Reasons for not achieving control: therapeutic inertia in monitoring hypertension in primary care.

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Abstract

Background: Physicians' failure to change/adjust treatments after learning of poor follow-up control in hypertensive patients can be defined as clinical inertia, a frequent and serious problem that affects health care activity at the international level.

Method: A total of 153 hypertensive patients under 80 years of age who met the inclusion and exclusion criteria and had received ambulatory blood pressure monitoring (ABPM) for 24 hours as the follow-up method to evaluate their level of blood pressure (BP) control. One year after data collection, the included patients were studied retrospectively, and the changes introduced by their physicians were checked based on their results.

Results: Sixty-five hypertensive patients (42.5%) out of the total sample (153) were classified as poorly controlled; of these, 36 were subject to therapeutic inertia (55%). Of the 29 hypertensive patients who did undergo treatment adjustment (45%), 15 (52%) underwent adjustment before the month of notification.

Conclusion: Therapeutic inertia in the care of hypertensive patients continues to be a common problem in primary care. Young hypertensive patients of male sex, smokers and nondiabetic patients were the most affected groups.

Test record: Registered retrospectively by the Clinical Ethics Committee of the José María Morales Meseguer University Hospital with the code EST: 62/17

Background:

Hypertension (HT) remains a major cardiovascular risk factors worldwide[1]. It is estimated that approximately 50% of hypertensive patients have poor control of their BP values, and because of this, determining the degree of control of our hypertensive patients is an objective involving different levels of health care. However, what do we do with the knowledge that a patient's BP control is poor? This information is of little use to us if, after we obtain data indicating that our hypertensive patients do not meet the predefined controlled numbers, professionals do not take appropriate measures.

In general, the failure of physicians to initiate or adjust treatment when necessary was first conceptualized by Phillips[2] with the term "clinical inertia" (CI), which was then modified by Okofuna et al. in 2006 to "therapeutic intertia"[3] (TI). Therapeutic inertia is a very common and serious problem of omission that affects health at the international level and is one of the main causes of lack of control in HT; its estimated incidence is between 40 and 80% among hypertensive patients < 64 years of age[3]. In TI, several factors intervene, including those derived from the doctor, the patient, and the health system[4].

Over time, both the concept and the definition of TI have expanded and unfolded, and TI has been subclassified according to the stage of the health process (screening, diagnosis, treatment, monitoring, etc.) or the specific pathology of the patient[5]. An example is TI in the monitoring of HT, which is defined as the non-modification or non-intensification of the established treatment when the expected targets are not met during periodic follow-up and the failure to perform planned tests or to provide adequate control at the required time points[5].

An early and intensified pharmacological response when hypertensive patients do not achieve BP control goals has been shown to translate to risk reductions of up to 15% for cardiac infarction, up to 40% for cerebrovascular accidents, and up to 30% for cardiovascular mortality [4], even in cases of suboptimal adherence[6]. Consequently, it is necessary to know and avoid factors that limit the detection of poor control so that health care providers' actions significantly reduce the morbidity and mortality caused by poor control of HT.

Methods:

OBJECTIVE: To determine the degree of TI in the follow-up of hypertensive patients treated at a health centre and to identify the factors that could influence this phenomenon.

DESIGN: Retrospective cross-sectional descriptive study.

SETTING:

Period of study

December 2011 to December 2013.

Population

A total of 153 hypertensive patients seen by an urban primary care team (PCT) who met the inclusion and exclusion criteria were evaluated for their degree of BP control. Prior to the beginning of the study, the 14 PCT physicians caring for these adults were informed and trained about the study, measurement methods, types of equipment, and BP results obtained so that when the researcher provided the records and the patient visited them, the doctor could make the adjustments he or she deemed appropriate. We worked with hypertensive patients whose medical records were kept in the urban Vistalegre-La Flota health centre computer database in Murcia, Spain.

CHARACTERISTICS OF THE PARTICIPATING PARTIES:

Inclusion and exclusion criteria: Inclusion criteria included the diagnosis of complicated and uncomplicated arterial HT since 18–80 years of age, sufficient vision and hearing to perform self-measurement, and adequate intellectual capacity or the presence of a responsible caregiver. The

exclusion criteria were those considered valid in various international HT guidelines[7,8,9]: Immobilized patients without a responsible caregiver and hypertensive patients diagnosed with obsessive-compulsive neurosis.

Mechanism of selection

From anonymous lists, we excluded any duplicates, diagnostic errors, and patients whose history showed that their most recent visit to the health centre (doctor or nurse) was prior to the start of the patient selection period (N = **2.245)**

Sampling method

Systematic random sampling was performed. The first subject was chosen at random, and the sampling fraction used was 1/10 patients. Patients were recruited by telephone or through their doctor as long as they had visited the health centre during the patient selection period. If a patient declined to participate or could not be contacted after several attempts, the following patient was chosen from the list. The recruitment flow diagram is shown in Fig. 1.

Each selected patient who agreed to participate gave his/her consent and then was seen in the first hour of the monitoring day (08:30) to begin the 24-hour ABPM. The patient's arm circumference was measured, and an appropriately fitting cuff was provided. Blood pressure was measured in both arms, and the nondominant arm was chosen as the measurement arm.

The patient was advised go about their day normally and return to the health centre the following day at the same time.

The equipment was programmed as follows: Frequency of readings: every 15 minutes during daytime activity and every 30 minutes during sleep. Types of recordings: Measurement of systolic blood pressure (SBP), diastolic blood pressure (DBP) and heart rate (HR) at 24 h, diurnally and nocturnally. Range of measurement: HR: 40 to 180 beats per minute. Pressure: 70 to 285 mmHg for SBP, 40 to 200 mmHg for DBP and 60 to 240 mmHg for mean arterial values. Valid recording quality: 70% of valid measurements on the ABPM, with more than 14 valid measurements of SBP and DBP during the day and more than 7 measurements of SBP and DBP at night.

The next day, the ABPM was removed, and the patient was advised to schedule an appointment for 48 hours later with their doctor, who would discuss the printed results with them. Patients were included retrospectively one year after ABPM, and it was found that their doctors had introduced changes based on the ABPM results for those who needed them.

The measured variables were as follows:

-Clinical demographic factors: age, sex, and associated comorbidities.

-Variables for measuring the degree of control based on the 24-hour ABPM, which is considered the gold standard of pressure measurement methods. SBP ≤ 130 mmHg and DBP ≤ 80 mmHg were used as cut-off values indicating good pressure control.
- Other measured variables were associated with the failure to meet the expected values indicating good BP control: A) Whether necessary adjustments were made to address uncontrolled hypertension and B) the elapsed time before the adjustment was made.

Statistical analysis: The statistical programme SPSS (version 25.0) was used, and frequencies and percentages for the qualitative variables and measures of centrality and dispersion for the quantitative variables were analysed with 95% confidence intervals (95% CI) for the variables of interest. Descriptive statistics and comparison of means (chi square, Student's t-test, and ANOVA) were performed.

Results:

A total of 419 patients were selected for inclusion in the analysis, of whom 153 had ABPM results that met the quality requirements (Fig. 1).

Of these patients, 50.3% were women. The mean age was 61.54 years, with a range of 23–80 years. Regarding economic activity, 67.3% were classified in the "not actively working" categories (pensioners, unemployed) (Table 1).

Table 1
Socio-demographic characteristics.

Sex			
	Male	76	49.7
	Female	77	50.3
Age group	(23-57.5 years)	50	32.7
	(57.51–67.5 years)	52	34.0
	(> 67.5 years)	51	33.3
Socio-economic level			
Pensioners and those without resources		103	67.3
Employed		50	32.7
n: Absolute frequency. %: Relative frequency			

In addition to HT, other associated chronic diseases were found among the hypertensive patients studied (Table 2). The most frequently occurring was dyslipidaemia (41.8%).

Table 2
Frequency of associated pathologies in patients by sex.

	Male n = 76		Female n = 77		χ^2	Total = 153	
	%	95%CI	%	95%CI	p.	%	95%CI
DLP	42.1	31.0-53.2	41.8	30.7–52.8	n.s.	41.8	34.0-49.6
DM	30.3	20.0-40.6	23.4	13.9–32.9	n.s.	28.8	21.4–36.0
CKD	13.2	5.6–20.8	5.2	0.3–10.1	0.03	8.5	4.1–12.6
AF	7.9	1.8–14.0	3.9	0.4–8.2	0.05	4.6	1.3–7.9
Stroke	2.6	1.0-6.2	1.3	1.2–3.8	n.s.	3.9	0.9–6.1

%: Relative frequency; 95% CI: 95% confidence interval; p: Significance level χ2

DLP: dyslipidaemia; DM: Diabetes mellitus; CKD: Chronic kidney disease. AF: Atrial fibrillation. Stroke: Cerebrovascular accident.

In 57.5% of the cases, the ABPM values were within the control limits, and no changes in treatment were necessary (Fig. 2).

Of the 29 subjects who did undergo treatment adjustment because their ABPM results were not within the control limits, 51.7% received a treatment adjustment within one month of the detection of poor control, while for the others (48.3%), the elapsed time between ABPM and treatment changes ranged from 1 month to 12 months.

Of the 36 patients in the sample who did not receive treatment changes for at least 1 year, 20 (55.5%) had no record of a visit since the date the study was performed (patient-derived TI). In 16 patients (44.5%), despite having recorded visits with their doctor, there were no treatment adjustments (doctor-derived TI).

Finally, of the subjects who did not require adjustments because their ABPM results indicated good BP control (88), 13.6% (12) did not come to the health centre to receive their results within the year after the study, and 5 patients ceased to be seen at the health centre (Table 3).

Table 3
Time elapsed between the ABPM and treatment adjustment at one year of the study, according to the need for adjustment and therapeutic inertia.

		n.	%	95%CI
Treatment adjustment	< 1 month	15	9.8	5.1–14.5
	1–12 months	14	9.2	4.6–13.8
Therapeutic inertia	Patient	20	13	12.7–18.3
	Doctor	16	10.5	5.6–15.4
No adjustment required	Current patient	71	46.4	38.5–54.3
	Left centre	5	3.3	1-6.1
	No record for > 1 year	12	7.8	3.6–12.0
		153	100	

n: Number. % percentage. 95% CI: 95% confidence interval.

Clinical inertia was more common in older patients (> 67.5 years [chi^2 p = 0.17]) and occurred in a greater proportion of males (p < 0.05) with an OR: 2.13 (95% CI:1-4.62). There was a significant association between TI and smokers (p = 0.001) [OR: 3.2 (95% CI: 1.5–6.7)] and between TI and nondiabetic patients (chi^2 p = 0.002). Finally, TI was also observed for younger patients and those who remained active in the workplace.

Discussion:

Regarding the degree of control of the hypertensive patients in the sample, 42.5% of the 153 patients studied required readjustment of their treatment to improve their BP control; this finding was similar to the results of the 2010 PRESCAP study conducted nationwide, in which nearly 4 of every 10 patients had poorly controlled BP[10,11]. The difference between our study and contrasting studies is that the follow-up of our hypertensive patients was based on ABPM values, while the others used BP measurements performed at doctor or nurse visit for diagnosis[12]. One year later, we examined the patients' clinical history via their electronic medical records and confirmed that therapeutic measures were taken for only 45% of the patients with poor BP control. This indicates that the remaining patients (55%) experienced TI during follow-up. This finding coincides with the results of several studies conducted at the national level, which reported TI values ranging between 52% and 84.6%[9], and indicates that the proportion of our patients that experienced TI was higher than the corresponding proportion of patients in another study conducted in North America[13].

Regarding the actions taken in response to poor control, we can see the evolution of the response by professionals in different editions of the same PRESCAP study. The study shows that after poor control

was detected, the pharmacological treatment was modified for 30.4% of poorly controlled patients in 2006, compared with 41.8% of those in the 2010 edition of the same study[10]. Our rate of response to poor control was 45%; this rate was similar to that reported in most recent PRESCAP, although all the actions recorded were performed within one year after poor control was detected.

Other factors are involved in TI during the monitoring of poorly controlled hypertensive patients. These include national health system-derived factors and patient-derived factors (lack of interest in the result, moving outside the clinic's catchment area, associated comorbidities, etc.). Some studies have reported a 30% rate of patient-derived factors[4], while in our study, the rate was 55%, surpassing that of doctor-derived factors. However, these data should be analysed with care since, as we said, they were obtained from retrospective registries, and a prospective assessment of causes is desirable.

Females were more likely than males to receive a therapeutic response to poorly controlled BP values, which is consistent with our results from other studies[14]. While other studies showed a positive association between TI and older patients[15], our results showed a greater response of professionals to older patients, which could be explained by the tendency of this group to have multiple pathologies that could lead primary care physicians to more strictly control BP in these patients[14]. These data support our finding of a higher prevalence of TI among nondiabetic patients and those without other associated comorbidities, contrary to the findings for patients in the FRENA registry[16], which reported a greater presence of inertia among hypertensive patients with diabetes.

Conclusions:

- Approximately half of the hypertensive patients treated at our health centre require readjustment of their treatment according to clinical practice guidelines.
- Therapeutic inertia is present in the follow-up of hypertensive patients.
- The causes of TI include both doctor- and patient-related factors.
- The hypertensive patients who suffer most from TI during follow-up are men, younger people and those without associated pathology.

Limitations:

In this study, the health professionals' stated reasons for not making changes to the treatment of poorly controlled patients were not evaluated. Other aspects of CI, such as patient factors, were not evaluated.

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Abbreviations

ABPM	*Ambulatory blood pressure monitoring.*
HT	Hypertension.
CI	Clinical inertia.
TI	Therapeutic inertia.
PCT	Primary care team.
BP	Blood pressure.
SBP	Systolic blood pressure.
DBP	Diastolic blood pressure.
HR	Heart rate.

Declarations

Ethical approval and consent to participate:

The consent of the patients was obtained verbally, after contacting them by telephone, inviting them to participate in the study and giving them a verbal report of the procedures to be performed. This study was approved by the research ethics committee of the University of Murcia, registration number 1018/2015, and by the Clinical Ethics Committee of the José María Morales Meseguer University Hospital with the code EST:62/17.

Consent for publication: Not applicable.

Availability of data and materials: The datasets used and/or analysed during the current study are available from the corresponding author upon reasonable request.

Competing of interest: The authors declare no conflicts of interest.

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Author contributions: All of the authors participated in the conception of the study. The bibliographic reviews were made by IHG, CLA, MCES, YDPC, JJAB and ADR. The study design and analysis were carried out by JJGC, IMHG and ADR. The field work was performed by CLA, YDPC, IMHG, MCES and ADLR. The successive versions of the manuscript were written by MCES, CLA, ADLR and JJAB. All of the authors participated in the review of the article with important contributions and accepted the final version.

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Figures

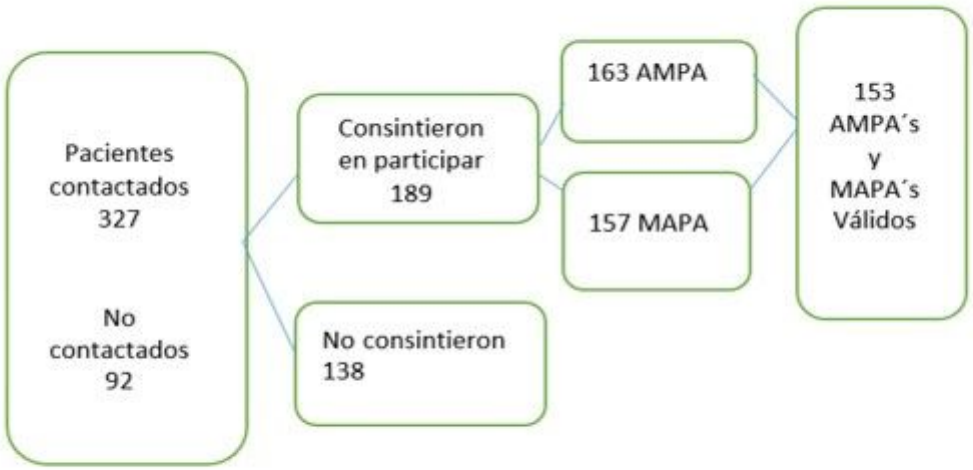

Figure 1

Diagram showing the patient selection process. SMBP: Self-measured blood pressure monitoring. ABPM: Ambulatory blood pressure monitoring.

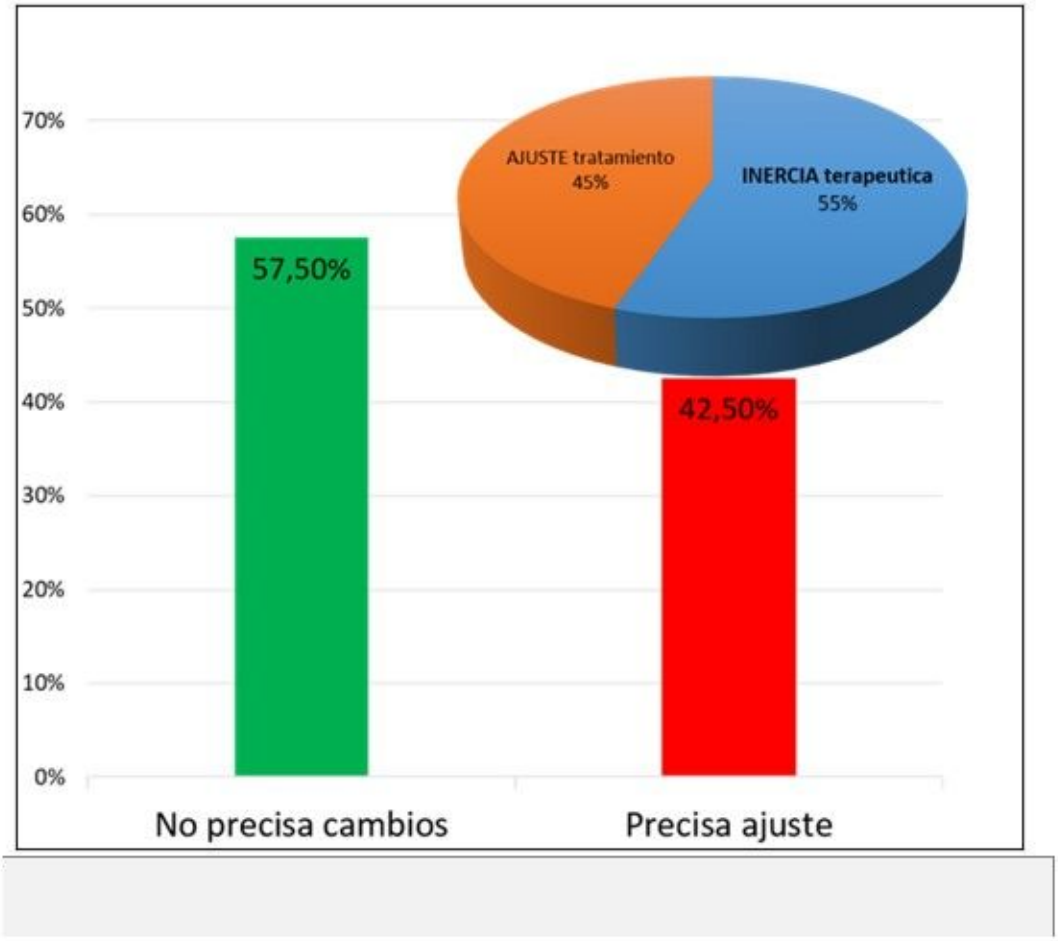

Figure 2

Degree of inertia observed