



The Keys To Figuring Out Fibromyalgia

Fibromyalgia is a common syndrome characterized by diffuse widespread pain and tender points, with associated sleep disturbance and fatigue. Understanding the complexity of chronic pain and treating any underlying treatable conditions or associated factors may be helpful.

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Fibromyalgia (FM) is a common syndrome, characterized by diffuse widespread pain, tender points and associated complaints of disturbed sleep and fatigue. By definition, it is not a disease. It is a syndrome, which describes individuals with a collection of symptoms, and, in the case of FM, validated by specific tender points.¹

The etiology of FM is unknown, and many

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theories are advanced in the literature, however, none have been proven conclusively.² Understanding the complexity and treatment of chronic pain may help in the management of this condition, as well as other related syndromes, such as chronic fatigue syndrome (CFS).

As in other chronic pain disorders that are multi-factorial in etiology, FM treatment based on an acute pain medical model may not be particularly helpful, with a lack of improvement that may prove frustrating for the patient and clinician. Understanding the complexity of

chronic pain, with an approach to maintaining and improving function despite symptoms, treating any underlying treatable conditions or associated factors may be helpful. Early diagnosis and management may be a key to improving and maintaining function, as well as to avoiding long-term disability.³ A brief overview of the diagnosis and management of FM is provided.

Epidemiology

Chronic widespread pain is common, affecting

between 10% and 12% of the general population, with women affected more than men.⁴ The prevalence of FM syndrome has been reported to affect 2% of the adult population. This figure increases with age, with the majority being women. The prevalence of FM reported includes 3.9% of women aged 20 to 40, 5.8% of women aged 40 to 60, with the prevalence in men at 0.5%.^{4,5}

FM also is common in clinical practice, representing 2.1% of family practice clinic patients, 5% of general medical practice patients and 15% to 20% of rheumatology clinic patients. This makes FM the second or third most common diagnosis seen by rheumatologists.⁶ It may co-exist with other conditions, such as osteoarthritis (OA), rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE). It also exists with other common syndromes, with FM patients having a higher lifetime risk of major depression, panic disorder, CFS, irritable bowel syndrome (IBS) and migraine.^{7,8,9}

Pathophysiology

Several hypotheses have been proposed in the literature to explain the pathophysiology and etiology of FM. To date, however, none have been conclusive and no causal links established.^{2,7} To begin, there is no clear evidence that patients with FM have any primary muscle disorder or abnormality.² Also, when compared to sedentary controls, no documented differences in muscle metabolism have been demonstrated, with control studies demonstrating FM patients to be aerobically unfit.²

No confirmed relationship has been established between trauma or infectious agents, with any proposed relationships based on self reports. No immune or serologic abnormalities have been confirmed. The diffuse nature of FM also mitigates against any single agent or mechanical factor

being solely responsible for the whole clinical picture.⁷ As no causal relationship has been established, it is recommended the terms “post-traumatic” or “secondary FM” not be used.⁵

An alpha electroencephalogram (EEG) stage 4 sleep anomaly,¹⁰ which sparked the resurgence and investigation of fibrositis (now FM [no inflammation documented]), is not specific to FM and is found in other disorders.² As well, this sleep anomaly has been demonstrated in 15% of healthy

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individuals with no particular complaints. Though similar symptoms and findings in keeping with FM were produced in healthy sedentary individuals through sleep arousal, this was not reproduced in aerobically fit individuals.¹⁰

Other physiologic changes demonstrated in FM patients include: a relative deficiency of serotonin, a neurotransmitter, known to regulate both pain perception and stage 4 sleep; and increased levels of substance P in cerebrospinal fluid, a substance that facilitates pain transmission.^{7,11} Serotonin reuptake inhibitors, however, have not been particularly helpful in the treatment of FM,^{12,13} with substance P levels not correlating with symptom severity.²

Other physiologic abnormalities reported include low overall production and changes in the diurnal variation of cortisol,¹⁴ as well as low levels of somatomedin C, a mediator of growth hor-

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Table 1

Common Symptoms

- Sleep disturbance 60% to 90%
- Fatigue 75% to 100%
- Stiffness 75% to 90%
- Subjective swelling 30% to 100%
- Tension headaches 40% to 75%
- Anxiety 40% to 70%
- Irritable bowel syndrome 35% to 50%
- Aggravated by cold, humidity, change in weather, physical activity

mone action.¹⁵ Other studies have noted responses to corticotrophin-releasing hormone and thyroid-stimulating hormone (TSH) are abnormal. Hypothyroidism, however, does not appear to be increased among FM patients.¹⁶ A provocation of symptoms with neurally mediated hypotension during tilt-table testing also has been reported.¹⁷

Various hypotheses have been proposed to explain these physiologic changes and their relationship with FM and the neuroendocrine axis. All hypotheses, however, continue to be speculative.²

A heightened pain response with lower pain thresholds has been demonstrated in diagnostic tender points and anatomic control sites in FM patients. It also has been demonstrated in non-patients (individuals who meet the criteria for FM, however, do not seek medical attention). A difference between the two groups is that patients with FM syndrome tend to meet diagnostic criteria for multiple lifetime psychiatric diagnoses (especially major depression), whereas non-patients do not differ from healthy controls in psychiatric morbidity.¹⁸

Studies of humans and animals have noted that females have lower pain thresholds and tolerance levels, as well as a higher sensitivity to various

noxious stimuli.¹⁸ A generalized hypervigilance to pain, as well as to other stimuli, also has been demonstrated in FM patients.¹⁴

Another proposed hypothesis is that FM is a variation of an affective disorder based on the frequent association with co-morbid disorders, such as major depression, migraine, IBS, panic disorder and CFS (Table 1). In this case, no causal link is proposed to exist between them; rather an underlying abnormality exists that is necessary for these disorders to occur. In other words, there is an underlying predisposition that, when combined with environmental factors, produces the particular disorder. It is important to note the majority of FM patients do not have an active psychiatric disorder, but a higher lifetime rate of the above co-morbid psychophysiological conditions and a higher than expected familial rate of major mood disorders.⁸ Patients with FM and IBS in specialty clinics are more likely to have a current or past history of psychiatric illness than patients in the community with similar symptoms.⁷

A higher prevalence of sexual and physical abuse, drug abuse and eating disorders prior to the onset of FM has been noted.² Psychologic stress has been found to influence the expression of pain and other core symptoms in FM, as well as mood disorders, chronic headaches, CFS and IBS.⁷ Psychologic stressors also appear to be very high prior to the development of FM in children and adolescents.²

Other findings have included brain imaging studies, which demonstrate substantially lower regional cerebral blood flow to the thalamus and caudate nucleus in women with FM compared to normal controls, which has been demonstrated in other chronic pain disorders.¹⁹ Both these structures are known to be involved in the integration of nociceptive stimuli and pain perception. When FM patients followed by a rheumatologist were compared to non-patients, no significant differ-

ence was noted in core symptoms, pain perception measures, CSF substance P, and blood flow imaging to the thalamus and caudate nucleus. A significantly greater number of current and past psychiatric illnesses, however, were noted in the FM syndrome patients. This suggests that current and past psychiatric illnesses are directly related to health-seeking behavior in FM patients.^{7,19}

Criteria for Diagnosis

The best way to differentiate patients with FM is by measuring widespread pain and high tender point counts. This is based on a large multi-center study, which resulted in the American College of Rheumatology 1990 criteria for the classification of FM. As the study noted no difference between primary and secondary FM (FM concomitant with another medial disorder), it was recommended any distinction between the two be abandoned.

The criteria includes a history of widespread pain for three months, with pain required in 11 of 18 tender point sites on digital palpation (sensitivity of 88.4% and specificity of 81.1%).¹ Many patients with fewer points also likely have FM.⁵

The pain is considered widespread when all of the following are present: pain on both sides of the body; pain above and below the waist; and axial skeletal pain (cervical or anterior chest or thoracic spine or low back). Regarding tender points, on digital palpation, pain must be present in at least 11 of the following 18 tender point sites: occiput, low cervical, trapezius, supraspinatus, second rib, lateral epicondyle, gluteal, greater trochanter and knee.

Digital palpation should be performed with an approximate force of four kilograms, which has been equated with when the nail begins to blanch. For a tender point to be considered positive, the subject must state that the palpation was painful. Tender is not considered painful.

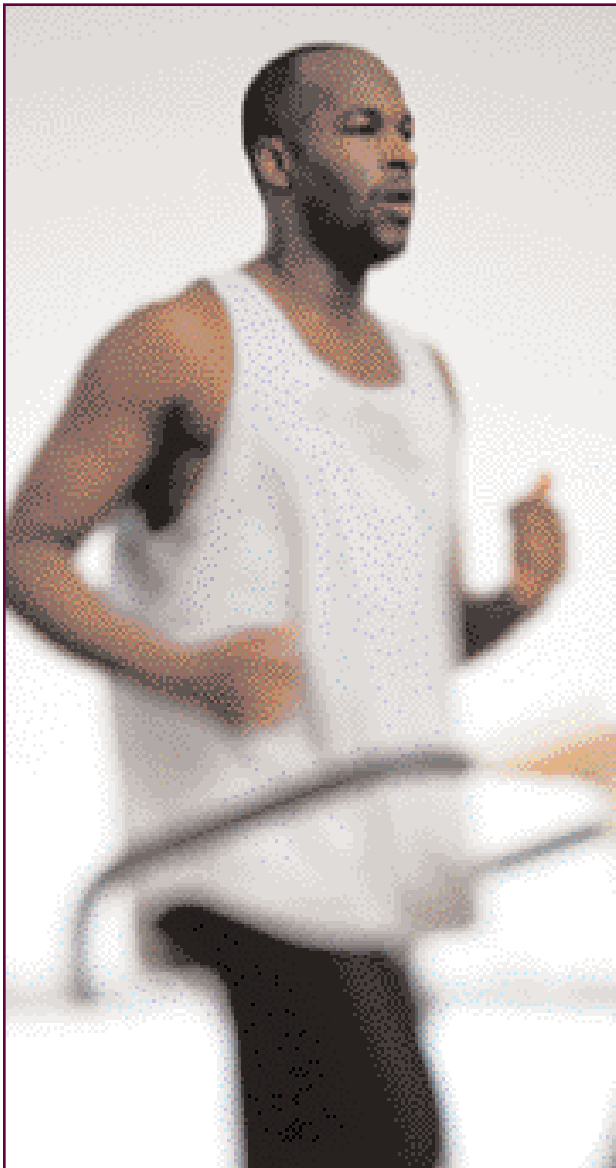
Differentiating tender points from trigger points may be useful, in that trigger points are usually associated with regional myofascial pain syndrome (MFS). Travell and Simons define a trigger point as a localized spot within a firm area of muscle (a taut band), which elicits a characteristic pattern of radiating pain, tingling or numbness in response to sustained pressure. In contrast, tender points, which can occur in muscle, ligament, tendon or periosteal tissue, remain localized rather than referred to adjacent areas upon sustained stimulation.²⁰

A careful history and physical examination are important to differentiate FM from RA, OA and other systemic illness. Usually, the exam will prove normal, except for multiple tender points.

Diagnosis and Management

A debate exists regarding whether labeling is helpful or negative, in that it may precipitate or perpetuate a sick role with associated negative consequences. Whether one believes the etiology is organic, psychological, or both, the symptoms are real and patients common. A logical approach may be helpful, based on the understanding that this syndrome is a multidimensional chronic pain disorder, which is benign, except for its psychosocial consequences. With this approach, treatment priorities both at the primary- and tertiary-care level include reassurance, limiting investigations, education, regular exercise, encouraging function

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At the primary care level, emphasis should be placed on the importance of regular exercise, as well as on dealing with any stressors or aggravating factors through appropriate intervention and supports.

with patients remaining active at home, in the community and at work, as well as, treating any underlying perpetuating factors or stressors with appropriate interventions or supports. Patients at tertiary-care levels may benefit from a interdisciplinary/multidisciplinary approach.

History and Physical

As in any other medical condition, a careful history and physical examination are important to differentiate FM from RA, OA and other systemic illness. Usually, the exam will prove normal, except for multiple tender points.

Investigations

Limited investigations are recommended, with complete blood count (CBC), erythrocyte sedimentation rate (ESR) and thyroid function tests proving helpful to exclude conditions, such as polymyalgia rheumatica or endocrine myopathies, which can present with widespread pain and stiffness.

As always, it is important to consider a differential diagnosis, as FM may occur in the setting of other rheumatic disorders (*i.e.*, SLE, RA, connective tissue disorder, myositis). A rheumatoid factor, anti-nuclear antibody (ANA), anti-ANA and creatine kinase (CK), may be helpful in this regard, with significant titers, an appropriate history and clinical findings prompting further evaluation.^{7,21}

Once the diagnosis is made, it is important to spend time educating and reassuring the patient. This takes time, however, it may put an end to constant doctor shopping. The overall goal of management should be to help regain the patient's independence and ability to lead an active lifestyle, despite symptoms.⁷

To date, FM treatment has largely been empirical, with no single therapeutic modality proving itself to be highly effective. A meta-analysis of 49

FM treatment outcome studies, comparing the efficacy of pharmacologic and non-pharmacologic treatments, found that optimal intervention should include non-pharmacologic treatments, specifically exercise and cognitive-behavioral therapy, and appropriate medication, as needed for sleep and pain symptoms.²²

Regarding exercise, high-intensity aerobic exercise has been demonstrated to be more effective than low-intensity exercise.²³ A graduated, moderately intense exercise program may be suited to the majority of FM patients who are deconditioned and aerobically unfit. Informing patients that some post-exertional pain and fatigue may arise is helpful in preventing the discontinuation of exercise and further inactivity. Programs consisting of postural exercises, passive stretching and low-load, low-repetition strengthening, in conjunction with low-impact aerobic exercises (*i.e.*, cycling, walking, swimming, aqua-fitness) practiced three times per week are recommended. Remember, improving a patient's compliance with regular exercise is important in maintaining a patient's long-term gains.²⁴

The use of a low-dose tricyclic antidepressant (TCA), such as amitriptyline, has been demonstrated to be effective in 30% to 40% of patients. A reduction in pain and improvements in sleep have been noted in randomized control studies. As FM patients are sometimes sensitive to medications, one may have to start as low as 5 mg at night (hs), and titrate every couple of weeks to the most effective dose with the least side effects. Some patients find doses as low as 5 mg helpful, with doses up to 50 mg shown to be effective. Amitriptyline is usually recommended to be taken two to three hours prior to bedtime to avoid a hangover effect the following day due to its long half life.

It is important to outline other side effects for the patient, including weight gain, dry mouth and constipation. Despite low doses, some patients are

still unable to tolerate side effects. At least a two-month course of treatment is recommended before accepting it as a valid trial.^{25,26} Other treatments include cyclobenzaprine hydrochloride, which is commonly used with support in randomized control studies.²⁵ Five milligrams to 10 mg hs one hour prior to bedtime can be used, taking advantage of the sedative effect. The dose can be increased every two weeks to a maximum daily

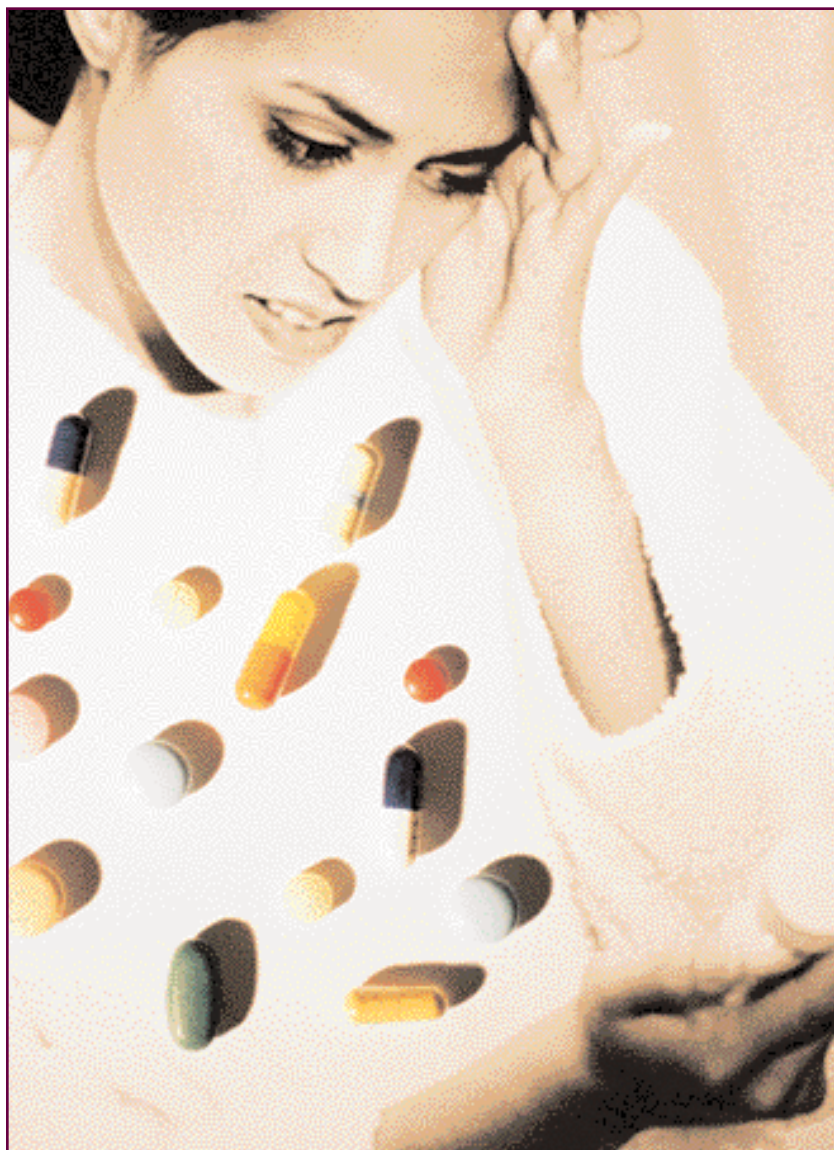
If time off from work is given, it should be short, with the duration established beforehand. The patient should avoid using this period for rest and more for learning to manage symptoms.

dose of 30 mg, taken twice or three times, with 10 mg in the morning and 20 mg at night. This dosing regimen takes advantage of its sedative effect at night.

Though short-term efficacy has been demonstrated in both amitriptyline and cyclobenzaprine, long-term efficacy has not, with a significant placebo response noted in controls.²⁵ Improving quality of sleep by practising good sleep habits (*i.e.*, regular bedtime, appropriate environment for sleep, avoiding shift work if possible, treating any underlying sleep disorders [*e.g.*, sleep apnea]), may be helpful.

Serotonin re-uptake inhibitors have not been demonstrated to be effective, except in one study in which their combined treatment with fluoxetine 20 mg in the morning and amitriptyline 25 mg hs was twice as effective as either alone.²⁷ A previous study found fluoxetine 20 mg in the morning ineffective, with citalopram, another serotonin re-

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uptake inhibitor, also ineffective.^{12,13}

Nonsteroidal anti-inflammatory drugs (NSAIDs), steroids and narcotics have not been demonstrated to be effective in managing FM. Alprazolam, a benzodiazepine, in combination with ibuprofen in one control trial was reported to be effective.²² Other therapies demonstrating improvement in controlled trials include: cognitive-behavioral therapy, electromyography

(EMG) biofeedback and hypnotherapy.^{22,25,28} A review of randomized controlled and cohort studies measuring the effectiveness of acupuncture in treatment of FM demonstrates a limited amount of high-quality evidence. This suggests real acupuncture is more effective than sham acupuncture for improving symptoms.²⁹ Growth hormone was demonstrated to be effective in one small, randomized study, involving a subset of patients with FM and low insulin-like growth factor I levels.³⁰

Education is an important component in any treatment plan and management.²² Self-help groups may be beneficial if they provide appropriate information, while encouraging mobilization rather than disablement.²⁶

A interdisciplinary/multidisciplinary team management program may prove to be the best approach, especially regarding patients referred at the tertiary-care level.²⁵ At the primary-care level, a more limited approach, involving the explanation of the diagnosis, reassurance and edu-

cation, may be effective. Emphasis should be placed on the importance of regular exercise, as well as on dealing with any stressors or aggravating factors through appropriate intervention and supports.³

Prognosis and Outcome

Based on most studies, FM symptoms remain sta-



ble over time. To some degree, however, this may be dependent on patient selection. One study of early intervention at the community practice level demonstrated a 24% remission rate at two years, with 47% no longer meeting the American College of Rheumatology (ACR) criteria for FM.³ In tertiary care patients, some improvement is common, but recovery is rare, with long-term follow-up studies demonstrating limited or no improvement.³¹ This has also been seen in the management of conditions, such as CFS, IBS and headaches.⁷ As most studies in FM involve selected bias from tertiary-care centers, poorer outcomes may be related to a higher psychological burden in this population,⁹ or reflect the beneficial effect of appropriate intervention at the communi-

ty practice level.³

Disability Issues

FM is a common cause of disability. A survey of 620 FM patients in the United States shows 15% of those surveyed are receiving disability payments.³² A multi-centered longitudinal survey in the United States of work and disability in FM patients found that 42% were employed, 6% unemployed, 28% homemakers, 4% disabled and 10% retired, with 27% receiving some form of disability payment. Sixty-four percent reported being able to work on all or most days.³³ In another long-term study of FM patients, 73% felt their symptoms interfered little, if at all, with their work.³¹

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In Canada, data from a private insurance company demonstrated that FM represented 9% of all disability payments. The overall cost to private insurers of long-term disability due to FM syndrome in Canada was estimated at \$200 million per year.³²

A consensus report done in 1994 on FM and disability noted most patients are capable of working, often with job modifications, with only a minority unable to work.¹⁶ A lead author of that consensus has since suggested that disability awards based on the diagnosis of FM be abolished, with FM remaining a clinical entity as it should be—a chronic pain syndrome. He further expressed the opinion that consideration be given to limiting the duration of payments for generalized chronic pain syndrome, with the goal: to help the claimant during a time of difficulty and to prepare the claimant to return to his/her original job, or to work that might be more physically suitable. As in other chronic pain disorders, disability awards rarely result in clinical improvement.⁵

It is, therefore, important early in the management of patients with FM to consider the ergonomics of the work environment—looking for any aggravating factors or stressors that can be modified or avoided, allowing individuals to continue working. Such efforts may be career saving and prevent the downward spiral of the psychosocial and economic woes of chronic pain syndrome and its associated disability.

Negative factors associated with stopping work include an increased awareness of pain produced by inactivity, feelings of isolation, loss of self-esteem, financial problems, lower salary, loss of job security, loss of any pension plan and family problems. Fears of returning to work are usually proportional to the patient's increasing time away from work, with the probability of returning to work decreasing over time.²⁶

Factors associated with self-reported work disability have included pain, sleep problems, fatigue, anxiety, depression, being unmarried, male gender or noting trauma as a cause.³⁴ Again, terms, such as “post-traumatic” and/or “secondary FM” should not be used, as a causal relationship between trauma and FM has not yet been established.⁵

If time off from work is given, it should be short, with the duration established beforehand. The reason for leaving (*i.e.*, respite period to learn how to manage symptoms), as well as the timetable for a return to work should be documented and respected, even if symptoms have not completely resolved. The patient should avoid using this period for rest and more for learning to manage symptoms.²⁶

To date, there are no valid instruments for measuring work disability in FM syndrome. In the absence of such instruments, a tailored work capacity assessment by a trained assessor may be helpful in determining if an individual is capable of returning to a specific work situation.³²

Summary

By definition, FM is a chronic pain disorder. Understanding the complexity of chronic pain may help in the treatment and management of FM, as well as related syndromes, such as CFS. Early appropriate intervention and management at the primary care and community practice level may be the key to improving outcome and function.

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