Migraine: a Follow-up Study of 92 Patients

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It has been a commonly held view that migraine attacks tend to cease as time passes and that such improvement occurs particularly after the menopause in women. However, we have found no published work on the natural history of the condition over periods of more than a few years which might lend support to this view. We therefore studied a group of migraine patients followed for periods of 15 to 20 years who, when finally assessed, had been subject to the condition for 16 to 69 years. We inquired for changes in frequency and severity of attacks and in the pattern of individual attacks, and sought to find out if these showed any consistent relation to advancing years, to the menopause, or to intercurrent illness, especially the development of hypertension or cervical spondylosis. This paper presents our findings.

Material and Methods

From the total of 1,304 patients with migraine who attended the neurology department at the Radcliffe Infirmary up to 1966 those who had been first seen and in whom the diagnosis was established before 1952 were selected for follow-up.

Criteria for the diagnosis of migraine were that the patient should have recurring throbbing headaches and, in addition, two of the following five features: unilateral headache, associated nausea with or without vomiting, visual or other sensory aura, cyclical vomiting in childhood, and a family history of migraine (Whitty, Hockaday, and Whitty, 1966).

There were 121 such patients. Five of them had died (two of carcinoma, one of glioma, and two of unknown causes). Twenty-four were not traced. Of the remaining 92 patients 53 were women and 39 men. All replied to a detailed questionnaire, and all were either reported on by their family doctor or examined personally.

Results

Changes in Frequency and Severity

In 63 patients attacks were still occurring at the time of follow-up. In two information was inadequate. Twenty-seven

TABLE I.—Age at Follow-up and Persistence of Attacks

Age in Years	Attacks Persist				Attacks Ceased	Not Known	Total
	No.	Improved*	Unchanged†	Worse			
<25	2	1	1	0	0	0	2
25-44	21	15	4	2	8	1	30
45-64	31	22	7	2	10	1	42
>64	9	6	3	0	9	0	18
Total	63	44	15	4	27	2	92

* Including 1 less severe but more frequent. † Including 2 fluctuating.

thought that their attacks had ceased because they had had no attacks for periods well beyond that of their usual attack rate. Previously they had had several attacks a year, and they had had none for at least three years.

The age of these patients at follow-up ranged from 22 to 81 (Table I). Half of 18 patients over the age of 64 were still having attacks; and there was no clear tendency for attacks to

cease with advancing years. Length of time since onset of migraine and age at onset also showed no consistent relation to persistence of attacks (Tables II and III). More males continued to have attacks (31 (79%) of 39) than females (32 (62%) of 51).

TABLE II.—Time Since Onset and Persistence of Attacks

Time since Onset	Attacks Persist	Not Known	Patients at Risk
15-19 years	17	0	22
20-29 "	23	1	33
30-39 "	5	0	12
40-49 "	8	0	10
>49 "	9	0	13
Not known	1	1	2

TABLE III.—Age at Onset and Persistence of Attacks*

Age at Onset	Attacks Persisting at >20 Years	Patients at Risk
<10 years	6	9
10-19 "	26	34
20-29 "	10	13
30-39 "	3	8
40-49 "	0	3

* This table includes only those patients whose migraine had started 20 or more years before the time of assessment.

An improvement was noted in 44 of the 63 patients with continuing attacks: 18 were less severe, 20 were less frequent, 5 were improved in both respects, and 1 was less severe but more frequent. (Severity is here a qualitative rather than a quantitative factor, assessed by length of attack, subjective intensity of headache, and disablement from normal activities.) Four patients were worse—attacks were more frequent or more severe. Fifteen were unchanged (Table I), though two of them fluctuated in severity. No valid inferences can be drawn about the age incidence of these changes. Findings in relation to any time factor in this study must be considered only for persistence of attacks, since information on the exact point during the period of observation at which attacks ceased or changed is unreliable.

Of the 27 patients whose attacks had ceased 15 could assign no reason for this, 4 associated the cessation with an operation (one each for gastric ulcer, duodenal ulcer, nephrectomy, and cervical sympathectomy), 3 with marked changes in life situation, 2 with the menopause, 2 with a course of specific treatment, and 1 with a year of frequent and prolonged physical illnesses.

Effect of Menopause

Of 40 patients in whom the menopause had occurred before the time of follow-up 18 noticed no change in their migraine, 6 were worse (one started at the menopause), 2 were improved, in 2 the attacks had ceased, and in 12 evidence was insufficient to judge of any change.

Intercurrent Illness

Information on intercurrent illness is certainly incomplete and statistically valueless. Blood pressure changes and cervical spondylosis are considered below. Apart from these, it may be worth noting that the following conditions were recorded as developing during the period of observation: affective dis-

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order 7; gynaecological complaints 7; peptic ulceration 6; cardiovascular disease 5; and cerebrovascular disease 3. Apart from three with affective disorder, no patient regarded the illness as aggravating their migraine. Two patients regarded themselves as improved by surgical treatment for peptic ulcer. In one patient with cerebrovascular disease migraine improved greatly after a stroke which he survived for at least four years. There was no case of temporal arteritis nor of allied conditions.

Blood Pressure.—In eight patients the blood pressure was significantly raised (diastolic 110 or over) when followed up. In three of these the attacks had ceased, one associated with the menopause; in three the attacks were less frequent and less severe; and in two there had been no change. None recorded worsening of their attacks. In one patient diagnosed as hypertensive after 28 years of migraine hypotensive treatment appeared to abolish his attacks. However, no change in severity or frequency of headaches had been noted at a time when hypertension was developing.

Cervical Spondylosis.—This diagnosis was based on x-ray findings only. Eight patients had evidence of cervical spondylosis. Their ages ranged from 44 to 60 years. Five reported improvement in their migraine, two no change, and one an increase in attacks.

Change in Pattern of Attacks

Pattern of attacks was taken to include the occurrence and nature of any aura, the general features of the headache, nausea, or vomiting, and any other constant accompaniment of the attack. Many patients had experienced some variation in pattern ever since their migraine started, sometimes amounting to one or two recognizably different types of attack. We inquired for changes in their usual attacks and for the emergence of new ones. Of the 62 patients with continuing attacks 40 recorded no significant changes and 22 noted some change. Changes usually occurred gradually, the new pattern at first occasionally replacing the old, or if the change was quantitative—for example, less vomiting—reduction would gradually give place to cessation.

The most common feature was loss or reduction of vomiting in eight cases. Five patients noted loss of their aura, headaches alone persisting. Four noted the opposite—headaches ceased and only aura occurred. One noted a dissociation of aura and headache, so that either might occur separately. In one a visual aura was replaced by giddiness and ataxia. In one a scotomatous aura gave place to teichopsia. Two noted loss of cluster headaches but continuation of classical migraine. Two noted the emergence of cluster headaches with autonomic accompaniment as a new pattern. In one case episodic headaches were replaced by episodic facial pain without autonomic features. Both loss of vomiting and loss of aura appeared to be associated with advancing age. This was not noted in other changes.

Family History

Information on the family history was available in 73 patients: 52 (71%) gave a positive history in siblings and/or parents. This figure is likely to be too low rather than too high. Figures from similar inquiries have varied from 80 to 61% (Wolff, 1963).

Conclusions

The group of patients studied here is a selected one. It is likely to represent the more severe cases, since the majority of migraine sufferers do not attend hospital clinics. The more unusual variants of migraine also are probably not represented, as they will have escaped this diagnostic label. Moreover, the study is largely retrospective, because patients were seen only

sporadically between first attendance and final follow-up. With these provisos it appears that during the period of observation attacks continue in about two-thirds of patients, but that improvement occurs in over two-thirds of those with continuing attacks. No consistent cause for cessation or improvement emerges. Age of itself does not preclude a continuance of migraine, nor comparative youth its cessation. Neither age at onset of migraine nor time since onset appears to affect the length of time for which it may persist.

Some of these patients and a number of others not in this survey showed a long-term picture of migraine in which attacks ceased completely in early adult life, and then recurred in the sixth or seventh decade. The method of this inquiry might not reveal the incidence of this picture, since a proportion of those reporting cessation of attacks may be in this latent period.

The patterns of attacks which an individual has at the start of his migraine tend to be constant, though they may be modified by loss of aura, by continuance of the aura without headache, or by dissociation of aura and headache. A complete change of aura and the emergence of a new type of attack are unusual.

We found no evidence to support a commonly held view that migraine improves or ceases with the menopause. Most of our cases showed no change; rather more were worse than better. One patient started her attacks, which we believed to be true migraine by the usual criteria, at the menopause.

Both hypertension and cervical spondylosis have been regarded as factors likely to aggravate migraine. Our information on hypertension was limited in this study. However, of nine patients known to have developed a significant rise in blood pressure none noted any increase in frequency or severity of attack; while some recorded cessation or improvement. In one patient attacks had ceased soon after starting a hypotensive regimen. However, no aggravation of attacks had occurred at a time when his hypertension was developing. The development of cervical spondylosis (the diagnosis being based on x-ray evidence) also seemed unrelated to any consistent aggravation of migraine, five of eight such cases reporting improvement in their condition. Neither of these two observations is of statistical value, but they suggest that a putative association between deterioration of migraine and the development of hypertension or cervical spondylosis needs further study, and that the evidence for a causal relation in the individual case should be scrutinized with care. Prospective studies are here likely to give more accurate information.

Summary

Ninety-two patients with migraine were reassessed at 15 to 20 years after their first attendance. Follow-up showed that they had first had migraine from 16 to 69 years previously.

In 27 patients attacks had ceased. Of 63 with continuing attacks significant improvement had occurred in 44. Neither age of patient nor age at onset of attacks, nor time since onset, was clearly associated with persistence of attacks.

No consistent change in attacks occurred after the menopause in women. In the few patients observed no consistent change was noted with the development either of raised blood pressure or of cervical spondylosis.

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