Management of hypertension in elderly long-term care residents

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OBJECTIVE: To determine the adequacy of hypertension management in institutionalized elderly patients.

METHODS: Retrospective chart review of all patients with a physician-documented diagnosis of hypertension at 15 long-term care facilities in Edmonton, Alberta.

RESULTS: Of 2063 long-term care residents, 733 (36%) were diagnosed with hypertension (mean age 84 years), and 566 (77%) of this cohort were receiving antihypertensive medication. The most frequently prescribed antihypertensive drugs were angiotensin-converting enzyme inhibitors (341 patients [60%]). Of the long-term residents prescribed antihypertensive therapy, 274 (48%) were on one medication, 203 (36%) were on two and 89 (16%) received three or more agents. Blood pressure readings were taken every 14 days on average (interquartile range two to 31 days). Overall, 467 (64%) of these residents with a diagnosis of hypertension achieved target blood pressure.

CONCLUSION: Hypertension treatment and control rates are better in elderly patients who are institutionalized than those reported in studies of patients who reside in the community. Determining the reasons for this discrepancy will be important for the design of strategies to improve hypertension control rates in the community.

Key Words: Blood pressure measurement; Elderly; Hypertension

Hypertension is the most common attributable cause of mortality in developed nations (1). There is a strong log-linear relationship between blood pressure levels and vascular outcomes (including stroke, myocardial infarction and death) across all age strata, including octogenarians (2,3). The benefits from antihypertensive therapy, particularly in stroke prevention, appear within only a few years of initiation, even when administered for the first time in the eighth decade of life (3,4). Given the morbidity and costs associated with stroke, there is a strong rationale for the use of antihypertensive therapy, even in elderly long-term care residents. There are few data on the treatment and control of hypertension in long-term care residents; previous practice audits have focused on community-dwelling individuals.

METHODS

A chart audit was conducted in 15 long-term care facilities in the Capital Health Region of Edmonton, Alberta, from June 1, 2002, to August 31, 2002. All residents with a diagnosis of hypertension 65 years of age or older were evaluated. Hypertension was accepted as the diagnosis if documented by a physician in the medical record. A single reviewer used standardized data collection forms and a priori definitions to collect data on each patient with a diagnosis of

La prise en charge de l'hypertension chez les personnes âgées en soins de longue durée

OBJECTIF : Déterminer la qualité de la prise en charge de l'hypertension chez des personnes âgées en soins de longue durée.

MÉTHODOLOGIE : Examen rétrospectif du dossier de tous les patients atteints d'une hypertension diagnostiquée par un médecin dans 15 établissements de soins de longue durée d'Edmonton, en Alberta.

RÉSULTATS : Des 2 063 résidents des établissements de longue durée, 733 (36 %) avaient un diagnostic d'hypertension (âge moyen de 84 ans), dont 566 (77 %) recevaient des antihypertensifs. Les inhibiteurs de l'enzyme de conversion de l'angiotensine (341 patients [60 %]) étaient les antihypertensifs les plus prescrits. Parmi les personnes âgées en soins de longue durée prenant des antihypertensifs, 274 (48 %) prenaient un médicament, 203 (36 %) en prenaient deux et 89 (16 %) en prenaient au moins trois. En moyenne, les lectures d'hypertension étaient prises tous les 14 jours (plage interquartile de deux à 31 jours). Dans l'ensemble, 467 (64 %) de ces personnes atteintes d'une hypertension diagnostiquée présentaient la tension artérielle cible.

CONCLUSION : Le traitement de l'hypertension et les taux de contrôle sont meilleurs chez les personnes âgées en soins de longue durée que ceux déclarés dans des études de patients autonomes. Il sera important d'établir la raison de cet écart pour concevoir des stratégies en vue d'améliorer les taux de contrôle de l'hypertension dans la collectivité.

hypertension. For the analysis of blood pressure control rates, patients' last recorded blood pressure values were used and target blood pressures were defined according to the 2001 Canadian hypertension recommendations (5): 140/90 mmHg in patients with uncomplicated hypertension, 130/80 mmHg in patients with hypertension and diabetes mellitus or chronic kidney disease, or systolic blood pressure of 140 mmHg in patients with isolated systolic hypertension.

The primary outcomes included the proportion of patients treated with antihypertensive medication, the type and number of antihypertensive medications prescribed, the frequency of blood pressure measurements and the proportion of patients who met target blood pressure values. Analyses were conducted using SPSS (version 11.0; SPSS Inc, USA).

RESULTS

Of 2063 long-term care residents, 733 (36%) had a physician-assigned diagnosis of hypertension. Of those with hypertension, the mean ($\pm$ SD) age was 84 ± 8 years, and comorbidities were common (Table 1). Of note, two-thirds of patients had a physician-assigned diagnosis of dementia.

Of the 733 residents who had a physician-assigned diagnosis of hypertension, 566 (77%) were taking antihypertensive agents. Of the

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TABLE 1
Characteristics of long-term care residents with a physician-assigned diagnosis of hypertension (n=733)

Characteristic	
Age, years (mean $\pm$ SD)	84 $\pm$ 8
Female sex, n (%)	494 (67)
Current smoking, n (%)	47 (6)
Mini-Mental State Examination Score, mean $\pm$ SD (n=442)	17.3 $\pm$ 7
Serum creatinine, μ mol/L (mean) (n=658)	105
Blood pressure, mmHg (mean $\pm$ SD) (n=679)	
Systolic	128 $\pm$ 20
Diastolic	69 $\pm$ 12
Most common comorbidities, n (%)	
Dementia (physician-assigned diagnosis)	477 (65)
Cerebrovascular disease	329 (45)
Coronary artery disease	241 (33)
Diabetes mellitus	201 (27)
Chronic obstructive pulmonary disease	192 (26)
Peripheral arterial disease	123 (17)

residents who were prescribed antihypertensive agents, the most frequently prescribed antihypertensive drugs were angiotensin-converting enzyme inhibitors (341 [60%]), calcium channel blockers (172 [30%, including 23% dihydropyridine and 7% nondihydropyridine]), thiazides (137 [24%]), beta-blockers (114 [20%]) and angiotensin-receptor blockers (26 [5%]). Of the 201 patients who had diabetes and hypertension, 128 (64%) were prescribed an angiotensin-converting enzyme inhibitor and 10 (5%) were prescribed an angiotensin receptor blocker. In those residents prescribed antihypertensive therapy, 274 (48%) were on one antihypertensive agent, 203 (36%) were receiving two agents and 89 (16%) were receiving three or more agents. One hundred sixty-seven (23%) of the long-term residents with a physician-assigned diagnosis of hypertension were not prescribed any antihypertensive agents.

Blood pressure was measured at least once in the previous year in 667 patients (91%) with a diagnosis of hypertension. The distribution of comorbidities was similar between patients who had a blood pressure measurement taken in the previous year and those who had not (data available from DM on request). The median interval between blood pressure measurements was 14 days (interquartile range two to 31 days). Based on the 2001 Canadian hypertension recommendations (5) treatment goals specified in the 'Methods' section, 467 of these patients (64%) had blood pressure readings at or below target on their most recent measurements. In the subgroup of patients with diabetes mellitus, 103 (51%) did not reach their target blood pressure (lower than 130/80 mmHg) and 90 (45%) were not prescribed any antihypertensive medication. Most cases of residents not meeting treatment targets were due to elevated systolic pressure (Figure 1).

DISCUSSION

In the present audit of residents older than 65 years of age in 15 long-term care facilities, we found that a diagnosis of hypertension had been assigned by a physician in over one-third of patients. Of those diagnosed with hypertension, three-quarters were prescribed antihypertensive medication, over one-half received more than one agent, and two-thirds had their blood pressure controlled to target levels. These rates for treatment and control are better than those reported in contemporaneous audits conducted in community settings and younger age groups (including our province) (6-10), but are still less than optimal. The reasons for this are undoubtedly multifactorial, but several surveys (including one in our locale) have shown that clinicians tend to accept higher systolic pressure readings before initiating

Figure 1 Proportion of hypertensive long-term care residents not achieving blood pressure (BP) targets. Overall, 266 (36%) residents did not meet target BP. Of the residents with diabetes or chronic kidney disease, 157 (46.9%) did not meet systolic or diastolic target BP. Of residents without diabetes or chronic kidney disease, 109 (27.4%) did not meet systolic or diastolic target BP. *Target BP<130/80 mmHg; **Target BP<140/90 mmHg

or uptitrating antihypertensive therapy than those recommended by guidelines or supported by evidence (11-13). The control of blood pressure to target levels is important at all ages. It is estimated that optimal control of blood pressure could prevent almost one-half of all coronary events (and an even greater proportion of strokes), and the greatest impacts would be in older individuals and those with isolated systolic hypertension (14).

The most frequently prescribed antihypertensive drugs were angiotensin-converting enzyme inhibitors (in nearly two-thirds of our cohort), and fewer than one-quarter of these elderly patients were prescribed a thiazide diuretic. Since 1993, the Canadian national hypertension guidelines have suggested thiazide diuretics as first-line treatment in elderly patients with hypertension (15). A recent Canadian population-based cohort study that used linked administrative databases to examine prescribing for elderly patients also found that only one-third of initial antihypertensive prescriptions were for thiazides (16).

Why are hypertension treatments and control rates better in institutionalized elderly patients than those in the community? Indeed, it is not unreasonable to expect the opposite, given that elderly patients who require institutionalization have more comorbidities and potential contraindications to therapy than those still living in the community. However, two recent studies (17,18) have reported results congruent with ours in that both demonstrated declines in the rate of inappropriate prescribing to elderly patients after admission to long-term care facilities. It seems plausible that any one of a number of factors associated with institutional care may contribute to better blood pressure control, including the presence of onsite clinical pharmacists, consistent and continuous nursing attention and monitoring, regular blood pressure readings, ongoing physician follow-up and continuity of care, and 100% adherence to treatment. Studies (19-22) have demonstrated that when pharmacists are included as members of health care teams, control rates for hypertension increase (20,21), with a reduction in drug interactions and costs (19-22). While it is also reasonable to hypothesize that long-term care residents would have more frequent contact with their physicians than community-dwelling individuals, frequent contact with physicians alone does not necessarily lead to initiation or change in dosing of antihypertensive therapy. It has previously been shown that most American adults with uncontrolled hypertension have frequent contact with their physicians, and therapy is rarely increased even when systolic pressures exceed 160 mmHg (23,24).

Limitations

Any chart audit is limited by the adequacy of documentation in medical records and a reliance on physician-assigned (and recorded) diagnosis without independent validation. Because we did not measure the blood pressures of all institutionalized elderly individuals in our region, we cannot make any valid statements about the prevalence of hypertension in this age group. The 36% frequency of 'diagnosed hypertension' in our study sample is almost certainly an underestimate. By the same token, the 167 individuals with a physician-assigned diagnosis of hypertension who were not prescribed any antihypertensive agents might have carried an incorrect diagnosis. However, our study was designed to explore the treatment and control of blood pressure in patients diagnosed with hypertension by their attending physicians. In addition, our study is limited by our inability to capture frequency of physician contact with the long-term care facility residents. However, our study also has several strengths that should be mentioned. First, we had 100% capture of all residents of the long-term care facilities involved in the present study, which suggests that our findings are applicable to other long-term care facilities. Second, all patients had their blood pressure measured in a standard fashion by trained health care personnel and at the same time of day. Third, because medications were administered by the long-term care staff, we had accurate data on medications prescribed, and patient noncompliance with filling prescriptions was not an issue.

CONCLUSION

Hypertension is common in residents of long-term care facilities, and rates of treatment and control are higher than reported in studies of

the community-dwelling elderly despite these patients being more frail and having more comorbidities than their peers who remain independently functioning in the community. This raises the intriguing question of why, and the answers to this question may well hold the key for future efforts to improve the management of hypertension in community-dwelling individuals.

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