Clinical audit

A collaborative audit of the management of hypertension in general practice

G Venkat Raman, Andrew Neal, Charles Lewis

Summary

We carried out an audit of the management of essential hypertension in general practice, against standards based on current guidelines. We examined the records of 882 hypertensive subjects (on medication) in whom hypertension had been diagnosed between January 1989 and December 1993, from 14 general practices in the Portsmouth and South East Hampshire Health Authority. The overall prevalence of hypertension was 3.5%. Pretreatment blood pressure had been measured on three or more occasions in 87% of patients. Pretreatment blood pressure was equal to or greater than 150/95 mmHg in 96% and 160/100 mmHg in 86.5% of patients. A thiazide diuretic was the initial drug of choice in 30% of patients, with beta-blockers being the most popular initial treatment. Ninety per cent of patients had had their blood pressure measured at least once during the preceding year. In 82.5% of patients, current blood pressure was less than 150/95 mmHg, while 44% achieved a current blood pressure less than 140/90 mmHg. We conclude that the prevalence of hypertension in this population was lower than expected, suggesting the need for improved screening. We also propose that the initial treatment choice should be a thiazide in the majority, which would result in significant cost saving. The blood pressure control was suboptimal compared to current guidelines.

Keywords: hypertension; audit; general practice

Essential hypertension is arguably the most prevalent and studied risk factor for cardiovascular disease. The prevalence is acknowledged as being around 20% in the adult population.^{1,2} However, there is wide variation in the reported prevalence in different studies and amongst different populations, with rates from 11% to 34%.³⁻⁸ Despite the recent recommendations on the diagnosis and treatment of essential hypertension,⁹⁻¹¹ it remains unclear whether hypertension is adequately or appropriately diagnosed and whether there is general adherence to the guidelines. We therefore set out to audit a few of the key basic elements of management in general practice in the Ports-

mouth & South East Hampshire Health District.

Methods and subjects

The project was designed to address the following issues:

- the prevalence of treated essential hypertension in the community
- the decision to treat – was it appropriate?
- the initial choice of treatment
- adequacy of blood pressure control on treatment
- adequacy of blood pressure monitoring.

The standards were set by the authors and the Clinical Audit Coordinator. All of the 81 general practices in the Portsmouth and South East Hampshire Health Authority area were approached and 14 consented to be audited. Each participating practice was requested to produce a computer list of all their known hypertensive patients. The clinical notes and computer records of the hypertensive patients thus identified, were scrutinised and the relevant data recorded and entered into a computer database designed for the project.

The study population comprised patients aged between 30 and 75 years (at the time of the audit), who had had their hypertension diagnosed and treatment started between 1 January 1989 and 31 December 1993. The audit took place between November 1994 and May 1996. Co-morbid conditions which could influence the choice of drug, were recorded for each subject (table 1); the total exceeds 100% because some patients were affected by more than one problem. The standards set for the study are shown in table 2, based on established guidelines.^{9,10} Each practice was provided with its own report once data collection was complete.

Results

The total aggregated list size of the 14 participating practices was 83 053 and the number of hypertensive patients aged between 30 and 75 years was 2941, giving a prevalence rate of 3.54% (inter-practice range 1.28–7.68%) in this age group. Of these 2941 patients, 882 patients had been diagnosed as suffering from hypertension between 1 January 1989 and 31 December 1993; the results that follow relate to this group of patients. The average age was 61 years and at diagnosis 56 years; 475 (54%) were male and 407 (46%) female.

Portsmouth Hospitals
NHS Trust,
Portsmouth, UK
Wessex Renal Unit &
Department of
Medicine
GV Raman
Clinical Audit
Department
A Neal

Portsmouth & SE
Hants Health
Authority Medical
Audit Advisory Group
Queen Alexandra
Hospital, Portsmouth,
UK
C Lewis

Correspondence to Dr G
Venkat Raman, Renal Unit,
St Mary's Hospital,
Portsmouth PO3 6AD, UK

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Table 1 Co-existing medical conditions present in the study population

Disease	Number	%
Angina	100	11.3
Asthma	52	5.9
COAD	18	2.0
Diabetes	72	8.2
Gout	22	2.5
Heart failure	7	0.8
Peripheral vascular disease	13	1.5
Renal disease	14	1.6
Otherwise healthy	639	72.4
Patients with 2 conditions	45	5.1
Patients with 3 conditions	4	0.5
Patients with 4 conditions	1	0.1

COAD=chronic obstructive airways disease

DECISION TO TREAT

Two standards were used to assess the appropriateness of the decision to treat (table 2). Standard I required that 100% of patients should have an average blood pressure of 150/95 mmHg or greater. This was achieved in 844 (95.7%) patients. The inter-practice range was 84.0–100%. Standard II, using a threshold of 160/100 mmHg, was achieved in 763 patients (86.5%).

Standard III required that 90% of patients should have had their blood pressure measured on three or more occasions before treatment was commenced. This was achieved in 767 (87.4%) patients. The inter-practice range was 70.8–96%.

INITIAL CHOICE OF TREATMENT

Standard IV required that 70% of patients had a thiazide diuretic as initial treatment for their hypertension; only 263 (29.8%) patients fulfilled this standard. The initial and current drug treatment in the study population are shown in table 3. (The aggregated percentage exceeded 100% because 14/882 (1.6%) patients were started on more than one drug as initial treatment and 240/882 (27.2%) patients are currently taking more than one preparation for blood pressure control.) Ninety-two (10.4%) patients were no longer on treatment.

CURRENT BLOOD PRESSURE

Two standards were used to assess current blood pressure control (table 2). Standard V required that 100% of patients had had their blood pressure measured at least once in the 12 months prior to data collection. This was achieved in 791 (89.7%) patients. The inter-practice range was 75–100%.

Standard VI required that the most recent blood pressure recording in 90% of study patients should be less than 150/95 mmHg. This was achieved in 728 (82.5%) patients with an inter-practice range of 62.5–96.0%. Standard VII, using a threshold of 140/90 mmHg, was achieved in 392 subjects (44%).

The average pretreatment blood pressure for the entire study population was 173/101 mmHg, compared with a current blood pressure level of 150/87 mmHg.

Discussion

In our study we found the prevalence of treated hypertension in the Portsmouth and South East Hampshire Health Authority amongst patients aged between 30 and 75, to be a relatively low 3.54%. This contrasts with the much higher range reported in other studies.^{3–8} It is likely that hypertension is under-diagnosed, or not adequately recorded on computer systems, or both. Thus, screening for hypertension is currently inadequate. As the patient identification was based entirely on computerised records of those on treatment, it is likely that a number of patients with early or borderline hypertension were excluded, in addition to hypertensive patients outside the age range of 30–75 years. Even so, it would appear that the prevalence in this district is a lot lower than might be expected.

It is now widely accepted that blood pressure should be measured at least three times before commencing medication,^{9–10} in the absence of obvious target organ damage. In this study, 87% of subjects had their blood pressure measured three or more times prior to commencing medication, which falls somewhat short of the 100% standard set.

We set a standard of 70% for a thiazide diuretic to be the drug of initial choice,^{9–11} and this target was clearly not met. Beta-blockers proved to be the most popular drugs of first choice, with angiotensin-converting enzyme (ACE) inhibitors and calcium antagonists being used in 12–14% of patients. The reason for the choice of drug could not be ascertained, as that was not routinely recorded. Nevertheless it would appear that the choice was fairly random; it would have been extremely unlikely that the substantial majority had a primary contraindication to thiazides, which are likely to be as effective as beta-blockers. This choice factor alone has major implications for costs of drug treatment in the

Table 2 Standards set for the project

Standard		Level set	Guideline	Refs
I	Average pretreatment blood pressure $\geq$ 150/95 mm Hg	100%	WHO	9
II	Average pretreatment blood pressure $\geq$ 160/100 mmHg	100%	BHS	10
III	Pretreatment blood pressure was measured on 3 or more occasions	90%	BHS	10
IV	The initial drug chosen should be a thiazide diuretic	70%		9–11
V	All patients on treatment for hypertension should have their blood pressure measured at least once each year	100%		9–11
VI	Current blood pressure on treatment $<$ 150/95 mmHg	90%		9–11
VII	Current blood pressure on treatment $<$ 140/90 mmHg	80%		

Table 3 Initial vs current treatment

Drug type	Initial (%)	Current (%)
ACE inhibitor	113 (12.8)	218 (24.7)
ACE inhibitor/thiazide	25 (2.8)	50 (5.7)
Alpha blocker	4 (0.5)	15 (1.7)
Beta blocker	306 (34.7)	240 (27.2)
Beta blocker/calcium antagonist	0 (0)	1 (0.1)
Beta blocker/thiazide	18 (2.0)	18 (2.0)
Calcium antagonist	124 (14.1)	241 (27.3)
Methyl dopa	0 (0)	0 (0)
Other	35 (4.0)	30 (3.4)
Thiazide	263 (29.8)	241 (27.3)
Vasodilator	0 (0)	0 (0)
No longer on treatment	— (—)	92 (10.4)

community. If a thiazide had been a drug of first choice in the majority of cases, it would be reasonable to conclude that very substantial sums of money could have been saved.

Analysis of current drug therapy showed that just 27% of patients were on monotherapy with a thiazide, although this figure rose to 35% when a thiazide was combined with an ACE inhibitor or a beta-blocker. It is our view that a substantially higher proportion of patients could be managed with a thiazide, thereby reducing the cost of treatment.

The follow-up and monitoring arrangements of hypertensive patients was slightly substandard, 90% of patients having had their blood

pressure measured at least once during the previous 12 months. The adequacy of blood pressure control depended on the threshold set. When set at 150/95 mmHg it was achieved in 82.5% of patients, against a standard of 90%. However when the threshold was dropped to 140/90 mmHg, as is currently accepted, then only 44% of patients achieved the standard. This indicates suboptimal blood pressure control, and the need for more aggressive treatment. However, the actual reductions in blood pressure achieved were substantial; the average pretreatment blood pressure was 173/103 mmHg compared with a current average of 150/87 mmHg. The achievement against standards varied according to the threshold, and is a potential source of confusion, as seen in another recent study.¹²

In conclusion, our audit suggests that hypertension is under-diagnosed and inadequately treated in this general practice population. The decision-to-treat and follow-up standards were somewhat suboptimal. Substantial savings on the costs of antihypertensive medication could be achieved by emphasis on the use of thiazide diuretics as the drugs of first choice.

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