A STUDY OF 104 CASES OF MIGRAINE

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(RECEIVED FOR PUBLICATION SEPTEMBER 16, 1960)

An inquiry about present or past history of migraine has been made in a factory of 4,700 employees.

The incidence of migraine among the 1,607 who replied to a questionnaire was found to be 4.9% for men and 13.2% for women.

A family history of migraine was found in migraine sufferers six times more frequently than in non-sufferers, and a personal history of travel sickness was found three times more often in sufferers than non-sufferers. It is believed that an association between migraine and travel sickness has not been reported previously.

Migraine was shown to be by no means exclusive to the "intellectual" or "brain-worker" but such people were more often compelled to stop work during an attack than were manual workers.

Treatment taken consisted of analgesics of the aspirin type in 60% of cases and of ergot preparations in 12.5%. The remainder were content to allow the passage of time to terminate their attacks.

Modern treatment, backed by research, has so reduced the severity of many diseases and the time spent in treating them, that other conditions which had previously been regarded as relatively trivial have now assumed greater prominence. Such a condition is migraine, about which much has been written, but nothing of importance has been brought to light since the use of ergotamine tartrate began in the 1920's.

Migraine sufferers, taken to include all those who experience or have in the past experienced attacks of migraine, are stated to comprise 10% of the population; females are affected about twice as frequently as males (Peters, 1953).

The objects of the present investigation were to see whether Peters' figures could be confirmed, to investigate the influence of heredity, and to inquire into other factors, such as the relation of travel sickness to migraine.

Investigation

The present survey was carried out in 1959-1960, at a tyre factory employing nearly 5,000 persons, predominantly male (male to female ratio 4:1); 4,700 employees were invited to complete a simple questionnaire and replies were received from 1,607

(34%). The question posed was "Do you now suffer, or have you in the past suffered from migraine?"; migraine was described as "a severe type of headache, usually one-sided, preceded by eye symptoms, usually zigzag lights, and followed by nausea or vomiting".

All those who replied in the affirmative were interviewed and any doubtful cases or definitely negative cases among these were excluded. The criteria used to establish the diagnosis of migraine were the presence of prodromal symptoms, including fortification spectra, scotomata, photophobia, diplopia, and paraesthesiae; headache, nausea, and/or vomiting.

Some otherwise typical cases occurred in which prodromal symptoms were absent and not in all cases did nausea and vomiting occur; these cases were included in the series. All of the employees thus found to have migraine, now or in the past, were then questioned regarding heredity, allergy, travel sickness, treatment, and time lost from work.

Results

Of the 1,607 people who replied to the questionnaire, 1,297 were men and 310 women. After eliminating from the "affirmatives" those who had been mistaken in calling their headaches migraine, it was found that of those who replied to the

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questionnaire, 63 of the men suffered or had suffered from migraine, as did 41 of the women. The total number of migraine sufferers was 104 and in both sexes the average age of onset was 23 years, a figure similar to that found by Selby and Lance (1960).

The average duration of attacks in both sexes was one day, and their frequency varied from 30 attacks per year to one attack in three years, with an average frequency in both sexes of eight attacks per year.

Anxiety, fatigue, and excitement were noted as probable predisposing factors to attacks in 39 of the cases. Table 1 shows details of these.

TABLE 1
FACTORS PROBABLY PREDISPOSING TO MIGRAINE ATTACKS

Factors	Men (% of all Affected Men)	Women (% of all Affected Women)
Anxiety (23), fatigue (12), excitement (4)	19 (30.1%)	20 (48.8%)
At week-ends (14) or when relaxed (1)	9 (14.3%)	6 (14.6%)
Bright light (5), noise (4)	3 (4.8%)	6 (14.6%)
Dyspepsia (1), food allergy (4), constipation (1)	3 (4.8%)	3 (7.3%)
Refractive errors (3), bending (1), exposure to cold (1)	4 (6%)	1 (2.4%)

Prodromal symptoms occurred in nine out of 10 of all cases, every female case without exception having prodromal symptoms. Only 12 of the 63 men affected did not experience any such symptoms. Details are shown in Table 2.

TABLE 2
PREVALENCE OF PRODROMAL SYMPTOMS

Symptom	Men (63)	Women (41)	Total (104)
Ocular	48 (76.2%)	39 (95.1%)	87 (83.7%)
Paraesthesiae	3 (4.8%)	2 (4.9%)	5 (4.8%)

Nausea or vomiting or both occurred in 74% of all cases, men 63.5%, women 90.2%.

The influence of heredity was considered and to enable comparisons to be made a random sample was taken from the "negatives". This was done by taking every 18th name from the alphabetically arranged "negative" replies from men, and by taking every sixth name from the alphabetically arranged negative replies received from women. This method produced a group consisting of 67 men and 44 women, but four men and four women from these lists could not be contacted, leaving the control group to consist of 63 men and 40 women.

The age distribution of this sample compared closely with that of the cases, the average age of the men being 43 years for cases and 45 years in

TABLE 3
FAMILY HISTORY OF MIGRAINE AND PERSONAL HISTORY OF TRAVEL SICKNESS IN MIGRAINE SUFFERERS AND A CONTROL GROUP OF NON-SUFFERERS

		Men	Women	Total
Family History of Migraine	Migraine cases	18 (28.6%)	20 (48.8%)	38 (36.5%)
	Control group	3 (4.8%)	3 (7.5%)	6 (5.8%)
Personal History of Travel Sickness	Migraine cases	15 (23.8%)	12 (29.3%)	27 (26%)
	Control group	5 (7.9%)	3 (7.5%)	8 (7.8%)

the control group, and of the women 33 years in the cases and 37 years in the controls.

For the purpose of this investigation a family history of migraine was considered to exist if either parent or any of the sibs of the patient suffered from migraine.

A family history of the condition was found in 36.5% of the migraine sufferers and 5.8% of the controls.

Inquiry was made about travel sickness, in both case and control groups. A personal history of travel sickness was present in 26% of the cases, but only 7.8% of the controls. Details are given in Table 3.

With regard to loss of time from work, it was found that about one-third had to stop work during the attack (men 31.7% and women 36.6%) and that the remainder were able to carry on working, although often at reduced pace or efficiency. All those who stopped work said that they would much sooner carry on if they could, but that the nature of their work, e.g. adding figures or typing, made it impossible to do so. Those who continued at work said that it was always much better for them to do so rather than stop. Those in positions of responsibility and in executive grades (classed as managerial, technical, and foremen) were less able to carry on working than those in the less responsible jobs (clerical and light and heavy manual work).

Of the 29 men sufferers who did light manual work, only six (20.7%) had to stop work during an attack of migraine. The figures are shown in Table 4.

TABLE 4
104 CASES OF MIGRAINE: NUMBER WHO STOP WORK OR CONTINUE DURING ATTACKS

Employment Group	Work	Men	Women	Total
Managerial, technical, and foremen	Stop	10	1	11
	Continue	13	1	14
Clerical, heavy, and light manual work	Stop	10	14	24
	Continue	30	25	55

Inquiry was made about loss of time from work due to migraine during the past five years. From the patients' statements it was calculated that the average total of lost time amounted to 141 days per annum. The 63 men had lost an average of 44 days per annum (equivalent to 0.7 day per man per annum) and the 41 women had lost 97 days per annum (equivalent to 2.4 days per woman per annum).

The treatment taken by the patients consisted of some form of analgesic of the aspirin group of tablets in 29 of the women and 34 of the men. Ergot preparations were taken by five women and eight men. The remaining seven women and 21 men took no drugs.

The possible association of the higher incidence of migraine in women with menstruation was considered. Inquiry showed that in 11 women the attacks tended to occur at the time of menstruation. Two women had begun to have migraine with the onset of the menopause.

Conclusions

The overall incidence of migraine found during this investigation in a population with a male to female ratio of 4 : 1 was 6.5% of those who replied to a questionnaire, but this figure should be accepted with reservation as only 34% of the total factory population replied to the questionnaire.

The overall incidence, and the ratio of occurrence in men compared with women is in general agreement with Peters' figures (Peters, 1953). The incidence of menstrual migraine was not sufficient to account for the more frequent occurrence of migraine in women (2.7 : 1) since only in a quarter of the female cases did the attacks occur in association with menstruation.

The figures relating to migraine and heredity showed that in migraine sufferers a family history of the condition occurred over six times more frequently than in the control group who did not suffer from migraine.

Travel sickness also occurred more frequently (3.3 : 1) in migraine sufferers than in non-sufferers. Apparently this association of travel sickness with migraine has not previously been reported.

It is generally believed that migraine affects mainly the intellectual and executive members of the community. This survey showed that the incidence was perhaps higher in this group than in manual workers, as 25% of the cases (Table 4) occurred in the "managerial, technical, and foreman" group, although the total number in this group was a smaller fraction of the whole. Migraine was by no means restricted to this managerial group. What was apparent was that those who had to think and make decisions as part of their work were more often unable to continue than were those doing manual work.

The amount of time lost from work was not found to be great compared with that due to many other major causes of absence. But time lost might be reduced quite considerably from the figure of 141 days per annum if treatment were more specific and prompt.

Few sufferers had found any treatment regularly effective. More than half relied on aspirin-type analgesics, which generally gave only partial relief. The 12.5% who had taken ergot preparations at one time or another did not always have such tablets available for immediate use. Both suffering and time lost could perhaps be reduced by the wider and more ready use of suitable ergot preparations.

The help of Dr. K. Cross of the Dept. of Medical Statistics, University of Birmingham, and of Dr. E. C. Hutchinson, Consultant Neurologist, North Staffs. Royal Infirmary, is gratefully acknowledged.

REFERENCES

- Peters, G. A. (1953). *Proc. Mayo Clin.*, **28**, 673.
Selby, G., and Lance, J. W. (1960). *J. Neurol. Neurosurg. Psychiat.*, **23**, 23.