"Headbanging" and carotid dissection

"Headbanging" is the term used to denote vigorous, rhythmical, rapid flexion and extension of the neck in time to music. We report on a boy who was found post mortem to have a dissecting aneurysm of the left internal carotid artery. This dissection was considered to be the direct result of headbanging.

Case report

A 15 year old white boy went to a rock concert, where he indulged in headbanging. During the evening he drank three pints (1.7 l) of beer but did not take any drugs. The next morning he was difficult to rouse, was later found only half dressed in his room, and appeared very unsteady. He walked unassisted downstairs, where it was noted that he could not stand on his right leg or use his right arm; he could not speak and could only make slurred noises. He was admitted to hospital 14 hours after leaving the concert.

On examination he was of average development, conscious, obeyed commands, but was aphasic. He had a moderate right hemiparesis, facial weakness, and evidence suggestive of either a right homonymous hemianopia or a right sided inattention defect. He did not have Horner's syndrome. Computed tomography within one hour after admission showed considerable oedema in the left temporo parietal region with compression of the lateral ventricle but no appreciable midline shift. Despite treatment with dexamethasone and mannitol his condition deteriorated and he died in coma on the seventh day after admission.

Histopathological findings—Postmortem examination showed an intact dissecting aneurysm of the extracranial portion of the left internal carotid artery, 2 cm of which was distended to a maximum of 8 mm. This was lying just below the carotid canal at the base of the skull. Microscopy of the aneurysm showed an intimal tear at the lower end with massive extravasation of blood disrupting the media with a plane of separation from the adventitia (figure). There was no evidence of pre-existing arterial disease at any site and no source of embolism. Massive infarction of the left cerebral hemisphere was found with coning of the uncus and cerebellum. Infarction with necrosis was greatest in the distribution of the lenticulostriate branches of the left middle cerebral artery, which contained thrombus. There was haemorrhagic infarction of the left occipital pole and tegmentum after posterior compression of the cerebral artery by herniation of the uncus.

Left internal carotid artery (2 cm length below carotid canal) dissected through intima and media with massive extravasation of blood in sub-adventitial plane. $\times 35$.

Comment

The occlusion of the carotid in this case was due to a dissecting aneurysm of the internal carotid artery at the level of the bony prominences of the atlas and axis. This was caused by an intimal tear at a site where relative fixity by connective tissue renders the artery vulnerable to shearing stresses.^{1,2} Indeed, injuries to the artery at this site are well documented in road traffic accidents³ and skiing accidents.⁴ Histological examination of the carotid arteries in this case did not show evidence of fibromuscular hyperplasia, medial necrosis, or anomalies of the elastic lamina, which have been reported to be predisposing causes for carotid dissection. The patient did not sustain any direct injuries to the neck, and no diagnostic manoeuvres

were carried out on the carotid arteries. We conclude, therefore, that the dissection of this patient's internal carotid artery was the direct result of headbanging. Unfortunately, his normal circle of Willis did not give adequate protection by cross circulation.

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Employment of men after myocardial infarction

Considerable interest has focused recently on preventing recurrent myocardial infarction. A reduction in the death rate has been the main criterion of success, and limited attention has been given to successful rehabilitation of patients after infarction. We assessed the employment record of 48 men six months after infarction.

Patients, methods, and results

Between 1 August 1981 and 1 February 1982, 85 men were admitted to the coronary care unit of this hospital with myocardial infarction and survived for at least six months. All were entered in a rehabilitation programme after infarction.¹ Replies to a postal questionnaire were obtained from 82. In 62 cases this was their first infarct. Forty eight patients had been in full time employment at the time of admission and one in part time employment, and 33 were retired. The 48 in full time employment were asked further questions about work and the advice that they had received on employment after infarction.

Only 24 of the 48 had returned to work six months after infarct (mean age 54, range 44-66). Fourteen were still convalescent (mean age 52, range 48-73), and 10 had retired early (mean age 59, range 48-73). Eleven had been "sacked" as a direct result of the infarct (mean age 55, range 44-60); three of these had been employed as storemen, two as drivers, and the remainder as builders, electricians, and unskilled workers; none was a heavy labourer. A more sympathetic attitude had been taken by 10 employers, who had reduced the physical component of jobs for employees after infarction. There was no evidence that these employees were less able to continue work than other patients. Four men had changed job (mean age 52, range 46-55); three had had their wages increased, and one had had his reduced.

For 41 of the 48 men, including eight of the 11 who were sacked, this was their first infarct. The social class distribution of the 48 men studied was wide: 23 belonged to social class III, 10 to class V, seven each to classes II and IV, and one to class I.

Most patients had been poorly informed about returning to full time employment. Twenty seven had received advice from general practitioners, 18 from hospital doctors, 15 from nurses, seven from trade union officials, three from social workers, two from their employers, and only one from a disablement resettlement officer.

Comment

Six months after a myocardial infarction only half of the men who had been employed full time before admission to hospital had returned to work. During this period the unemployment rate in the area rose from 13.4% to 14.6%. Successful rehabilitation of men

with ischaemic heart disease implies return to work without loss of status or earnings: when this is not possible advice about future employment should be available from social workers and disablement resettlement officers. About half of patients fail to return to work after an infarct,² and there is no apparent benefit from exercise training or social advice.³

Factors other than physical disability may influence the decision of patients not to return to work, but breathlessness and angina are among the most important.⁴ Fears about precipitating a further infarct and general weakness may contribute to the low number of successfully rehabilitated patients.¹ A study of 84 patients in work at the time of infarction supports this hypothesis.⁵ The 17% of patients unemployed one year after infarction showed greater psychiatric morbidity, but it was not clear whether this was due to delayed return to work or inability to resume work because of angina and breathlessness.

We found that after a myocardial infarction a quarter of men in full time employment may expect to be either sacked or convalescent for at least six months. Programmes of education and rehabilitation for patients should provide guidance about work, and when employment is ended prematurely alternative occupations should be suggested. Quality of life is as important as its duration.

We thank the consultant physicians at the Royal Gwent Hospital for permission to conduct this study.

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Comparison of accuracy of digital and standard mercury thermometers

An increasing amount of advanced, electronic hardware is becoming available for use in medical practice. Its superiority over traditional equipment is sometimes accepted by the medical and nursing professions without adequate evaluation.

Several electronic thermometers have recently been marketed. Manufacturers suggest that these thermometers have assured accuracy and that they require less attention to technique.^{1,2} This echoes the claim that automated sphygmomanometers would eliminate human observer error and thus be more accurate, which has not been substantiated.³ Further advantages claimed for digital readout thermometers include ease of reading, shorter time spent taking the temperature, disposable probes that prevent cross infection, and durability.^{1,2} Are the advantages over conventional thermometers sufficiently great to justify the introduction of such expensive equipment into an underfunded state health service or a developing country? If the claim regarding the greater accuracy of electronic thermometers could be upheld then the case for their more widespread introduction would be stronger. Our study examined this question.

Method and results

Three different types of thermometer (IVAC 821 (IVAC Corporation, San Diego, California 92121 USA); Electromedia Mark V (Electromedics,

Denver, Colorado, USA); and standard mercury thermometer) were compared on 20 inpatients. All thermometers were carefully checked and standardised before the study and rechecked on its completion. Their calibration was found to be unchanged. The three thermometers were simultaneously placed under the tongue and the temperature recorded after two minutes. One hundred consecutive triple readings were recorded and analysed (table). Pairs of readings were compared.

Comparison of readings obtained with two digital thermometers (IVAC and Electromedia) and standard mercury thermometer in 20 patients

	IVAC v standard	Standard v Electromedia	Electromedia v IVAC
No of comparisons	100	100	100
Mean difference (°C)	0.008	0.018	0.026
SD of difference	0.341	0.296	0.340
Z value of mean difference	0.2	0.4	0.5
Significance of mean difference	p > 0.1	p > 0.1	p > 0.1

The mean difference between each pair was: 0.026°C between the Electromedia and the IVAC; 0.018°C between the standard thermometer and the Electromedia; and only 0.008°C between the IVAC and the standard thermometer. These were the averages of positive and negative differences and indicate that all three thermometers produced similar results. The consistency of the paired differences may be measured by their standard deviations. All three comparisons had standard deviations of the order of only 0.3°C.

This study was not conducted blind. Therefore, the possibility of observer bias required evaluation. In all non-randomised, non-digital measurement systems there is an inherent bias towards certain terminal digits and away from others. The most commonly preferred digits are 0 and 5 and the most avoided are 1 and 9 (both rounded to 0).⁴ The distributions of the two digital thermometers were first tested to see whether they differed significantly from the uniform distribution. Neither thermometer's reading was significantly different from the expected distribution ($p > 0.1$ for both thermometers). The results obtained with the standard thermometer, however, were appreciably different from the uniform distribution ($p = 0.002$) with the expected preference for 0 and 5. These findings support the hypothesis that observer bias did not produce the concordance between the results obtained with the standard and with the digital thermometers.

Comment

This study produced no significant differences between the readings given by standard mercury thermometers and electronic thermometers in a typical ward of a general hospital. We are currently investigating whether these findings hold true at extremes of temperatures.

Greater accuracy has been one of the more persuasive arguments in favour of the electronic thermometer but is rendered untenable by the results of this study. Mercury thermometers have the advantage that they are familiar, inexpensive, lightweight, and compact in size and do not require recurrent expenditure on recharging, replacement of probes, and servicing. We conclude that the mercury thermometer should not be displaced from its traditional and well deserved place in the general practitioner's pocket and the hospital ward.

We thank the nursing staff of the rehabilitation unit, Riyadh Armed Forces Hospital, for their help and cooperation.

¹ IVAC Corporation. Electronic thermometer information sheet. IVAC 811. (Form No 60-73-12, ref 9/73.) (IVAC Corporation, 11353 Sorrento Valley Road, San Diego, California 92121 USA).

² Electromedics Inc. Mark V Electronic Thermometry System information sheet. (Electromedics Inc, PO Box 1051, Denver, Colorado 80201 USA.)

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