Anxiety and depression in migraine

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Summary

The present study examined the prevalence and severity of anxiety and depression among people with migraine. To obtain a spectrum of migraine experience two potentially different samples were identified: over 600 patients attending migraine clinics and 87 migraine sufferers in the general population. International Headache Society criteria were used to establish the diagnosis of migraine. Anxiety and depression were measured using the Hospital Anxiety and Depression scale and studies using this scale in other patient groups were identified for comparison. Approximately 50% of subjects experienced anxiety and 20% experienced depression, rates which were consistent across the two study groups. This prevalence of psychological morbidity is unexpectedly high and comparable to that measured in patients with other diseases. There is no evidence that it is correlated with frequency of migraine attacks. Anxiety and depression are common among people with migraine and remain largely unrecognized. Future studies should identify contributory factors.

Introduction

Several studies[1-4] have shown that migraine is often associated with anxiety and depression, with reported frequencies of 20-40% for anxiety and 10-15% for depression[3,4]. Migraine is common, with an estimated prevalence of 6-28% in women and 2-19% in men[5,6], and therefore this would suggest a significant level of morbidity. However, the conclusions that can be drawn from previous studies are limited by variability in the definition of migraine and the assessment of morbidity. Different criteria to diagnose migraine were used, none of which conform to the current diagnostic criteria for migraine of the International Headache Society (IHS)[7]. The actual prevalence of anxiety and depression in people with migraine therefore remains uncertain.

The aims of the present study were to identify the prevalence of psychological morbidity in two potentially different populations of people with migraine meeting IHS criteria, and to compare, on a common basis, the prevalence of anxiety and depression in this group with that reported in other groups of patients.

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Methods

Assessment of anxiety and depression

The Hospital Anxiety and Depression (HAD) scale[8] was used to measure anxiety and depression in migraine sufferers. This questionnaire was developed specifically for use in physically ill populations and has been well validated against clinical interview and other health assessment questionnaires[9-13]. It has a sensitivity (proportion of correctly identified cases) of 72-90% and a specificity (proportion of correctly identified non-cases) of 68-94%[10-13].

Patients attending migraine clinics

Patients attending migraine clinics aged between 18 and 65 who had been experiencing severe or moderately severe migraine attacks, either with aura (classical migraine) or without aura (common migraine) defined according to IHS criteria, for at least 1 year, completed the HAD scale. Patients with a history of ergotamine abuse (consuming more than 6 mg ergotamine weekly) or concurrent illness were excluded.

Migraine sufferers in the general population

In 1988, a British Market Research Bureau (BMRB) survey identified 220 people, by means of nationwide random location sampling using face-to-face interviews, who reported having migraine and who were prepared to participate in future surveys. This population was expanded to 354 by a further survey in 1990. To preserve confidentiality the HAD scale was distributed by BMRB. Those who did not return the questionnaire received two reminder letters at fortnightly intervals. The diagnosis of migraine without aura was confirmed against IHS criteria using an accompanying questionnaire on lifetime experience of migraine.

HAD scale in other patient groups

Reports of HAD scale assessments in other study groups were identified by a Medline search.

Results

Seven hundred and forty-four people with common (60%) or classical migraine (16%), or both (24%), which met IHS criteria were recruited from 50 migraine clinics; 651 subjects (87.5%) completed the HAD anxiety scale and 648 (87.1%) completed the depression scale fully.

In the general population survey, 181 of the 354 subjects (51%) returned the questionnaire, a good response rate considering the delay between the initial contact by BMRB and receipt of the questionnaire. This was part of a larger quality of life survey of which 112 (62%) subjects met all the study criteria and so only these were considered for analysis. Eighty-seven subjects (80% of the 109 for whom there were complete

Table 1. Demographic and clinical data

	Migraine clinic patients (N=651)	*General population (N=87)*
Sex *N* (%)		
Male	138 (21%)	16 (19%)
Female	513 (79%)	70 (81%)
Not recorded		1
Mean age (SD)	39 (11)	44 (12.7)
Frequency of attacks* *N* (%)		
<1 per month	21 (3%)	18 (21%)
1-3 per month	472 (64%)	53 (62%)
⩾4 per month	243 (33%)	14 (17%)
Not recorded	8	2

*Migraine clinic data are the average over the previous 12 months for the 744 patients recruited, including those who subsequently were excluded from Hospital Anxiety and Depression scale analyses due to incorrectly completed forms. Data for the general population are the number of attacks in the previous month

data) met the IHS criteria. Twenty-two subjects (20%) were suffering from migraine other than IHS-defined common migraine.

Demographic and clinical characteristics (Table 1)

The two samples were comparable in age and sex distribution, comprising one-fifth men and ranging in age from late teens to 71 years. There was a significant difference in the frequency of attacks (χ^2=60.558, P=0.000, df=2). Frequent migraine (four or more attacks per month) was reported less often by people in the general population, and fewer of the patients attending migraine clinics experienced less than one attack per month.

Prevalence of anxiety and depression

The frequency distributions of scores on the HAD scale are presented in Figures 1 and 2. The prevalence

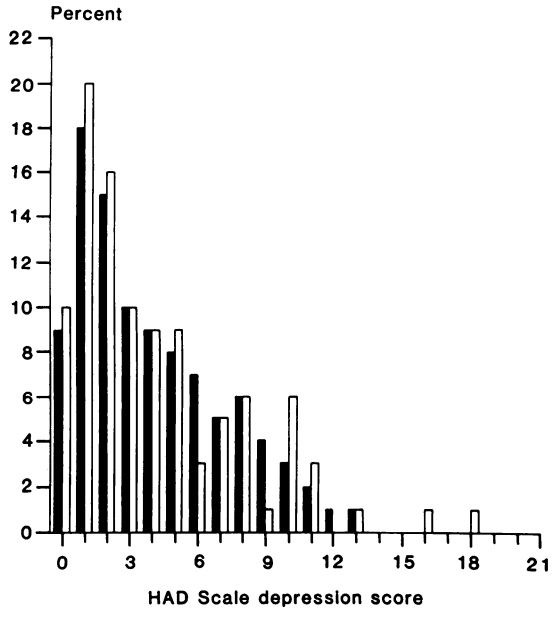

Figure 1. Distribution of depression scores. HAD=Hospital Anxiety and Depression; ■ =migraine clinic patients; □ =general population

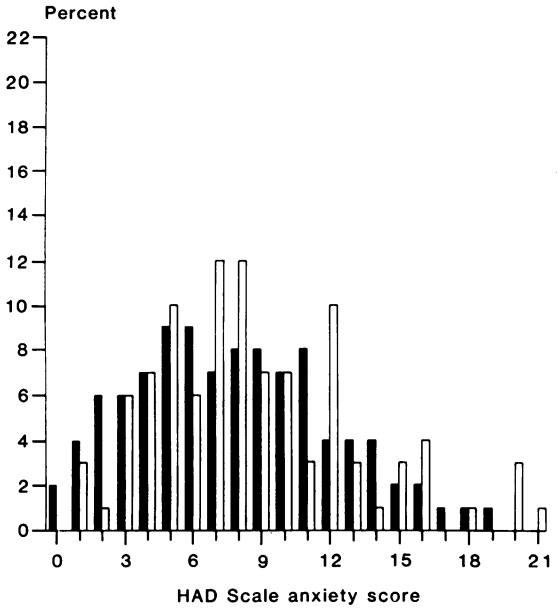

Figure 2. Distribution of anxiety scores. HAD=Hospital Anxiety and Depression; ■ =migraine clinic patients; □ =general population

of anxiety and depression, according to the cut-off scores originally proposed to indicate possible and probable cases[8], are listed in Table 2. The scores reveal a surprisingly high level of psychological morbidity among people with migraine. Approximately 50% had a possible or probable anxiety disorder. Depression was less common, though the proportion affected was still large: 6% recorded scores indicating probable 'cases' and a further 14% recorded possible or borderline depression scores. There were no differences between the two groups in their levels of anxiety (Mann-Whitney P=0.252) or depression (Mann-Whitney P=0.660). It would appear that there is no obvious link between frequency of attacks and HAD score.

The HAD score correlates with the severity of affective disorder. Three per cent of the migraine clinic patients and 5% of the general population sample recorded HAD anxiety scores of 17 or over, compared with 24% of both samples scoring between 11 and 16. By contrast, only 1% of both groups recorded similarly high scores on the depression scale. This suggests that a small number of people with migraine may have severe anxiety but that severe depression may be rare.

There was some concern that willingness to respond to the questionnaire in the general population sample might be related to psychiatric morbidity. HAD scale scores of subjects who responded only after receiving a second reminder were compared with those who replied more promptly. The anxiety scores for late responders (median score=9, range 5-10) were no different from those of the early responders (median score=8, range 1-21, Mann-Whitney P=0.588). Late responders had slightly higher depression scores (median score=5, range 3-11) compared with early responders (median score=3, range 0-18) but this was not statistically significant (Mann-Whitney P=0.063).

HAD scores in other groups

Overall, most studies using the HAD scale in surgical and medical patients have demonstrated a prevalence of anxiety of 30-50% and a prevalence of depression

Table 2. Prevalence of depression and anxiety

	N	Median score (range)	HAD Scale score N (%) 0-7 (Normal)	8-10 (Possible case)	11-21 (Probable case)	Unknown
Depression						
MCP	648	3 (0-18)	523 (81)	89 (14)	36 (6)	
General population	87	3 (0-18)	65 (80)	11 (14)	5 (6)	6
Anxiety						
MCP	651	8 (0-20)	324 (50)	145 (22)	182 (28)	
General population	87	8 (1-21)	37 (46)	22 (27)	22 (27)	6

HAD=Hospital Anxiety and Depression; MCP=migraine clinic patients

of 10-30%; higher and lower levels are occasionally reported (see Table 3).

Compared with those publications reporting possible (score 8-10) and probable (score 11 or more) affective disorder separately (see Table 3), probable cases of anxiety are at least as common among people with migraine as in those with cancer of the breast, women undergoing termination of pregnancy and outpatients with mild dementia. By contrast, probable cases of depression appear to be less common among people with migraine though possible or borderline depression is equally frequent.

It is not possible to compare the distribution of the severity of anxiety or depression because other reports do not provide the frequency distribution of scores on the HAD scale.

Discussion

This study provides evidence that anxiety and depression are as common among people with migraine as in other patients with severe chronic disease. It should perhaps be no surprise that psychological morbidity is so common when people are frequently subjected to moderate or severe pain and impairment. None the less, since as many as 19% to 28% of the population suffer from migraine, it is worrying that morbidity on such a scale may be unrecognized.

Estimates of the prevalence of migraine within the population have varied widely. This can be attributed partly to different definitions of the condition, but, as a consequence, true characteristics of the migraine population from which to draw a representative sample are not accurately known. As an alternative, this study selected two groups, using a common set of diagnostic criteria, with the aim of encompassing a broad range of migraine experience. In view of the evidence that almost half of those suffering from migraine have never consulted a doctor[23,24] one of the samples was drawn from the general population.

The response rate from the BMRB survey was approximately 50%. A time lag of 2 years between identification of the sample and distribution of the questionnaires was a problem as many subjects may have moved. Epidemiologists have claimed that study participants and non-participants do not differ on a number of parameters, including self-evaluation of health[25], and that late responders may be similar to

Table 3. Prevalence of anxiety and depression measured by the HAD Scale in patients with other diseases

Population	Score	Anxiety (%)	Depression (%)
Outpatients attending a migraine clinic: volunteers for clinical trial[3]	≥11	20	8
Outpatients attending a migraine clinic: non-volunteers[3]	≥11	38	10
General practice patients[21]	8-10	21	11
	≥11	25	10
General medical outpatients[8]	8-10	20	18
	≥11	34	13
Women with advanced breast cancer[18]	8-10	18	2
	≥11	17	18
Outpatients with early mild dementia[19]	8-10	22	14
	≥11	16	14
Referrals to psychiatric clinic: patients with coeliac disease; mothers attending a postnatal clinic[9]	8-10	18	14
	≥11	34	30
Women undergoing termination of pregnancy[16]	8-10	32	Not assessed
	≥11	19	
Rheumatology clinic patients[14]	≥9	21	19
Patients with breast cancer given no choice of surgical technique[15]			
(pre-op)	≥11	70	20
(post-op)		37	—
Choice of surgery			
(pre-op)	≥11	28	1
(post-op)		2	—
Women with benign breast disease[15]	≥11	24	10
General surgical inpatients[15]	≥11	34	1
Outpatients with newly-diagnosed inflammatory bowel disease[17]	>8	50	18
Outpatients with chronic inflammatory bowel disease[17]	>8	27	7
Outpatients with diabetes mellitus[17]	>8	43	12
Outpatients with Crohn's disease	>8	47	Anxiety and/or
Outpatients with ulcerative colitis[20]	>8	37	depression
Coronary artery bypass graft patients 1 month post-operatively[22]	≥8	38	18

non-participants. Data from this sample indicate no significant differences in psychological morbidity between early and late responders.

The groups in the present study are similar in age distribution to those reported elsewhere[5], though proportionately slightly more women than men were included in the present samples. There is little information available elsewhere on attack frequency, although one recent general population survey reported that approximately half of migraine sufferers have one or more attacks per month[6]. Most subjects here reported an attack frequency of 1-3 per month. It would appear, therefore, that the present samples are not grossly atypical of migraine sufferers generally.

Using a validated instrument such as the HAD scale, levels of anxiety and depression can be compared directly with other groups of patients. Comparative prevalence rates within the community using the HAD scale are rare, primarily because this instrument was not designed for such use (Snaith 1993, personal communication). However, one study including a sample of elderly volunteers reported 3% with depression scores of eight or more and 9% with anxiety scores at this level[19]. Only one published study[3] has used the HAD scale in migraine sufferers. The prevalence of anxiety and depression were 20% and 8%, respectively, in 40 patients attending a migraine clinic who agreed to participate in a clinical trial. A group of 135 patients who refused to participate in this trial, but who completed the HAD scale, recorded anxiety in 38% and depression in 10%. Although these data reveal the existence of morbidity, the two populations are likely to be different and therefore it is difficult to determine the true rate.

The threshold HAD scores which indicate the presence of affective disorder have been validated against standard psychiatric criteria[7], yet researchers have adjusted them to reduce the misclassification rate, either increasing the sensitivity or the specificity, in accordance with the demands of their particular study (Table 3). Such changes restrict the comparability of the resultant prevalence rates of anxiety and depression between patient groups. Presenting the complete frequency distribution of HAD scores for people with migraine provides a basis for future comparisons using alternative threshold scores.

A large number of people with migraine suffer psychological morbidity. Even though anxiety and depression are as common as in many other medical and surgical patients (groups in whom such problems are acknowledged) the problem is largely unrecognized. This study suggests that frequency of attacks is not related to anxiety or depression, a finding supported by Brandt and co-workers[2]. Results also show comparable levels of psychological morbidity among sufferers in the general population and those who attend specialist clinics. Further investigations to confirm or refute these rather counter-intuitive findings are recommended.

Exploring whether factors such as treatment efficacy, pain severity, nature of care, and degree of impairment in functioning are determinants of anxiety and depression in migraine are important areas for future research. In the meantime, attention should be directed at identifying those who experience anxiety and depression and alleviating their symptoms.

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