Fibromyalgia is common in patients with transformed migraine

Article abstract—Fibromyalgia (FM) and transformed migraine (TM) are common chronic pain disorders. The authors estimated the prevalence of FM in 101 patients with TM, and analyzed its relationship to depression, anxiety, and insomnia. FM was diagnosed in 35.6% of cases. Patients with FM had more insomnia, were older, and had headaches that were more incapacitating than patients without FM. Insomnia and depression predicted FM in patients with TM.

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Transformed migraine (TM) is the most common subtype of chronic daily headache seen by clinicians, with a population prevalence of 2.4%.[1] Psychiatric comorbidity, particularly depression (80%) and generalized anxiety disorder (70%), is commonly associated with TM.[2] The prevalence of fibromyalgia (FM) in a TM population is not known. Depression, anxiety, and insomnia have never been studied in this subgroup of patients. We studied FM in a TM population, described their clinical features, and analyzed its relationship to depression, anxiety, and insomnia.

Patients and methods. We enrolled 101 consecutive patients with TM seen at the Department of Neurology, Headache Clinic, Federal University of São Paulo, between February and November 1999. All had normal neuroimaging and clinical examinations. TM was diagnosed according to the 1996 Silberstein and Lipton criteria.[3] FM was diagnosed according to the American College of Rheumatology diagnostic criteria (1990).[4]

We analyzed age, sex, previous migraine history, number of years with daily headaches, pain intensity, acute medication overuse, insomnia, and disability in patients with and without FM. Pain intensity was evaluated on a scale of 0 to 10. Beck Depression Inventory (BDI)[5] and the State-Trait Anxiety Inventory (STAI)[6] scores were obtained from 65 patients. Their scores were compared to those of patients with and without FM, insomnia, self-reported disability, age, sex, pain intensity, and acute medication overuse.

Patients were considered depressed if they had a BDI score greater than 16. A score of 46 was considered as the cut-off for the presence of anxiety in the STAI scale.

We proposed criteria for the diagnosis of insomnia (see the Appendix), since there is no appropriate diagnostic criteria for the insomnia related to TM in the International Headache Society, International Classification for Sleep Disorders, International Classification of Diseases, or Diagnostic and Statistical Manual of Mental Disorders.

The χ^2 test, one-way analysis of variance, Pearson correlation test, Mann–Whitney rank sum test, and logistic regression were used for the statistical analysis. Results were considered significant at $p < 0.05$.

Results. FM was diagnosed in 36 of 101 patients (35.6%). Their ages ranged from 24 to 72 years (mean of 37.3 ± 12.0 years), compared to patients without FM whose ages varied from 15 to 66 years (mean of 34.8 ± 13.0), $p = 0.009$. Both groups had a female preponderance. The two groups were similar in history of episodic migraine, daily headaches, pain intensity, and analgesic overuse. Headaches were more often rated as incapacitating in patients with FM (88.9%) than in patients without FM (66.1%), $p = 0.0235$. Patients with FM had more insomnia (75%) than those without FM (24.6%), $p < 0.0001$ (table).

The mean BDI-II score was 21.1. Fifty-seven patients (87.7%) had at least mild depression. Forty-four patients (67.7%) had the State score over 46, and 51 patients (78.5%) had Trait score over 46. The figure shows the distribution of patients with TM according to the presence of FM, insomnia, and mild to severe depression.

The BDI-II scores were correlated to the pain intensity ($p = 0.002$) and STAI scores ($p < 0.001$). Depression, as measured by the BDI-II scores, was also associated with FM ($p = 0.007$), insomnia ($p = 0.043$), and disability ($p = 0.05$).

In a multivariate logistic regression model, predictors of FM in patients with TM included insomnia (odds ratio [OR] 10.05, 95% CI, 9.03 to 13.55) and depression (OR 6.8, 95% CI, 4.91 to 8.68).

Discussion. We found a high prevalence of FM in TM, suggesting that they could be comorbid disorders. The association between FM, TM, depression, and insomnia may be an artifact, but it could be a different subgroup of patients. A population-based study is needed to address this issue. Patients attending a headache clinic who complain of widespread pain may have this attributed to their headache disorder and not get an independent diagnosis.

Therapeutic opportunities may exist, but there are also certain treatment limitations. Lack of response to treatment in TM could be explained by the failure to diagnose comorbid disorders. Treatment options for FM, such as exercise and the use of melatonin,[7] should be considered in this subset of patients.

Important and sustained clinical improvement in FM occurs only in a minority of patients.[8] This could be explained by daily analgesics that are used by

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Table *Results*

Patients	n	Sex, F:M	Age, y, mean ± SD	Time from onset of migraine, y, mean ± SD	Time from onset of chronic daily headache, y, mean ± SD	Disability, %*	Pain intensity, 0–10, mean ± SD	Analgesic overuse, %	Insomnia, %*
Fibromyalgia	36	8:1	37.3 ± 12.0	13.5 ± 10.8	2.9 ± 5.5	88	8.0 ± 1.5	69.5	75
Without fibromyalgia	65	4.9:1	34.8 ± 13.0	10.5 ± 10.6	2.0 ± 4.5	66	7.5 ± 1.8	70.8	24.6
p Value			0.009	0.079	0.119	0.023	0.26	0.93	<0.0001

Patients with fibromyalgia (FM) had more insomnia, were older, and their headaches were more incapacitating than patients without FM.

patients with FM, which might also lead to rebound headache. Our clinical impression is that withdrawing analgesics might also be helpful in controlling widespread pain found in our patients with FM, but a controlled trial should be conducted to clarify this issue.

TM and FM are similar disorders in that both have female preponderance and both have bidirectional comorbidity with affective disorders. Psychosocial distress and psychological abnormality occurs frequently in both patients with FM and patients with TM. Increased rates of depression, anxiety, somatization, and links to physical and sexual abuse have been noted in FM.[9] FM, depression, and anxiety were also significantly associated.[10] FM and TM also both respond to antidepressants. FM and TM may share common pathophysiology, with serotonin abnormalities involved in both conditions.[8]

In our study, patients with FM were older than those without FM. The increasing prevalence of FM with aging, at a point when the migraine prevalence curve flattens and then declines, could explain this finding. Headaches were more incapacitating in patients with FM and depression. This suggests that the co-occurrence of these disorders is an aggravating factor in patients with chronic daily headache.

The BDI scores were correlated to the STAI scores, and 75.4% of patients had both depression and anxiety. These results suggest that instead of diagnosing and treating depression and anxiety as separate entities, mixed anxiety and depression as a unique syndrome should be considered in the management of TM. In our study, depression was also associated with FM in TM. This association is important to be detected in TM, since prognosis and treatment can be changed.

Patients with FM had more insomnia than those without FM. Sleep deprivation may cause fatigue and widespread pain, but it is unclear whether insomnia is the cause or consequence of headache, FM, depression, or anxiety in chronic daily headache. The relationship between insomnia, FM, and chronic daily headache needs to be clarified. The BDI-II scores were significantly associated to FM and insomnia; therefore, TM associated with depression, FM, and insomnia might be a different subgroup (see the figure).

Future clinical trials of patients with TM may evaluate the effect of FM on outcome and consider the treatment effect on FM as another efficacy endpoint.

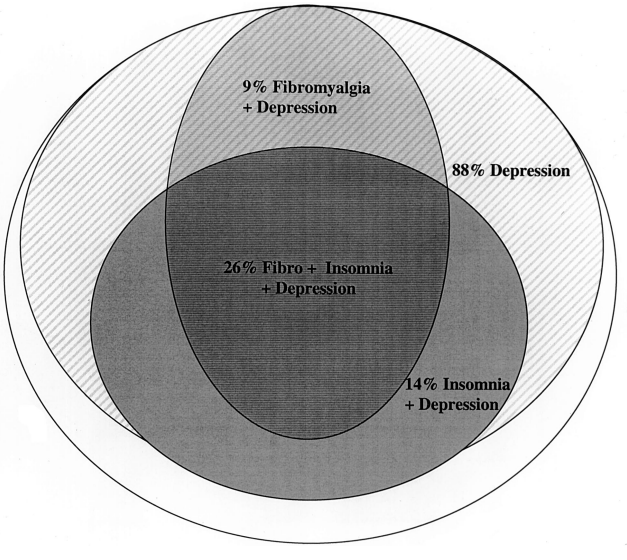

Figure. The Venn diagram shows the comorbidity of fibromyalgia, insomnia, and mild to severe depression in patients with transformed migraine. All the patients with fibromyalgia and the majority of patients with insomnia had mild to severe depression. Note that 26% of patients had depression, fibromyalgia, and insomnia (center).

Appendix

Diagnostic criteria for insomnia in patients with transformed migraine:

- Difficulty of sleep onset or maintenance
- Insomnia for at least three times/week for at least 1 month
- Insomnia interfering with daily personal functioning
- Patient fulfills proposed diagnostic criteria[4] for transformed migraine

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High-grade carotid stenosis detected before general surgery: Is endarterectomy indicated?

Article abstract—The risk of stroke in unselected patients and patients with a carotid bruit undergoing general anesthesia and surgery is very low. The incremental risk related to known carotid stenosis is uncertain. The authors studied 284 patients with ultrasound studies before general surgery, 224 of whom demonstrated carotid stenosis. Carotid stenosis was related to a perioperative risk of stroke of approximately 3.6%. Greater degrees of stenosis did not confer significantly higher risk. Although higher than in the unselected population, this risk does not appear sufficient to mandate prophylactic endarterectomy.

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The incidence of perioperative stroke in patients undergoing general (nonvascular) surgery performed under general anesthesia is less than 0.5%.[1-3] The risk may be 1% in asymptomatic patients with a carotid bruit.[4] Prior cerebrovascular disease, chronic obstructive pulmonary disease, and peripheral vascular disease increase the odds of a postoperative stroke even more. But in this population of patients, undergoing a comparatively risk-free surgical procedure, no studies exist that specifically address the possible contribution of a high degree of carotid stenosis. Conceivably, a perioperative coagulopathy or intraoperative hypotension could occlude the carotid artery or reduce flow in a distal watershed area. The objective of this study was to establish the risk of perioperative stroke for patients with known carotid stenosis undergoing general surgery. These estimates may be useful to guide decisions regarding possible prophylactic carotid endarterectomy in such patients.

Methods. The Institutional Review Board of the Mayo Clinic approved the study. Through the use of an Ultrasound Database and the Mayo Clinic Medical Record Index system, all patients with a carotid ultrasound study within 1 year of a surgery requiring general anesthesia between 1988 and 1998 were retrospectively identified. Patients undergoing cardiac, aortic, carotid, or other cervical vascular surgery as the index surgical procedure were excluded. Not included were patients who had carotid endarterectomy after the index ultrasound study but before a general surgical procedure, without an intervening ultrasound study. Patients whose qualifying carotid ultrasound study was performed after the index general surgical procedure were also excluded. The ultrasound results as reported by the contemporaneous ultrasonographer, risk factors for vascular disease, the occurrence of perioperative stroke (within 30 days), the location and characteristics of the stroke, and history of stroke or TIA were assessed by individual chart review.

Results. The study included 284 patients who underwent general surgery following preoperative ultrasound studies without intervening carotid endarterectomy. Of the 284 patients, 250 had carotid bruits, a previous history of TIA or stroke, or both. Ten patients (2.8%) had perioperative ischemic strokes within 30 days of the index surgical procedure. Eight of the 224 (3.6%) with a carotid lesion greater than 50% had a perioperative stroke. Previous history of TIA/stroke (perioperative stroke in 4/102 = 3.9%, Fisher's exact test, p = 0.75) or TIA/stroke within 3 months (perioperative stroke in 0/15 = 0%, Fisher's exact test, $p = 1.0$) did not significantly increase stroke rates. Similarly, a history of chronic obstructive pulmonary disease (1/49 = 2.0%), peripheral vascular disease (3/121 = 2.5%), coronary artery disease (4/158 = 2.5%), or diabetes (2/84 = 3.9%) did not increase the risk compared with the entire group.

The table presents the patient and stroke numbers and stroke laterality subdivided by the severity of the most severe cervical carotid lesion in each patient as determined by the preoperative ultrasound study. As the standard ranges of stenosis used in ultrasound reports changed during the period 1988–1998, the ranges 50 to 80% and 50 to 70% were grouped together for analysis, as were the complementary ranges 80 to 99% and 70 to 99%. Increasingly

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