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Brief report

Antihypertensive overtreatment in people 80 years old and older☆

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ABSTRACT

Background and objective: To study the proportion of patients older than 80 years old with hypertension and pharmacological overtreatment.
Patients and methods: Cross-sectional simulation study, including 281 patients older than 80 years old of primary prevention, randomly selected, with good control of hypertension (systolic blood pressure < 150 mmHg, diastolic blood pressure < 90 mmHg), treated with a maximum of 3 medications. Overtreatment was considered if at least one medication could be removed and good control persisted, calculating how the blood pressure would raise with Law's meta-analysis, which estimates blood pressure reductions by pre-treatment levels, number and dose of medications.
Results: The average age was 85.3 years (64.8% women). A percentage of 33.6 were taking one medication, 46.3% 2 and 22.1% 3, with the most prescribed being thiazides (69.4%), ACE inhibitors (51.3%), ARBs (23.4%), calcium antagonists (21%) and beta blockers (19.6%). Overtreatment was 90.7%, with 2 medications being able to be removed in 63.1% of cases and 3 in 43.1%. Polypharmacy (OR 2.47; 95% CI 1.07–5.69; $p = 0.033$) was associated with a greater likely removal of at least one medication.
Conclusions: The proportion of patients with overtreatment is high. Changing good control criteria could contribute to a reasoned deprescription.

Sobretratamiento antihipertensivo en mayores de 80 años

Palabras clave:
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RESUMEN

Fundamento y objetivo: Estudiar la proporción de pacientes mayores de 80 años con hipertensión arterial y sobretratamiento farmacológico.
Pacientes y métodos: Estudio de simulación, descriptivo transversal, incluyendo 281 pacientes mayores de 80 años de prevención primaria, seleccionados aleatoriamente, con buen control (presión arterial sistólica < 150 mmHg, presión arterial diastólica < 90 mmHg), tratados con 3 principios activos como máximo. Se consideró sobretratamiento si se podía retirar al menos un principio activo y persistía el buen control, calculando cuánto subiría la presión con el metaanálisis de Law, que estima las reducciones de presión arterial según pretratamiento, número y dosis del principio activo.
Resultados: La edad media fue de 85,3 años (64,8% mujeres). Tomaban un principio activo el 33,6%, 2 el 46,3% y 3 el 22,1%, siendo los más prescritos tiazidas (69,4%), IECA (51,3%), ARA-II (23,4%), antagonistas del calcio (21%) y betabloqueantes (19,6%). El sobretratamiento fue del 90,7%, pudiéndose retirar 2 principios activos en un 63,1% y 3 en el 43,1%. La polifarmacia (OR 2,47; IC 95% 1,07-5,69; p = 0,033) se asoció a una probable retirada de al menos un principio activo.
Conclusiones: La proporción de pacientes con sobretratamiento es elevada. El cambio de criterios de control puede contribuir a una deprescripción razonada.

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Introduction

High blood pressure (HBP) is the most prevalent cardiovascular risk factor in the elderly, so that 72% of those over 65 suffer from it.[1] The HYVET study[2] demonstrated that such a strict control of blood pressure was not necessary in those over 80 years of age, with significant reductions in morbidity and mortality with a control target for systolic blood pressure (SBP) of <150 mmHg and diastolic blood pressure (DBP) of <90 mmHg.[3]

It has been postulated that, often, older people are pharmacologically overtreated,[4] this being an important argument to try a reasoned deprescribing in a population especially vulnerable to drug-induced adverse effects.[4]

However, studies that have addressed deprescribing in older people with HBP are scarce. We have only found a previous observational study in diabetic patients in the United States in which a hypoglycaemic and antihypertensive treatment reduction was studied.[5]

The objective of this study is to study the proportion of patients older than 80 years with HBP and pharmacological overtreatment and how many antihypertensive active ingredients (AIs) could be removed while maintaining good control (GC) of blood pressure.

Patients and methods

A cross-sectional, descriptive, simulation study was carried out. Patients were selected by systematic random sampling (one out of every 2 patients, after applying the inclusion and exclusion criteria) from the electronic primary care records (ePCR) of an urban healthcare center with 16,084 people over 14 years of age assigned to it, of whom 1161 were over 80 years of age. The study was approved by the Jordi Gol Foundation, code P17/008.

The inclusion criteria were: over 80 years of age, diagnosis of HBP in the ePCR, pharmacological treatment of HBP with a maximum of 3 drugs, at least one blood pressure record in the last 12 months and one last recorded value for SBP < 150 mmHg and of DBP < 90 mmHg. Patients with a diagnosis of ischemic heart disease, stroke, heart failure and chronic renal failure in the ePCR were excluded, since a stricter control of blood pressure was required.

The study variables were: age, sex, other cardiovascular risk factors recorded in the ePCR (smoking, diabetes mellitus and hypercholesterolemia), total number of AIs, number and type of antihypertensive AI, dose of antihypertensive AI (standard or half dose), consumption of drugs that could modify blood pressure (non-steroidal anti-inflammatories, metamizole, corticosteroids, anxiolytics and antidepressants) and the last recorded SBP and DBP values.

Overtreatment was considered when at least one antihypertensive AI could be withdrawn, and the GC of blood pressure was maintained. Likewise, it was studied whether 2 or even 3 antihypertensive AIs could be withdrawn when more than 2 or 3 were taken. The calculation regarding how much would blood pressure increase upon withdrawal was based on the meta-analysis by Law et al.,[6] which provides tables with reductions in SBP and DBP with one, two and three drugs, both at standard dose and at half dose, in intervals of 10 and 5 mmHg for SBP and DBP, respectively, from the last recorded values of SBP and DBP. To improve accuracy, reductions were calculated at 5 and 2.5 mmHg intervals for SBP and DBP, respectively, rounding the result to the worst case if the values did not match. The withdrawal was considered first with antihypertensive AIs at half dose and then at standard dose. To classify the doses as standard or half dose we used the clinical practice guidelines of the Institut Català de la Salut on hypertension.[7]

Descriptive statistics were performed, using number and percentage for the qualitative variables and mean and standard deviation for the quantitative variables. We studied the variables associated with the possible withdrawal of at least one antihypertensive AI using the *Chi* square test, categorizing age according to the 50th percentile and the total number of AIs taken according to polypharmacy (more than 4 drugs), also performing a logistic regression analysis, adjusting for age, sex and the variables associated with a $p < 0.2$. The sample size was calculated from a confidence interval of 95%, an accuracy of 4% and an estimate of overtreatment of 86.5% in a previous study of our work group.

Table 1
Characteristics of the study patients (n = 281).

Variables	
Age (years)	85.3 (3.8)
Sex (women)	182 (64.8)
Diabetes mellitus	74 (26.3)
Hypercholesterolemia	121 (43.1)
Smoking	10 (3.6)
Active ingredients intake	6.1 (2.8)
Polypharmacy (>4 drugs)	200 (71.2)
Non-steroidal anti-inflammatories intake	64 (22.8)
Metamizole intake	12 (4.3)
Corticosteroid intake	10 (3.6)
Anxiolytics intake	80 (28.5)
Antidepressants intake	54 (19.2)

Variables expressed in the form of number (%) and mean ± standard deviation.

Table 2
Characteristics of patients in relation to arterial hypertension (n = 281).

Variables	
Antihypertensive active ingredients	1.9 (0.7)
Number of antihypertensive active ingredients	
One	89 (33.6)
Two	130 (46.3)
Three	62 (22.1)
Thiazides	
Half dose	161 (57.3)
Standard dose	34 (12.1)
Angiotensin converting enzyme inhibitors	
Half dose	94 (33.5)
Standard dose	50 (17.8)
Angiotensin II receptor blockers	
Half dose	33 (11.7)
Standard dose	33 (11.7)
Calcium antagonists	
Half dose	49 (17.4)
Standard dose	10 (3.6)
Beta-blockers	
Half dose	43 (15.3)
Standard dose	12 (4.3)
Alpha-blockers	
Half dose	30 (10.7)
Standard dose	8 (2.8)
Systolic blood pressure, mmHg	129.7 (11.2)
Diastolic blood pressure, mmHg	72.7 (8.5)
Blood pressure < 140/90 mmHg	216 (76.9)
Blood pressure < 130/80 mmHg	90 (32.0)

Variables expressed in the form of number (%) and mean ± standard deviation.

Results

A total of 281 people was studied, with an average age of 85.3 years. 64.8% of them were women. The rest of the characteristics of the sample are detailed in Table 1. Table 2 shows the variables related to HBP. It is noteworthy that the majority took 2 antihypertensive AIs, with thiazides and angiotensin