Projecting the number of patients with first ever strokes and patients newly handicapped by stroke in England and Wales

Roberta Malmgren, John Bamford, Charles Warlow, Peter Sandercock, Jim Slattery

Abstract

The common assumption that future increases in the number of elderly people will result in a parallel increase in the burden of care of long term disabled survivors of stroke was examined. The number of patients with first ever strokes and the net number of people handicapped after these strokes in England and Wales every five years until 2023 have been projected. Between the base year 1983 and the year 2023 an increase in population of about 5% will occur; first ever strokes are projected to increase by about 30% and deaths within six months of first ever strokes by about 40%. The net number of severely handicapped people six months after a first ever stroke is projected to increase by only about 8%, however, and the net number of people who are moderately or severely handicapped by only 4%. This paradox occurs because first ever stroke often kills people who have been handicapped by other causes, particularly if they are elderly.

It is concluded that despite the limitations of these data they strongly suggest that the increased burden of health care of patients with first ever strokes in the next 40 years will be primarily that of caring for those in the acute stages of stroke and not with the management of chronic handicap after a stroke.

Introduction

Patients with stroke impose a particularly large burden on the health care system.[1] This burden has two main components: the early treatment of patients in the acute stages of stroke and the long term care of patients who survive with consequent handicap.[2-4] Projections of the increasing number of elderly people in England and Wales combined with the greater risk of a stroke occurring with age suggest that there will be a parallel increase in demand for health services. But how valid is this concern? Will the increase in the number of strokes and handicapped patients in the future be as great as is commonly assumed?

We investigated whether and to what degree changes in the population might affect the health care burden in the next 40 years, assuming no change in the incidence rate of stroke. Although we project numbers for England and Wales, the basic trends will often apply to other countries with similar age structures.

To project the burden of stroke we must estimate the number of "first ever in a lifetime" strokes (hereafter referred to as "first ever" strokes) that will occur in England and Wales every five years until the year 2023, as well as the net changes in the numbers of people who will be handicapped after these strokes. These estimates require accurate incidence rates that are specific for age and sex and reliable information on the percentage of people who were handicapped before and after a stroke. The Oxfordshire community stroke project is a community study of patients with first ever strokes and provides age and sex specific rates and the proportion of patients with stroke who were handicapped or died after their stroke. We emphasise that this paper estimates only the number of patients who will be handicapped after their first ever stroke. There are many other causes of handicap in old age, but to obtain the number of handicapped people from all causes would require a prevalence survey, and this is outside the scope of the stroke project.

Methods

INCIDENCE

The Oxfordshire community stroke project is a prospective study of the incidence and outcome of first ever strokes in a population of about 103 000 people registered in 10 general practices in Oxfordshire, England.[5-7] The rates used were for the period 1 November 1981 to 31 October 1984.[5] During this time 515 patients with a first ever stroke were identified. An extensive surveillance system and close collaboration with the participating doctors ensured that virtually all patients who had had a stroke were referred to the study.[6] Each patient's case was assessed by a neurologist as soon as possible after the cerebrovascular event. The definition of a stroke followed the criteria set out by the World Health Organisation.[8] Denominators for the incidence were obtained from the age-sex register in each general practice. This population was counted in 1981 and in 1984; the population at risk was the mean of these two counts.

At the time of notification of the stroke the patient's level of handicap before the stroke was estimated from information from the patient, relatives, and a review of all available medical records. Handicap was assessed by means of a scale modified after Rankin.[9] For the analyses in this paper the scale was collapsed (table I).

TABLE I—*Handicap scale (modified after Rankin[9])*

	Grade	Level of handicap
No symptoms	0	None
Minor symptoms: Symptoms that do not interfere with lifestyle	1	Mild
Minor handicap: Symptoms that lead to some restriction of lifestyle but do not interfere with patients' capacity to look after themselves	2	Mild
Moderate handicap: Symptoms that appreciably restrict the patients' lifestyle or prevent totally independent existence, or both	3	Moderate
Moderately severe handicap: Symptoms that clearly prevent independent existence, though patient does not need constant attention	4	Severe
Severe handicap: Totally dependent, patient requiring constant attention night and day	5	Severe

A research nurse visited surviving patients at one, six, and 12 months and then yearly after the stroke to obtain information about patients' overall levels of handicap (whatever the causes) and interim medical histories.

POPULATION PROJECTIONS

The Office of Population Censuses and Surveys makes national projections of the size of future popu-

Department of Clinical Neurology, Radcliffe Infirmary, Oxford
Roberta Malmgren, PHD, *research associate*

Pinderfields Hospital, Wakefield, West Yorks WF1 4D9
John Bamford, MRCP, *senior registrar in neurology*

Department of Clinical Neurosciences, Western General Hospital, Edinburgh EH4 2XU
Charles Warlow, FRCP, *professor of medical neurology*
Peter Sandercock, MRCP, *senior lecturer in neurology*
Jim Slattery, MSC, *statistician*

Correspondence to:
Professor Warlow.

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lations of England and Wales. The projections (see table III) used in this paper were based on the estimated resident population in mid-1983.[10]

PROJECTED NUMBER OF PATIENTS WITH STROKE, NET NUMBER OF HANDICAPPED PATIENTS, AND DEATHS

To obtain the projected numbers of patients with stroke we applied the age specific rates from the stroke project to the number of people in each age group in the predicted population for each five years up to 2023. (As we note later, rates did not differ enough by sex to warrant separate projections by age and sex.)

Estimating the burden of handicapped people imposed by first ever strokes was more complicated. Only two categories of handicap were projected: moderate (score=3) and severe (score=4 or 5) (table I). The state of handicap at the six month follow up visit was used because patients with stroke rarely improve much after this.[11] For health care planning it is the net number of newly handicapped patients with stroke that is of interest because patients who were already handicapped before their first ever stroke—for example, by arthritis or cardiac failure—do not add much to the existing health care burden. To obtain the net percentage of handicapped patients, the percentage of patients who were handicapped before their stroke was subtracted from the percentage of patients who were handicapped at the six month follow up. This was done for each age group. The percentage difference was applied to the projected number of patients with first ever strokes to estimate the net number of people who would be handicapped six months after their stroke. "Net" percentage and numbers thus do not necessarily mean people who are newly handicapped but instead are the difference between the figures for before and after a stroke.

The projected numbers of deaths were calculated by multiplying the projected number of patients with first ever strokes in each age group by the percentage of patients in the Oxfordshire community stroke project in that age group who died within six months of their stroke.

For each category of prestroke and poststroke state (handicap level; died) we also looked to see whether there were differences by sex within age groups and used the χ^2 test to test for significance.

Tables for projections of the population and first ever strokes are presented in full (age specific projections), but totals only are given for projections of handicapped patients and deaths in each quinquennium, as the age specific numbers can be calculated from preceding tables.

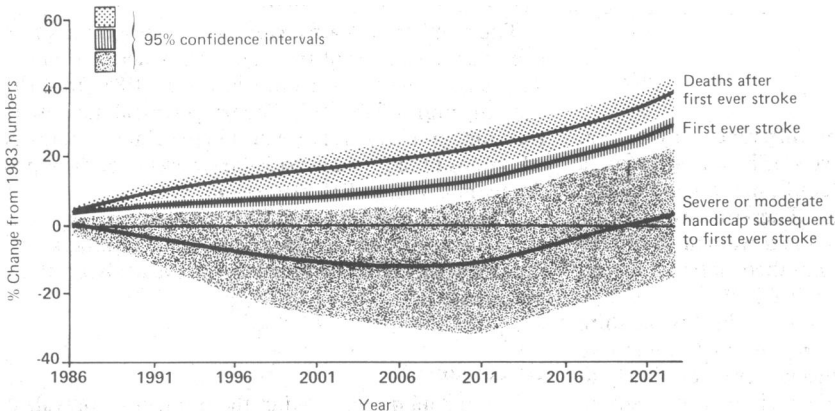
TABLE II—*Average yearly incidence rates for first ever stroke 1 November 1981 to 31 October 1984. Oxfordshire Community Stroke Project**

Age (years)	No of cases in three years	Population at risk (average)	Rate/1000 per year	95% Confidence interval
Men:				
<45	9	37 012	0·08	0·03 to 0·13
45-54	11	5 535	0·66	0·27 to 1·05
55-64	56	4 802	3·89†	2·88 to 4·90
65-74	79	3 230	8·15	6·38 to 9·93
75-84	72	1 530	15·69	12·15 to 19·22
≥85	16	261	20·73	10·73 to 30·13
Women:				
<45	9	34 671	0·09	0·03 to 0·14
45-54	6	5 346	0·37	0·07 to 0·67
55-64	34	4 839	2·34†	1·56 to 3·13
65-74	71	3 667	6·76	4·97 to 7·95
75-84	101	2 492	13·51	10·93 to 16·09
≥85	51	839	20·26	14·87 to 25·65
Men and women:				
<45	18	71 683	0·08	0·04 to 0·12
45-54	17	10 881	0·52	0·27 to 0·77
55-64	90	9 641	3·11	2·47 to 3·75
65-74	150	6 897	7·25	6·10 to 8·40
75-84	173	4 022	14·34	12·25 to 16·42
≥85	67	1 100	20·30	15·59 to 25·01

*Rates are for all pathological types of stroke combined, including subarachnoid haemorrhage.
†Difference in rates by sex significant, $p<0·05$ (χ^2).

TABLE III—*Projected population in England and Wales (in thousands) 1983-2023 (men and women)*[10]

Age (years)	1983	1986	1991	1996	2001	2006	2011	2016	2021	2023	% Change 1983-2023
<45	31 053	31 198	31 307	31 099	31 163	30 707	29 728	29 146	29 384	29 652	−4·5
45-54	5 498	5 427	5 812	6 641	6 739	6 683	7 454	7 612	6 657	6 201	+12·8
55-64	5 602	5 402	5 071	4 986	5 357	6 130	6 211	6 186	6 912	7 061	+26·0
65-74	4 416	4 451	4 446	4 368	4 131	4 093	4 435	5 107	5 176	5 049	+14·3
75-84	2 512	2 641	2 719	2 673	2 726	2 693	2 592	2 618	2 899	3 190	+27·0
≥85	573	643	774	885	951	998	1 067	1 091	1 109	1 138	+98·6
Total No	49 654	49 762	50 129	50 652	51 067	51 304	51 487	51 760	52 137	52 291	+5·3
% Change from 1983	—	+0·2	+1·0	+2·0	+2·8	+3·3	+3·7	+4·2	+5·0	+5·3	



Confidence intervals for predictions of first ever stroke and death and handicap after first stroke

PRECISION OF PROJECTIONS

The figure shows confidence intervals for the predictions of first ever stroke and for death and handicap after a first ever stroke. We were not able to assess the possible error in the population projections, but this is assumed to be small. In calculating these intervals the number of patients with first strokes per year in each age group of the population and the number of deaths after strokes are assumed to be Poisson variables, while the net number of handicapped patients is the difference of two Poisson variables: those who were previously fit who become handicapped and those who were previously handicapped who subsequently die. Errors in the ratio of rates in a given year compared with those for 1983 are calculated under the assumption that the main source of such errors is uncertainty in the rates obtained from the Oxfordshire community stroke project.

Results

PROJECTED NUMBERS OF FIRST EVER STROKES

Table II shows the incidence by age and sex for the subjects in the stroke project with 95% confidence intervals for each rate. The incidence of first ever stroke increased with age. Differences by sex, however, were significant for only one age group: 55-64 (χ^2 test, $p<0·05$). Therefore we used the combined rates for men and women in table II to estimate the projected numbers of patients with first ever strokes. Table III gives the projected population in England and Wales from 1983 to 2023. The bottom row gives the percentage change of total numbers for any year relative to the base year, 1983. Changes can be either increases (+) or decreases (−). Table IV gives the projected numbers of patients with first ever strokes for the next 40 years. The total number of patients with stroke is projected to increase from 102 559 in 1983 to 133 129 in 2023, an overall increase of 29·8% (95% confidence interval 27·6 to 32·0%).

TABLE IV—*Projected number of first ever strokes in England and Wales: 1983-2023 (men and women)*

Age (years)	1983	1986	1991	1996	2001	2006	2011	2016	2021	2023
<45	2 599	2 611	2 620	2 603	2 608	2 570	2 488	2 440	2 459	2 482
45-54	2 863	2 826	3 027	3 459	3 510	3 480	3 881	3 964	3 467	3 229
55-64	17 432	16 809	15 779	15 515	16 669	19 075	19 327	19 249	21 508	21 972
65-74	32 014	32 268	32 232	31 666	29 948	29 672	32 152	37 024	37 524	36 603
75-84	36 017	37 866	38 985	38 325	39 085	38 612	37 164	37 536	41 565	45 738
≥85	11 634	13 055	15 715	17 969	19 308	20 262	21 663	22 151	22 517	23 105
Total No	102 559	105 435	108 358	109 537	111 128	113 671	116 675	122 364	129 040	133 129
% Change from 1983	—	+2·8	+5·7	+6·8	+8·4	+10·8	+13·8	+19·3	+25·8	+29·8*

*95% Confidence interval: 27·6% to 32·0%.

TABLE V—*Handicap before and after stroke in patients in the Oxfordshire Community Stroke Project**

		Handicap (%)					Net changes in % of handicapped at six months		
		Before stroke†		At six month follow up					
Age (years) (1)	No (2)	Moderate (3)	Severe (4)	Moderate (5)	Severe (6)	Dead (7)	Moderate (8)	Severe (9)	Moderate or severe (10)
<45	18	0·0	0·0	11·1	5·6	11·1	+11·1	+5·6	+16·7
45-54	17	0·0	0·0	23·5	5·9	11·8	+23·5	+5·9	+29·4
55-64	90	6·7	5·5	8·9	8·9	22·2	+2·2	+3·4	+5·6
65-74	150	3·3	4·0	8·0	13·3	21·3	+4·7	+9·3	+14·0
75-84	173	12·7	4·1	11·6	18·5	29·5	−1·1	+14·4	+13·3
≥85	67	22·4	20·9	17·9	9·0	56·7	−4·5	−11·9	−16·4

*Men and women combined.
†Caused by arthritis, claudication, angina, for example, but not by previous stroke.

TABLE VI—*Percentage of patients in Oxfordshire Community Stroke Project who were dead six months after stroke, by handicap level before stroke*

Handicap before stroke	No	No (%) dead by six months	95% Confidence interval
None	191	29 (15·2)	10·1 to 20·3
Mild	242	75 (31·0)	25·2 to 36·8
Moderate	48	19 (39·6)	25·8 to 53·4
Severe	32	20 (62·5)	45·7 to 79·3
Unknown	2	2 (100·0)	37·0 to 100
All patients	515	145 (28·2)	24·3 to 32·1

TABLE VII—*Projected net numbers of people in England and Wales who will be handicapped or dead six months after first ever stroke*

	Severely handicapped		Moderately or severely handicapped		Deaths	
Year	Projected net No	% Change from 1983	Projected net No	% Change from 1983	Projected No	% Change from 1983
1983	7 697	—	9 606	—	28 598	—
1986	7 796	+1·3	9 611	+0·1	29 865	+4·4
1991	7 615	−1·1	9 321	−3·0	31 493	+10·1
1996	7 214	−6·3	8 893	−7·4	32 445	+13·5
2001	7 045	−8·5	8 614	−10·3	33 327	+16·6
2006	6 913	−10·1	8 474	−11·8	34 196	+19·6
2011	6 795	−11·7	8 517	−11·3	35 184	+23·1
2016	7 245	−5·8	9 181	−4·4	36 597	+28·0
2021	7 878	+2·4	9 709	+1·1	38 551	+34·9
2023	8 327	+8·2	9 998	+4·1	40 002	+39·9
95% Confidence interval for change from 1983 to 2023		−9·2 to 25·6%		−15·1 to 23·3%		34·8 to 45·0%

PROJECTED NET NUMBERS OF PEOPLE HANDICAPPED AFTER A STROKE

There were no significant differences by sex in percentages at the various levels of handicap before a stroke or for handicap state (handicap level or died) six months after a first ever stroke. Therefore we used the combined percentages for men and women to project the number of deaths and net numbers of handicapped patients after a first ever stroke. Table V gives the level of handicap of the 515 patients in the Oxfordshire community stroke project before their first ever stroke (columns 3 and 4). Older subjects were more likely to have been handicapped before their first ever stroke (by conditions not related to stroke, such as arthritis, emphysema, claudication, or cardiac failure). Columns 5 and 6 in table V give the levels of handicap six months after the first ever stroke when no adjustments have been made for prestroke handicap. The percentage of patients who were moderately handicapped after the stroke showed no trend with age (column 5), but the percentage of patients who were severely handicapped at six months increased between the ages of 54 and 84 then dropped sharply (column 6). Column 7 shows the reason for this decrease: the six month case fatality rate increased greatly with age: over half of patients over 84 had died in this period. Thus stroke led to the death of many of the elderly patients who were already handicapped by something else.

The net change in the percentage of patients who were moderately or severely handicapped in this population at six month follow up (columns 8 and 9) was calculated by subtracting columns 3 and 4 from columns 5 and 6 respectively. The net change for some of the older groups was a minus percentage. A fairly high percentage of elderly patients were handicapped before their first stroke, and the greater the handicap before the stroke the greater the risk of dying within six months (table VI). Because some of the standard errors for the net changes in the percentage of moderately handicapped patients (column 8, table V) were large (not shown), column 10 (table V) combines 8 and 9 to allow more stable projections of net numbers of handicapped patients to be calculated.

The age specific percentages of columns 9 and 10 in table V were applied to the projected number of patients with strokes in table IV and the numbers for each year were totalled. Table VII summarises the results. The projected net numbers of severely handicapped patients decrease between 1983 and 2011 when they will be 11·7% lower than the 1983 figures. The numbers then increase until the year 2023, an increase over 1983 of only 8·2% (95% confidence interval −9·2% to 25·6%). Relative to 1983 the net numbers of moderately or severely handicapped patients six months after a first ever stroke become progressively smaller until the year 2006. They still remain lower than the 1983 numbers until 2021, after which they increase gradually to the year 2023 when they will be 4·1% more (95% confidence interval −15·1% to 23·3%) than the number of severely or moderately handicapped patients in 1983. As we mentioned earlier, these seemingly paradoxical decreases in the net numbers of handicapped patients result from the high death rate among elderly people who were previously handicapped. For example, when the net changes in the percentage of severely handicapped patients over age 84—that is, −11·9% (column 9, table V)—is applied to the projected number of patients with first ever stroke in that age group in 2023—that is, 23 105 (table IV)—a decrease of 2749 severely handicapped people in the population results.

PROJECTED NUMBER OF DEATHS

The number of deaths within six months after a first ever stroke rises until the year 2023 when it is about 40% larger (95% confidence interval 34·8% to 45%) than the number in 1983. The proportional increase in the number of deaths is greatest in the elderly, many of whom, as noted, will already be severely handicapped at the time of their first ever stroke.

The figure summarises these various projections as percentage changes from the 1983 numbers and indicates the 95% confidence intervals about these percentages.

Discussion

These data do not predict the number of prevalent cases of stroke—that is, all people who have had a

previous stroke—nor do they project the numbers of people with recurrent strokes and their sequelae. Thus the projections provide rough guidelines only for the probable burden to be placed on the NHS over the next four decades by patients with first ever cases of stroke. What is important about the projections is the reminder that an increase in the number of elderly people in the population may not necessarily be accompanied by a proportionate increase in long term needs for all types of health services. A disorder that can result in either severe handicap or death may actually reduce the number of handicapped people in a population because people who were previously handicapped for other reasons die as a result of it and all are not replaced by people who are newly handicapped. Newly handicapped patients, however, are likely to need more immediate medical, psychological, and social support than did the chronically handicapped people they replace.

The projections also show the complexity of interplay among a set of age specific rates, handicap before a stroke, survival rates after a stroke, and the changing age structure of a population. For example, despite a 99% increase in the age group 85 and over in the next 40 years and despite a sharp increase in the incidence of stroke with age the total number of patients with stroke predicted in the year 2023 is only about 30% more than in 1983. This is, of course, due to the fact that the numbers of very elderly people are still relatively small. Planners who wish to project rates of disease and handicap must be careful to apply age specific rates to specific age groups, using narrow age bands for the elderly.

Of particular concern is the validity of the population projections and incidence of stroke. The population projections rest on certain assumptions but are as reliable as can be obtained, particularly for cohorts already born. The stroke rates are derived from a single community based, prospective study of incidence which is designed to ascertain even mild cases. With such complete ascertainment the projected numbers of patients with stroke in England and Wales may overestimate the number of cases of stroke actually diagnosed. But the estimates of handicapped cases will not be affected by the case finding methods: if in other areas fewer total numbers of cases might be observed (because mild cases are missed) the proportion of those observed patients who were moderately or severely handicapped would be higher, resulting in similar numbers of cases with handicap. It should be noted that the projections for the younger ages are based on small numbers and are, therefore, less stable than those for people over 54. On the other hand, a possible source of underestimation of the projected burden of stroke in England and Wales is suggested by the standardised mortality ratios for cerebrovascular disease.[12] The standardised mortality ratios for the Oxford Regional Health Authority (92 for men and 94 for women) are below those experienced by all of England and Wales. Though mortality reflects many things besides morbidity,[13] this lower mortality from stroke suggests that residents of Oxfordshire may have a lower risk of stroke. If so, then our incidence rates would somewhat underestimate the total numbers of patients with stroke for England and Wales.

The projections for stroke do not allow for changes over the next 40 years in the incidence or prognosis of stroke. From the results of studies on mortality[14,15] and one well designed study of incidence in Rochester, Minnesota,[16] many researchers think that the risk of stroke is declining: in Rochester between 1945 and 1979 the incidence of stroke declined by 54%.[16] If the decline in mortality from stroke in the United Kingdom[17,18] truly reflects a decline in incidence our estimates may need to be revised downwards. But more recent data from Rochester suggest that the decline there has halted[19]; and research in Sweden suggests that in the area studied the incidence of stroke may not be decreasing.[20] In the light of these various findings our assumption of no change in the incidence of stroke is not unreasonable.

Several additional assumptions have been made regarding the projected numbers of handicapped people. One is that the handicap scale is valid and reliable. The scale is crude but does measure handicap, not disability, and has recently been shown to have reasonable reliability.[21] Thus, whether the observed levels of handicap reflected physical impairment or social setting the projections for handicap are of patients who are likely to require particular types of support. A second and less justifiable assumption is that the net changes in percentages of handicapped patients are precise; because of the sample size there is inevitably some imprecision in the estimates. The standard errors of the proportions of net handicapped in table V are fairly large—for example, ranging from approximately 0·03 to 0·06 across the different age groups for the severely handicapped. Thus the primary purpose of table VII is not to provide specific numbers for health planners but to indicate that, in general, because (not despite) of the increasing numbers of elderly people in the future first ever strokes might lessen the burden of care of chronically handicapped people among the elderly, a trend which is counter-intuitive.

Another assumption regarding the projections for handicap is that there will be no secular changes in the outcome of stroke. Future methods of intervention may prolong life or reduce handicap after stroke, or both. But if only the first occurs the numbers of handicapped people will be likely to increase because the data from the stroke project indicate that more previously handicapped elderly patients die from stroke than are replaced by newly handicapped ones. Therefore any treatment which only prolongs life in the elderly may merely extend their lives in an already disabled state.

The future burden placed on society by patients with first ever strokes will depend on the outcome measure and year of interest; but given the assumptions described here the major increase in the health care burden of such strokes in the future will probably result from the acute event and its immediate sequelae and not from a large increase in the number of newly handicapped, long term survivors of stroke. Health care planners may therefore need to concentrate new resources more in the acute sector to cope with the increased numbers of new, acute cases.

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For Debate

Does constitutional hypotension exist?

John Pemberton

While visiting the late Professor Dr Hans Jesdinsky, an epidemiologist, in Dusseldorf I noticed on his desk some sickness statistics which included details of patients who had been absent from work with a diagnosis of hypotension. I told him that I did not believe that hypotension existed as a primary condition in the United Kingdom and asked him to send me a photocopy of its description from a standard German textbook of medicine. This he kindly did.[1] Under the heading "Constitutional hypotension" and paraphrased it stated that:

It exists if the systolic blood pressure is constantly under 110 mm Hg in men and under 100 mm Hg in women, with a diastolic pressure under 60 mm Hg. It is a disturbance of blood pressure control. The leading symptoms are bodily and mental tiredness, giddiness, a tendency to faint, and tightness round the heart. On standing up the pulse rate may go up to 100 or more, and the standing electrocardiogram may show a flattened or negative T wave and depression of the ST segment. It must be distinguished from coronary artery disease, a vasovagal attack, and a psychogenic fainting attack.

The treatment is systematic bodily exercises and the prescription of peripheral vascular constrictors such as dihydroergotamine or perhaps in severe cases sympathomimetic drugs.

Another German textbook[2] gives the same cut off points for blood pressure and includes among the symptoms:

tiredness, sleep disturbances, giddiness, blackouts, fainting, anxiety or depression, consciousness of the heart beat, and racing of the heart and sweating. The prognosis is not serious and treatment should include physical exercise and a high salt diet.

Many antihypotensive drugs are taken in West Germany. In the Munich Blood Pressure Study of 1980-1, for example, it was found that 1·8% of men and 5·8% of women aged 30-69 in the population studied were taking antihypotensive drugs (U Keil, personal communication). In a study of the cost and burden of hypotension in West Germany it was reported that 9·5 million days were lost from work in 1978 from this cause, and the estimated cost of antihypotensive drugs for the country in 1979 was 380 million DM (roughly £120m).[3]

Evidence in other countries

In France I asked a retired French general practitioner if he recognised the condition. "Oh yes indeed," he said, "my wife here suffers from it." I inquired after her symptoms and treatment and learnt that her main complaints were vertigo and fatigue and that he treated her with a derivative of ergot. He said he had treated many other patients with similar symptoms in his practice. I have not found clear evidence in French publications that low blood pressure is regarded as a disease in itself, apart from its association with posture —that is, orthostatic hypotension.[4] The condition is recognised in Italy where it is called chronic primary hypotension[5] and ephedrine or amphetamine is recommended for treatment. In Spain a condition of essential hypotension has been described with symptoms of fatigue, vertigo, sweating, and fainting. Recommended treatment included ephedrine, coffee, Swedish drill, and cold showers.[6]

British textbooks of medicine describe hypotension as a symptom of acute conditions such as coronary thrombosis, shock, vasovagal attacks, orthostatic fainting, and drop attacks in the elderly, as a symptom of chronic conditions such as Addison's disease, cachexia, tuberculosis, Parkinson's disease, diabetes, and anorexia nervosa, and as a side effect of taking levodopa and antihypertensive and antidepressive drugs.[7,8] A rare condition of degeneration in the autonomic nervous system, the Shy-Drager syndrome, which is characterised by hypotension, is also described. They do not describe a chronic constitutional disease of hypotension. Three British general practitioners whom I have spoken to do not diagnose or recognise the condition, and textbooks of general practice[9,10] do not mention it.

In Australia according to one authority "hypotension is significant only when associated with symptoms" such as "dizziness or giddiness upon standing."[11] In the United States one authoritative textbook states: "Although many patients have been treated for chronic 'low blood pressure', most of them, with systolic pressures in the range 90-110 mm Hg are normal and may actually have a greater life expectancy than those with 'normal pressures'."[12]

Two explanations

There are two possible explanations of the difference between the practice of British and West German doctors. The first is that British doctors are failing to recognise a disease of chronic constitutional hypotension or are calling it by another name. The second explanation is that West German and other European

Department of Community Medicine, University of Sheffield, Sheffield S10 2RX
John Pemberton, FRCP, *honorary clinical lecturer*

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