, regardless of age, the prevalence of hypertension increased both with increased body mass index, and with increased waist circumference[21].

Another study reported that age, triglycerides, waist circumference and sex were independent risk factors

associated with hypertension[22]. Besides that, abdominal obesity is a component of metabolic syndrome and has been associated with increased cardiovascular risk[23].

This scenario is further enhanced with intervening factors in proper follow-up of antihypertensive treatment, the attitudes to it. Complicated hypertensive patients compared to uncomplicated patients have more behaviors that may negatively influence, such as never or rarely bringing drugs when traveling, not following instructions on diet and not buying the drugs before running out of them. Thus, adherence to treatment is impaired, with consequent less satisfactory control of hypertension. The behaviors and attitudes are rooted in the conduct of individuals and require health team knowledge and skill of educational practices in order to change or minimize actions that may jeopardize proper treatment.

The education of people with chronic diseases such as hypertension is intended to influence the behavior of the patient in obtaining and maintaining those changes. The goals relate to: helping patients understand, acknowledge and accept the disease; know and recognize risk behaviors; inform on decisions about treatment and diagnosis; negotiate and fulfill treatment proposals; and address treatment maintenance problems[16]. Thus, treatment of patients with chronic disease should facilitate compliance with this condition, equipping the patients for, through their own resources, developing mechanisms to get familiar with their health-disease process in order to identify, avoid and prevent complications, worsening, and above all, early mortality[24].

The presence of comorbidities associated with complicated hypertension, such as diabetes, was an expected fact, considering that it was part of the inclusion criteria for this group. However, hypertension and diabetes mellitus represent major public health problems in our country, due to the high prevalence rates, their complications, and for being important risk factors associated with cardiovascular diseases, which in turn rank first in the profile of morbidity and mortality.

Patients' survival, barriers to access to health services, aspects of behavior that determine the spontaneous demand for preventive or curative care, are factors that may influence the prevalence of target organ complications of hypertension in patients evaluated in outpatient care centers[18].

The social and economic costs arising from health care, early retirement, absenteeism from work and other disabilities should also be emphasized.

As for the presence of other health problems, uncomplicated hypertensive patients showed more symptoms such as migraine, which can be explained by the higher concentration of women in this group and this abnormality is more commonly found among females[25]. Also in relation to uncomplicated women, it was reported that a higher number of these were under hormone replacement therapy, compared with complicated hypertensive women. The relationship between hormone replacement therapy after menopause and protection for cardiovascular disease is still widely debated. However, a study conducted by Scuteri et al found that, in hypertensive patients under this therapy, there was a small reduction in systolic blood pressure[26]. Furthermore, women tend to seek more for health care and seem to have a more accurate perception of their health condition, developing greater links with health services because of their attributes and reproductive functions.

Note also that "the difficulty of erection" was most often reported by complicated hypertensive patients, which can be justified mainly by the association of hypertension and diabetes, use of a higher number of drugs for other comorbidities such as renal failure or even because, in this group, most patients were male.

Other findings that may influence the condition of complicated hypertensive patients were longer time of disease and treatment associated with poor knowledge, such as not knowing that treatment may prevent kidney problems and that young people may have hypertension. Knowledge about the disease and treatment is also a variable to be considered in the context of adherence to treatment.

In general, data from studies[7,27,28] show that hypertensive patients have information about their health problems, but are not properly controlled. The discrepancy between having information about the disease and treatment and managing to control blood pressure points out to the essential difference between knowledge and adherence.

In addition to that, in an attempt to assess how they felt about their life as a whole, which would be a possibility of assessing quality of life, this research found that complicated hypertensive patients reports more dissatisfaction than complicated hypertensive patients. The relationship between personality traits and adherence to treatment is controversial. However, variables such as sense of well-being, networking and ability to be like others, are elements that measure personality and may be associated with adherence to treatment, contributing for disease control[29,30].

Conclusion

Among complicated hypertensive patients, unfavorable structural and psychosocial characteristics, negative attitudes towards treatment and lack of knowledge about the disease could have influenced the low percentage of blood pressure control.

We do not rule out the possibility of limitations in this study, which is common in observational studies, such as the potential selection bias, involvement of confounding factors and incidental findings in the analysis. However, it is considered that health professionals who work with hypertensive patients should provide distinguished strategies and plan their actions to provide a comprehensive and quality assistance that meets the real needs of these patients.

Potential Conflict of Interest

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

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