His improvement seemed very rapid to all those who saw him. In retrospect it is possible that he had a superficial infarction of a portion of the brain near the motor face area. The infarction is postulated because of the xanthochromia and the considerable rise in protein. Presumably, recovery was due to a good collateral circulation and diminution of local oedema. To those who saw him initially the prognosis indeed appeared gloomy. At the end of a week it was almost unbelievable that this was indeed the same patient.

Investigations.—Red blood cell count 3,700,000/c.mm.; haemoglobin 7.8 g./100 ml.; packed cell volume 30%; M.C.H. 22 μ g.; M.C.V. 82 cubic microns; total white-cell count 5,600/c.mm. (normal differential count); platelet count 180,000/c.mm. Peripheral blood film showed the red blood cells to be hypochromic with moderate anisocytosis and poikilocytosis. There were a few target cells and microcytes. Haemoglobin H inclusion bodies were present in a brilliant-cresyl-blue preparation. Alkali-resistant haemoglobin <1%. Haemoglobin electrophoretic analysis: haemoglobin A+H. Serum iron 221 μ g./100 ml. Unsaturated iron-binding capacity of serum <40 μ g./100 ml. Bleeding, clotting, and prothrombin times within normal limits. Blood for lupus erythematosus phenomena and latex fixation test negative. Liver-function tests normal. Blood sugar (fasting specimen) 89 mg./100 ml. W.R. and Kahn test negative.

Discussion

There was no doubt that this man had a severe anaemia of haemoglobin H type. The problem was how to fit in the focal attacks with the picture of organic dementia of recent origin. The xanthochromic C.S.F. (positive Diazo reaction) showed that obviously there had been some bleeding. The excessive cells and the raised protein content suggested inflammation.

It was thought that he might have had a thrombosis of an anterior cerebral artery or that there was a more widespread thrombophlebitis, because both frontal lobes appeared to be involved. In our experience encephalitis of viral origin Japanese B does not give rise to such a high C.S.F. protein content or to xanthochromia.

The C.S.F. itself was unusual. In the many hundreds of lumbar punctures done for cerebral thrombosis the protein is occasionally raised to about 100 mg./100 ml. and it is most unusual to find cells up to 250/c.mm. In this connexion Brain (1962) says: "The cerebrospinal fluid is usually normal except after an acute infarction, when the protein may be raised up to 100–200 mg./100 ml. for two or three weeks, and the fluid may be xanthochromic at first. There may also be a pleocytosis, including a moderate excess of polymorphonuclear cells."

We were more inclined to take the view that there was probably superficial thrombophlebitis because of the C.S.F. changes and the involvement of both frontal lobes, although a careful search failed to reveal any phlebitis elsewhere.

Because of the xanthochromia we decided on a carotid arteriogram to exclude the possibility of a subdural haematoma. (We had one case recently in which there was no headache but only papilloedema, some drowsiness, and a xanthochromic C.S.F. with increased protein but no increase of cells.) This was to be done on the 14th day of the disease—that is, one week after admission.

Summary

A case of haemoglobin H disease with occlusion of the right anterior cerebral artery is described. The clinical picture was one of Jacksonian epilepsy, dementia, and paresis affecting the left arm and face. The unusual features were the xanthochromic turbid C.S.F. and the rapid recovery. A superficial cortical infarction near the motor face area is postulated. Recovery was attributed mainly to an adequate collateral circulation.

We are grateful to Dr. J. Yin for carrying out and reporting on the carotid arteriogram.

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Medical Memoranda

First Year's Experience in Anti-smoking Clinic

Brit. med. J., 1965, 1, 1651–1653

Most doctors accept the importance of stopping many of their patients from smoking cigarettes. It is the single most important treatment for chronic bronchitis and it could be a far-reaching measure in preventive medicine, since cigarettes cause between 40,000 and 50,000 deaths a year in Great Britain. Unfortunately, simple advice to the patients to stop smoking often proves ineffective. For this reason it was decided to see whether a group anti-smoking clinic would prove more effective.

In May 1962 a pilot clinic was started at the Central Middlesex Hospital. We now report our experience with 92 patients seen between September 1962 and June 1963, 75 of whom have been followed up for a year. Much interest has been aroused in Great Britain and abroad by this project.

PATIENTS

The patients were referred from general practitioners, from hospital doctors, or from a chest clinic. Most of them had

already failed to stop smoking on simple advice. A total of 109 patients attended. Only patients who came on three or more occasions out of a possible seven are included (mean attendance six times). Thus information on 92 patients was analysed; 62 patients were men and 30 women, aged from 16 to 68 (mean age 45). All social groups were represented. The mean cigarette consumption had been 31 daily (10 to 60) and was the same for both men and women. The reasons for attending were as follows:

Chronic bronchitis and other chest diseases	...	47
Peptic ulcer	...	10
Heart disease	...	7
Other medical reasons	...	8
Non-medical and social reasons	...	20

THE CLINIC

The clinic was run once a week in the evening for seven weeks. Fifteen to 20 patients attended each session, which lasted from one and a half hours to two hours. Apart from a radiograph of the chest, patients were not physically examined, but each filled in a questionnaire on his smoking habits.

Experience has shown that three essentials are required for an effective clinic: an enthusiastic doctor, and preferably one who

has experience of the effects of smoking on his patients; a determined patient who is anxious to stop smoking; good organization, both in the clinic and at follow-up—secretarial help for at least one day a week is required.

The clinic is run as a group, since the spirit of rivalry together with discussion of mutual problems is helpful. Patients were not normally seen individually.

The first three weeks of the clinic are considered a period of preparation. The patients are told at the outset that there is no magic method of stopping smoking, but that their own conviction of the importance of doing so is imperative. An effort is made to clarify in their minds the reasons for stopping smoking, and the effects of cigarettes are demonstrated by the use of coloured slides of patients with chronic bronchitis and lung cancer, and by means of pathological specimens. Each patient is given a list of suggestions on how to stop smoking, and these suggestions are discussed by the group.

Three films which have been found to be most useful are "Smoking and You" (Ministry of Health—11 minutes), "This is Your Lung" (Allen and Hanburys—20 minutes), and "One in Twenty Thousand" (from the British Temperance Society—25 minutes). Charts and statistics appeal to some patients but usually need simplifying. "Would you travel in an aeroplane which had a one in eight chance of crashing?" is a question which illustrates the risks better than any graphs. Other incentives for stopping smoking are stressed. Our patients spend an average of £105 a year on smoking. Giving it up enabled one patient to buy a car, and another to install central heating. Most people do not want their children to smoke and are impressed by the fact that smoking is only half as frequent in children of non-smoking parents. More than a quarter of a million children in school to-day will die of lung cancer if present trends continue. Heavy smokers aged 35 years are twice as likely to die before they retire than are non-smokers. A consideration of these facts gives to some the incentive to stop the habit in order to see their children marry and their grandchildren grow up.

A short talk is given on chronic bronchitis, and the forced expiratory spiogram of a patient with chronic bronchitis is compared with that of a normal person, clearly illustrating the loss of lung function which smoking had caused. An additional spur to cease is the improvement in peak flow rate that may occur when smoking is given up.

During the cutting-down period, the patients are advised to avoid their favourite brand and to stop smoking before breakfast and at special times such as with coffee or alcohol. D-day, the day on which smoking will completely cease, is planned for the third week of the clinic. Each person is asked to state the day he will stop, often at a weekend or on holiday. It is useless to plan it during a period of business stress, domestic strife, or an approaching festivity. The last four weeks is considered a period of consolidation.

A large chart is used to record the progress of every patient week by week. Each patient fills in a card showing the number of cigarettes smoked a day. Groups of 6 to 10 are found to be the best size for discussion, and are each led by a doctor. Patients are encouraged to discuss their difficulties and can often answer each others' problems. The social pressure of the group helps those who are having difficulty in giving up smoking. Successful patients from earlier clinics attending for follow-up encourage those still struggling. Some patients telephone each other for support during the week. Some need a prop in the shape of a pill, though none so far tried has been conspicuously helpful. Others find dummy cigarettes of use. All are encouraged to find a simple alternative to smoking when the desire is strong—deep breathing, going for a walk, polishing the floor, sucking mints, and sniffing smelling salts have all been found helpful.

At the final session patients are asked for their own ideas about the clinic. They usually state that group discussion is the most helpful, followed by the factual evidence given by

films, charts, and slides, and, finally, the tablets and dummy cigarettes. Methods are repeatedly modified as a result of patients' ideas.

FOLLOW-UP

Patients are asked to send in weekly progress cards for the first month, and thereafter at monthly intervals. They are given a follow-up appointment for one month after leaving the clinic and then at three-monthly intervals.

RESULTS

The results at the end of the clinic's seven-week period were as follows:

Not smoking	62 (67%)
Failed to stop smoking	30 (33%)

The Figure demonstrates the proportion who were non-smokers at three-monthly periods to one year.

COMMENT

Most of the patients who attended the clinic appeared to be hardened smokers who had not previously responded to their own attempts or to the admonitions of their doctors. Crofton (1963) believed that 30% of his patients with chronic bronchitis might be able to stop smoking relatively easily if the necessity for doing so were put to them, but this is not our experience. Seventy-eight patients with myocardial infarction admitted to one of our wards where smoking is actively discouraged were individually advised to stop smoking. At follow-up one to four years later, 48% had not reduced their smoking, 37% were smoking less, and only 15% had stopped altogether (Sharland, 1964). Of our patients 33% remained non-smokers after one year. This is a disappointing figure but better than our results with simple advice, which suggests that the clinic was worth while. However, this is not a satisfactory comparison, and a planned trial of various methods would be valuable.

Has a group clinic any advantages over an individual approach? We believe that it offers much more than the advantage of treating a number of patients at once. The group produces social pressures and supports which enabled many to succeed who had previously failed on their own.

While we have not selected patients, it seems that individual interviews before the clinic would be helpful in excluding those not intending to stop, those undergoing severe domestic crises, or those with frank mental illness who need psychiatric help rather than anti-smoking therapy.

The relapses remain an important problem. There is a fall in the proportion of non-smokers from 67% to 51% in the first

three months. Closer follow-up might have reduced this number, but this is often difficult to achieve. Some relapses follow a single cigarette after months without, smoked either out of curiosity or as a result of some stress such as a car accident. The rule for the ex-cigarette smoker must be never to smoke another cigarette, whatever else he smokes. Patients are told to telephone the clinic immediately should they do so, and they are always welcomed back.

There remains a small hard-core of cigarette addicts who fail to respond initially to these methods and who probably need more intensive therapy, such as that described by Ejrup (1960) with use of lobeline injections.

Much research is needed to find the most effective methods for stopping smoking. Aversion therapy, either by drugs or by electric shock (McGuire and Vallance, 1964) needs further consideration. It may be that there are different kinds of smokers, each needing a different treatment, and in order to study this aspect of the problem we are now assessing the personality of our patients.

Serum Creatine Kinase and Physical Exercise

Brit. med. J., 1965, 1, 1653-1654

Studies on the effect of physical exercise on the levels of some serum enzymes in normal human subjects have yielded varying results (Tessari and Parrini, 1961; Critz and Merrick, 1962; Fowler *et al.*, 1962). Recently, determination of serum creatine kinase has been regarded by most workers in the field of muscle disorders to be superior to that of other enzymes, since the presence of creatine kinase in significant amounts is limited to skeletal and cardiac muscles and brain tissue. Hughes (1963) failed to show any consistent rise in the level of the serum enzyme in a normal subject after 15 minutes' stationary cycling in a laboratory. Using a somewhat similar procedure to that of Hughes for the enzyme estimation (modified Ennor and Rosenberg's method), Pearce *et al.* (1964) obtained similar results on three subjects exercised by running three times up and down two flights of stairs. Nor did Swaiman and Awad (1964), using the method of Kuby *et al.* (1954) for enzyme estimation, find any significant increase in the serum enzyme after 10 minutes of strenuous exertion, but they concluded that the exercise was insufficient in duration or severity.

The present study is concerned with the determination of the effect of strenuous physical exercise on the serum enzyme levels of 12 healthy young medical students or doctors. Six played rugby and six were oarsmen. Blood samples were taken from each subject half an hour before and half an hour after the exercise, which in each case was for about 80 minutes.

Level of Activity of Creatine Kinase Before and After Exercise

Subjects			Creatine Kinase Activity (Units)	
			Before	After
Rugby players ..	1	0.75	3.3	
	2	1.8	2.8	
	3	3.0	4.4	
	4	6.2	11.0	
	5	5.9	8.6	
	6	2.9	6.8	
Oarsmen ..	7	3.4	4.0	
	8	1.6	2.5	
	9	1.1	1.3	
	10	12.7	18.0	
	11	2.1	3.2	
	12	1.7	6.2	

At present the combined pressures of society and the cigarette advertisers make some relapses inevitable. But as the force of public opinion progressively hardens against the cigarette, so will it become easier for our patients to rid themselves of this habit.

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KEITH P. BALL, M.D., F.R.C.P.
BRIAN J. KIRBY, M.B., CH.B.
CONNIE BOGEN.

Cardio-thoracic Department,
Central Middlesex Hospital,
London.

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Serum creatine kinase activity was determined in duplicate for each sample by the method used by Pearce *et al.* (1964). The results are shown in the Table.

The serum enzyme levels in normal human subjects expressed as micromoles of creatine formed per hour per millilitre at 37° C. ranged from 0.4 to 3.6, with a mean of 1.5 units (Pearce *et al.*, 1964).

In all but two of our subjects (Nos. 7 and 9) the serum enzyme levels after exercise exceeded the corresponding levels at rest by from 50% to 400%. Although the post-exertional levels were slightly raised in subjects 7 and 9 they were within the limit of experimental error. It is noteworthy that three subjects (Nos. 4, 5, and 10) had resting enzyme levels well above the accepted normal range, and in seven the enzyme levels after exercise reached levels generally regarded as pathological.

COMMENT

The present study reveals a consistent elevation of the serum creatine kinase level after severe physical exertion. The rise in the enzyme levels in rugby players was more striking than that in oarsmen. It may be that muscle trauma sometimes encountered during a rugby match may be partly responsible, though no significant bruising was present in any of our subjects. Alternatively, the amount of physical exertion in the two groups may be of a different order.

The abnormally high resting levels present in three normal subjects are of interest. The accepted range of normal levels was drawn from a very limited number of subjects (Hughes, 1962; Pearce *et al.*, 1964). Furthermore, Hughes (1963) found abnormally raised enzyme levels in two normal subjects who were manual labourers, and stressed that the time of collection of blood samples and the occupation of the subjects might have significant effects on these levels.

The present study raised two interesting points. Estimation of this serum enzyme is now widely employed in the investigation of muscle disorders, but if important issues such as those involved in diagnosis or genetic counselling are to depend on such estimations they should be made under defined basal conditions.

The reasons for increased serum creatine kinase activity after exercise are at present uncertain. Alteration in the permeability of the cell membrane may result from physical activity (Zierler, 1956). A further possible mechanism is release