Comment

The relatively low response rate, particularly in high peak users, raises concern about the representativeness of this study. When the higher total consumption of sumatriptan among non-respondents in this group is taken into consideration, this bias could lead to underestimation of sumatriptan overuse. Appropriate heavy use of sumatriptan for cluster headache was rare. We conclude that heavy consumption of sumatriptan generally represents inappropriate use, mainly for tension and drug induced headaches. Inappropriate use may be related to the patient rather than the drug. Patients at greatest risk have generally been excluded from clinical trials conducted before the drug was marketed. Greater awareness of the problem among doctors could lead to more rational use of sumatriptan.

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Contributors: DG had the original idea for the study, was principal investigator and study coordinator, interviewed all patients, did statistical analyses, and had main responsibility for writing the article; he is guarantor of this paper. IT and SHS advised on design of the structured interview and criteria for inappropriate use, examined patients, and participated in evaluation of drug use. JH and JK advised on the recruitment part of the study. JH was also responsible for retrieval of prescription data. BKR commented on the part of the structured interview on headaches and the criteria for inappropriate use and was consulted regarding difficult cases. LFG was responsible for funding and advised on the overall design and intrepretation of data. All authors contributed to the writing of the paper.

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Is cardiothoracic ratio in healthy middle aged men an independent predictor of coronary heart disease mortality? Whitehall study 25 year follow up

Harry Hemingway, Martin Shipley, David Christie, Michael Marmot

Aetiological studies of myocardial ischaemia have tended to concentrate on factors which influence atherothrombotic processes in the coronary arteries rather than myocardial pathophysiology.[1] The commonest clinical measure of heart size—cardiothoracic ratio—was included in the original Whitehall study of healthy middle aged civil servants. Cardiothoracic ratio is associated with left ventricular mass[2] and left ventricular systolic function; since left ventricular mass determined by echocardiography has been shown to predict coronary heart disease in elderly people,[1] we hypothesised that increased cardiothoracic ratio would independently predict mortality from coronary heart disease. Unlike previous studies[3] we did not include mortality from stroke since it may be related to heart size through different pathophysiological mechanisms.

Subjects, methods, and results

We studied the 1203 male British civil servants aged 40-69 years who participated in the original Whitehall study and were randomly selected (by random number tables) for measurement of cardiothoracic ratio from 100 mm chest radiographs. The rate ratio for all cause mortality among those in the random sample compared with those not in the sample was 1.01 (95% confidence interval 0.93 to 1.11) making a serious selection bias unlikely. Details of the standardised methods of risk factor, electrocardiographic and radiographic measurements and their quality control have been reported.[4 5] Cardiothoracic ratio was calculated as the ratio of the maximal transverse diameter of the cardiac silhouette to the distance between the internal

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Adjusted hazard ratios (95% confidence intervals) for the effect of cardiothoracic ratio on all cause and coronary heart disease mortality

	All causes (534 deaths)			Coronary heart disease (196 deaths)		
Cardiothoracic ratio (fifths)	Adjusted for age	Adjusted for age and blood pressure*	Fully adjusted†	Adjusted for age	Adjusted for age and blood pressure*	Fully adjusted†
<0.4	1.0	1.0	1.0	1.0	1.0	1.0
0.4-0.439	1.07 (0.80 to 1.42)	1.08 (0.80 to 1.45)	1.08 (0.80 to 1.46)	1.15 (0.69 to 1.92)	1.04 (0.62 to 1.75)	1.02 (0.61 to 1.73)
0.44-0.449	0.96 (0.72 to 1.28)	0.94 (0.69 to 1.27)	0.98 (0.72 to 1.34)	1.11 (0.67 to 1.87)	1.03 (0.61 to 1.74)	1.02 (0.60 to 1.74)
0.45-0.469	0.96 (0.72 to 1.28)	0.93 (0.69 to 1.26)	1.02 (0.75 to 1.38)	1.45 (0.89 to 2.37)	1.32 (0.81 to 2.16)	1.33 (0.81 to 2.20)
≥0.47	1.38 (1.05 to 1.82)	1.27 (0.95 to 1.70)	1.28 (0.95 to 1.73)	2.15 (1.35 to 3.44)	1.84 (1.14 to 2.97)	1.65 (1.01 to 2.70)

*Adjusted for systolic pressure and diastolic pressure.
† Adjusted for age, systolic blood pressure, diastolic blood pressure, heart rate, total cholesterol concentration, smoking habit, Rose angina, and electrocardiographic evidence of ischaemia (Minnesota codes: 1-1 to 1-3, 4-1 to 4-4, 5-1 to 5-3, and 7-1).

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margins of the ribs at the level of the right hemidiaphragm. In all, 1191 (99%) of the subjects were flagged at the NHS Central Registry and there were 534 deaths over 25 years, 196 of which were due to coronary heart disease (ICD-8 codes 410-414). Adjusted mortality hazard ratios and their confidence intervals were estimated by Cox's proportional hazards regression models.

The table shows the extent to which cardiothoracic ratio affects the risk of death from all and coronary causes independently of potential confounders. After age, blood pressure, heart rate, total cholesterol concentration, smoking, prevalent symptoms of coronary heart disease, and electrocardiographic evidence of ischaemia were adjusted for, men with a cardiothoracic ratio in the highest fifth of the distribution had a hazard ratio of 1.65 (95% confidence interval 1.01 to 2.70) for coronary heart disease mortality compared with men with a cardiothoracic ratio in the lowest fifth. When men with a ratio ≥ 0.5 were excluded, the top fifth (≥ 0.47 and < 0.5) was associated with an increased risk of coronary death of 1.67 (0.99 to 2.82) after age and blood pressure were adjusted for.

Comment

The cardiothoracic ratio in a healthy middle aged population predicted coronary mortality over 25 years independent of blood pressure and other risk factors. A ratio of ≥ 0.5 has by convention been defined as a threshold of pathological enlargement. In our healthy population of civil servants a ratio of 0.47 to < 0.5 was associated with increased risk of death from coronary heart disease, questioning this convention. The results of recently established population based echocardiographic studies are therefore awaited to establish the relative contribution of left ventricular mass and left ventricular systolic dysfunction in predicting coronary heart disease among healthy middle aged subjects. Until then the Whitehall study offers the advantage of a prolonged follow up.

Does lowering cardiothoracic ratio reduce the risk of coronary heart disease? Among hypertensive patients, drug treatment and exercise may reduce cardiothoracic ratio. However, further studies are required to investigate whether such effects lead to a reduction in subsequent coronary heart disease events and therefore constitute a worthwhile therapeutic goal. In the meantime the prognostic information provided by the cardiothoracic ratio should be considered in risk stratification of healthy middle aged men.

Contributors: HH posed the research question and wrot the first draft of the paper. All the authors commented on drafts of the paper which were incorporated by HH. MS carried out all the statistical analyses. DC collected the radiographic data and his doctoral thesis formed the basis of this paper. MM is codirector of the original Whitehall study. HH is the guarantor.

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Adherence to cardiac rehabilitation guidelines: a survey of rehabilitation programmes in the United Kingdom

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Two key recommendations of recent guidelines are that cardiac rehabilitation requires the skills of a range of professionals and that the patient should receive a menu based programme after an individual assessment of needs.[1] A previous survey of 25 cardiac rehabilitation programmes found little congruence with these guidelines and noted that physicians were particularly unlikely to be involved.[2] We extended this inquiry to include all of the discoverable rehabilitation programmes in the United Kingdom.

Subjects, methods, and results

We identified 273 cardiac rehabilitation programmes through registers maintained by professional and charitable bodies and conducted a structured telephone interview with the "main coordinator" of 263 (96%) of these programmes between 1 April 1996 and 31 March 1997. If a respondent did not have the competence to answer a particular question the appropriate person was contacted. We asked each participant whether the rehabilitation team included anyone from a list of nine healthcare professions. To examine the use of assessment measures we asked which of a list of 15 health variables were assessed; whether this was with a validated assessment (a published scale or a standardised procedure with known properties) or an informal assessment (any other method); and whether the assessment was repeated either to check the patient's progress or to audit outcome.

Most (184 (70%)) participants reported that five or more (mean 4.6; SD 1.6) healthcare professions were represented on the rehabilitation team; only 13 (5%) teams comprised members from only one profession. Nurses were represented in 234 (89%) teams, dieticians in 220 (84%), and physiotherapists in 223 (85%). Less