

Fibromyalgia

Fibromyalgia is a relatively common disorder characterized by widespread muscle pain, stiffness, and disturbed sleep. People with fibromyalgia may have pain that lasts for months, or even years. Some people with fibromyalgia will be in continual pain. The disease, however, is complex and poorly understood. In 1990, the American College of Rheumatology set up criteria for the classification of fibromyalgia. Researchers have not yet uncovered the cause of fibromyalgia, although they have presented a number of theories (Kasper DL et al 2005).

Fibromyalgia tends to occur in women much more often than in men. It is estimated that more than 80 percent of people with fibromyalgia are women between the ages of 30 and 60 years (Ataoglu S et al 2003). As many as 10 million people in the United States battle this chronic illness, and fully 5 percent of the world's population may contend with it (Goldenberg D 2002).

Patients with fibromyalgia often present with comorbid conditions such as:

- Chronic fatigue
- Sleep disorders
- Numbness and tingling in various parts of the body
- Some degree of sexual dysfunction

Studies in Australia and Canada have shown that 50 percent of patients with fibromyalgia who took no medication experienced a complete remission of all symptoms within 2 years. The other 50 percent had one or more symptoms of fibromyalgia for more than 2 years (Goldenberg D 2002).

THE CAUSES OF FIBROMYALGIA

Although we do not yet know what causes fibromyalgia, great strides have been made in recent years in uncovering the underlying pathology of the disease. In fact, in recent years, researchers have begun to rethink fibromyalgia. For many years, fibromyalgia was thought to be a muscle disorder, but new research is also implicating the central nervous system. According to the newest research, it is a disease characterized by central sensitization of the spinal cord and central nervous system (Bennett R 2005; Gerwin RD 2005). This sensitization may occur because of inflammatory cytokines that trigger inducible nitric oxide synthase (iNOS) in muscle tissue. The iNOS causes inappropriate stimulation of pain receptors and an increase in oxidants such as the peroxynitrite radical and other reactive oxygen species.

Numerous studies have examined the role of nitric oxide in fibromyalgia, with interesting results:

- A study found that women with fibromyalgia experienced a reduced flow of nutrients to muscles after exercise. Researchers speculated that this might be related to elevated levels of iNOS, which stimulates increased levels of nitric oxide (McIver KL et al 2006).
- A paper examining the recent theories on the cause of fibromyalgia hypothesized that oxidative stress may play an important part in the disease. The paper called for double-blind studies to be done on antioxidants in the treatment of the disease (Ozgoemen S et al 2005a).
- A review of dozens of separate studies found that the central sensitization associated with fibromyalgia may be caused by stimulation of pain receptors in the muscles that causes changes in the spinal cord and central nervous system. These changes are strongly dependent on nitric oxide (Mense S 1999).
- A hypothesis presented in one journal proposed that abnormally elevated levels of nitric oxide within the central nervous system generate high levels of peroxynitrite, an oxidant product of nitric oxide. This causes oxidative damage in tissues affected by the disorder (Pall ML 2005c).

While there is still much to learn, these new findings suggest several targets for fibromyalgia therapy, including antioxidants to limit oxidative damage and nutrients that inhibit pain receptors and transmitters in the muscles. One important pain transmitter is substance P, which is elevated in the cerebrospinal fluid of people with fibromyalgia (Stratz T et al 2004).

Of course, this is not the only avenue of research. Fibromyalgia is a complex disease that is influenced by multiple factors, including hormonal and psychological issues. For instance, the increased prevalence of fibromyalgia in women suggests a hormonal influence. This association is strengthened by observations that women who have fibromyalgia are much more likely to have late onset of menstruation and lower fertility rates than women without fibromyalgia (Schochat T et al 2003). Many of the most common

fibromyalgia symptoms—widespread muscle pain, fatigue, poor sleep, gastrointestinal problems, and depression—also occur regularly in people who have demonstrated hormonal deficiencies (Adler GK et al 2002).

Alternatively, many patients with fibromyalgia report that their symptoms began after they had experienced trauma—particularly injuries to the head and neck. Fibromyalgia also seems to be aggravated by infection; it is known that chronic viral infection can trigger symptoms (Adak B et al 2005; Goldenberg D 2002).

SYMPTOMS AND DIAGNOSIS OF FIBROMYALGIA

All people with fibromyalgia have widespread, significant pain. Other symptoms include, in descending order from most common to least common (Wallace D et al 2002):

- Unrefreshing sleep
- Stiffness
- Tension headache
- Painful menstrual periods
- Irritable bowel, with recurring diarrhea and constipation
- Vaginal pain and dryness
- Difficulty with concentration and related cognitive functions
- Depression and mood disorders
- Restless leg syndrome
- Irritable bladder and urinary complaints

Fibromyalgia has also been associated with depression of the hypothalamic-pituitary-adrenal (HPA) axis. Researchers believe this may be caused by the chronic pain and sleeplessness associated with the disease, which tends to depress HPA activity—including growth hormone, androgens, and cortisol levels (Calis M et al 2004; Geenen R et al 2002; Okifuji A et al 2002). Dehydroepiandrosterone (DHEA) levels are also diminished in women who have fibromyalgia (Dessein PH et al 1999).

Diagnosis of fibromyalgia is complicated by the fact that there is no single test that detects it. Instead, it is diagnosed by a history of widespread pain and tenderness in at least 11 of the 18 pressure points identified by the American College of Rheumatology. These pressure points are located in the neck, shoulders, back, arms, and legs. Before a diagnosis of fibromyalgia is confirmed, physicians usually need to exclude a wide variety of other conditions, including cancer, leukemia, hypothyroidism, anemia, and multiple sclerosis.

Fibromyalgia and Chronic Fatigue Syndrome

Fibromyalgia is closely linked to, and sometimes mistaken for, chronic fatigue syndrome. Some researchers now believe that the diseases are related by some underlying mechanism, even though they have some important distinctions (Pall ML 2005b). Both diseases affect women far more often than men; both most commonly involve chronic, debilitating fatigue, muscle pain, poor sleep, and difficulty with clear thinking; both tend to last for many months and even years; and neither can be cured (although they often resolve spontaneously).

However, people with chronic fatigue syndrome often have a sore throat that can last for many months but that does not develop into an upper respiratory illness. Most patients with chronic fatigue syndrome also have swollen glands and run low-grade fevers, symptoms that are not normally found in patients with fibromyalgia. Patients with chronic fatigue syndrome also tend to have elevated blood antibodies and tender lymph nodes, both of which are indicative of infection (Wallace D et al 2002).

Patients with fibromyalgia tend to find that mild exercise improves their overall sense of well-being, while patients with chronic fatigue syndrome normally find even the gentlest exercise debilitating. Patients with fibromyalgia also report that both heat and massage often reduce muscle pain, and that standing or sitting too long in a single position makes their pain significantly worse (Aaron LA et al 2000). These symptoms are not typical of patients with chronic fatigue syndrome.

CONVENTIONAL TREATMENT

There are no medications available that successfully treat all symptoms of fibromyalgia. Instead, conventional treatment involves treating individual symptoms, most often analgesics to kill pain, antidepressants to elevate mood and alleviate pain (often working synergistically with the analgesics), and sleep agents to promote restful sleep. In many cases, just getting a diagnosis of fibromyalgia is helpful to the patient to confirm that the disease is not all in his or her head. Unfortunately, the drugs prescribed to treat symptoms of fibromyalgia all have adverse effects, especially because the condition often requires long-term treatment. Drugs used to treat symptoms of fibromyalgia include:

Nonsteroidal anti-inflammatory drugs (NSAIDs). Many physicians begin treatment of fibromyalgia with NSAIDs such as ibuprofen or naproxen, which successfully dampen muscular pain (but seldom eliminate it). Other physicians report success in prescribing NSAIDs in the category of COX-2 inhibitors such as celecoxib (Celebrex®), which was developed to have fewer adverse effects than ibuprofen and naproxen. All NSAIDs, including COX-2 inhibitors, work by blocking enzymes that produce chemicals involved in inflammation, such as prostaglandins and leukotrienes. Recently, COX-2 inhibitors have been linked to increased risk of heart attack, leading to the removal of rofecoxib (Vioxx®) and valdecoxib (Bextra®) from the market. NSAIDs are generally safe when used for limited periods, but they can have significant negative side effects if used chronically. Although this makes them poor choices for long-term treatment of fibromyalgia, patients may want to consider using NSAIDs for short-term flare-ups of pain.

Antidepressants. Antidepressants are commonly recommended. Medications that specifically act by sustaining levels of the brain chemical serotonin, which plays a key role in mitigating depression and anxiety, have proven successful in raising energy levels—particularly sertraline (Zoloft®), fluoxetine (Prozac®), paroxetine (Paxil®), and citalopram (Celexa®). So-called tricyclic antidepressants, which include amitriptyline (Elavil®) and cyclobenzaprine (Flexeril®), are successful in treating pain, in addition to treating low energy and insomnia, although many people have adverse effects such as constipation, dry mouth, increased appetite, and lowered libido.

Sleep aids. Medications such as zolpidem (Ambien®) that are designed to promote sleep can be successful, but people usually develop a tolerance to sleep medications when used over time; the drugs just stop working. One way of delaying or avoiding the tolerance effect is to use a different sleep aid each night. For example, a patient with fibromyalgia may want to start off with the following drug combinations:

- Night 1: 5 to 10 milligrams (mg) of zolpidem
- Night 2: 1 to 3 mg of clonazepam (Klonopin®)
- Night 3: 23 to 46 mg of clorazepate (Tranxene®)
- Night 4: 5 to 10 mg of zolpidem again, followed by clonazepam the next night and clorazepate the next.

Additional sleep aids include the tricyclic antidepressant amitriptyline (which has many side effects), the over-the-counter drug doxylamine hydrochloride (sold under the brand-name Unisom® and generically), and melatonin in doses of 300 micrograms (mcg) to 6 mg at bedtime.

What You Have Learned So Far

- Fibromyalgia is a little-understood syndrome with multiple symptoms. It commonly affects women between the ages of 30 and 60 years. As many as 10 million people in the United States have it.
- The most common symptoms of fibromyalgia are muscle pain, fatigue, sleep disorders, tingling and/or numbness, vaginal pain and sexual dysfunction, and tender points at many of 18 specific sites on the body.
- The cause or causes of fibromyalgia are unknown. One leading theory is that fibromyalgia is a central sensitization disease associated with elevated levels of oxidant stress in muscle tissue and changes in nerve cells in the brain and spinal cord. It may also be exacerbated or caused by hormonal imbalances and infection.
- The disease is conventionally treated with a wide array of drugs that address individual symptoms, such as pain and depression. These drugs frequently have unacceptable side effects.

LIMITING DAMAGE WITH ANTIOXIDANTS

Today's most exciting research implicates oxidative damage as an underlying problem in fibromyalgia and calls for more research into the use of antioxidants and omega-3 fatty acids to fight inflammation and scavenge free radicals. Many studies have found oxidative damage in people with fibromyalgia (Bagis S et al 2005; Hanninen O et al 2000; Ozgocmen S et al 2005a, 2005b). In addition, levels of superoxide dismutase, an internal antioxidant, are reduced in women with fibromyalgia (Bagis S et al 2005).

Patients with chronic fatigue syndrome—whose symptoms often are the same as those of patients with fibromyalgia—have been shown to have both high levels of oxidants in their systems and low levels of the antioxidant vitamin E (Vecchiet J et al 2003). A study of patients with fibromyalgia and a number of other chronic pain conditions demonstrated a decrease in joint stiffness and pain when subjects shifted to a living-foods (foods that have not been cooked or heated) diet, which is rich in antioxidants, lactobacilli, and fiber (Hanninen O et al 2000).

A Washington State University researcher hypothesized that vigorous antioxidant supplementation may help minimize damage from peroxynitrite and other oxidants (Pall ML 2005a). Research conducted by the Agricultural Research Service of the US Department of Agriculture (USDA) determined that blueberries (which can be consumed fresh, frozen, canned, or as an extract) are highest overall in total antioxidant capacity (Wu X et al 2004). Other antioxidants that patients with fibromyalgia should take include

selenium, vitamin C, and vitamin E.

For More Information

The following chapters may also be of interest to people with fibromyalgia:

- Chronic Pain
- Insomnia
- Depression
- Female Bio-Identical Hormone Replacement
- Male Hormone Replacement

HORMONAL THERAPY FOR FIBROMYALGIA

Because of the hormonal connection, people who have fibromyalgia should consider getting a full hormonal blood test panel. If any hormones are out of balance, hormonal modulation therapy should be implemented. Studies indicate that patients with fibromyalgia may benefit from hormonal modulation therapy (Geenen R et al 2002). In addition, a subset of patients who are severely deficient in growth hormone may benefit from growth hormone replacement (Bennett RM 2002).

Support for hormonal replacement in fibromyalgia is mostly anecdotal. Integrative physicians have observed that patients with fibromyalgia often have symptoms—such as widespread pain, migraine, poor sleep, and gastrointestinal complaints—that are similar to people who have hormonal deficiencies. Also, hormonal testing often reveals that women who have fibromyalgia have low levels of crucial hormones. It is important when considering bioidentical hormonal replacement therapy to seek the advice of a qualified physician and to have your blood tested.

BOOSTING ADENOSINE TRIPHOSPHATE LEVELS

One study demonstrated that patients with fibromyalgia tend to have low levels of adenosine triphosphate (ATP), the molecule that is essential for storing and transporting energy within the cells of all living organisms (Park JH et al 1998). One case report suggests that supplementation with D-ribose, the 5-carbon sugar that forms the base of ATP, may be helpful (Gebhart B et al 2004). Additional nutritional supplements appear to support the production of ATP, including the following:

Magnesium and malic acid. Magnesium is essential to healthy muscle function. The enzymes that liberate energy from ATP require magnesium to function properly. A review of studies on magnesium and malic acid found that blood levels of these two nutrients vary considerably in people with fibromyalgia, but multiple, controlled studies have found magnesium and malic acid to be effective in relieving the symptoms of fibromyalgia (Holdcraft LC et al 2003).

Vitamin B6. Pyridoxine is required to boost the action of magnesium and malic acid in the creation of ATP. Vitamin B6 supplementation may be considered for patients with fibromyalgia whose vitamin B6 levels are abnormally low.

GETTING A GOOD NIGHT'S SLEEP

Melatonin is a pineal hormone that has been widely studied for its ability to produce sleep. In the body, melatonin is secreted in response to darkness, causing sleepiness.

Because so many patients with fibromyalgia have insomnia or unrefreshing sleep, researchers have sought to determine whether melatonin can be of specific help to them as a sleep agent. Studies have found that people with fibromyalgia have low melatonin levels. Supplementation with melatonin resulted in improved sleep and lowered requirements for prescription drugs (Rohr UD et al 2002). A Swedish study determined that patients with fibromyalgia produce less melatonin during hours of darkness than do healthy control subjects, making melatonin therapy potentially helpful as a sleep aid (Wikner J et al 1998). Researchers in Argentina conducted a pilot study in which they found that sleep patterns, sleep quality, and pain measures markedly improve in patients with fibromyalgia after 4 weeks of treatment with melatonin (Citera G et al 2000). In the United States, a double-blind, placebo-controlled study showed that 20 percent of the patients with fibromyalgia significantly improved their sleep patterns and quality when they took 6 mg of melatonin each night before bed.

DIET AND LIFESTYLE APPROACHES

Patients with fibromyalgia can do a number of things to help diminish their pain, deepen their sleep, and generally improve their quality of life.

Diet. No controlled studies have been undertaken to date to test whether specific foods can alleviate symptoms of fibromyalgia. The following dietary guidelines may help patients with fibromyalgia (Hanninen O et al 2000):

- Consume plenty of calcium to support bone density. Foods high in calcium include milk, ice cream, yogurt, broccoli, hard cheeses, oysters, sardines, spinach, and oranges.
- Apples are high in malic acid, an antioxidant important in limiting muscle pain.
- Blueberries have been shown by the USDA to be higher in antioxidants than any other fruit, vegetable, nut, or herb.
- Carbohydrates increase serotonin levels, essential fatty acids reduce fatigue, and protein helps improve mental alertness (Wallace D et al 2002).
- Caffeine, a strong stimulant, should be avoided, particularly late in the day, to ensure that it does not negatively affect sleep.
- Alcohol should never be used to alleviate or mask pain.

Exercise. Moderate, regular exercise has been shown to reduce symptoms. Patients with fibromyalgia should work some of the following exercises into their schedule:

- Walk 20 to 40 minutes daily. Walking—outdoors when possible—is perhaps the best regular exercise.
- Swim 30 to 60 minutes three times a week. Swimming can successfully strengthen and tone painful muscles.
- Do isometric and stretching exercises. These types of exercises, particularly those focused on muscle groups susceptible to fibromyalgia pain, are vitally important.
- Strengthen and stretch muscles through yoga. Yoga is also an excellent way to engage with other people and take your mind off pain.
- Maintain good posture at all times. Don't stay in a single position for long periods.
- Use supports such as armrests, railings, pillows, and slings to help avoid needlessly stressing sensitive muscles.
- Focus as much as possible on relaxation and stress reduction. Deep breathing, meditation, and other forms of conscious relaxation are often quite helpful.

Tobacco use. People with fibromyalgia should not smoke or use tobacco. Smokers with fibromyalgia have lower pain thresholds and more sleep problems than nonsmokers. Nicotine withdrawal can cause muscle spasms, and vascular constriction is worsened by smoking, leading to increased numbness, burning, and tingling (Wallace D et al 2002).

Other Treatments. Many patients with fibromyalgia report excellent results fighting pain with the help of therapists trained to use a variety of the following musculoskeletal and psychological treatments:

- Regular massage. Offers significant pain relief.
- Chiropractic. Chiropractors work to align the spine for optimal nerve flow and to increase range of motion and relax muscles.
- Physical and occupational therapy. Physical and occupational therapists, particularly those specifically trained to work with patients who have fibromyalgia, can design rehabilitation programs involving both manipulation and exercise that often show

positive results.

- Acupuncture. A 2500-year-old treatment system, using very thin needles, that has shown moderate degrees of effectiveness in treating both pain and fatigue in patients with fibromyalgia.
- Psychotherapy, counseling, and support groups. These groups can be enormously beneficial to people with fibromyalgia, offering great assistance with issues such as anxiety, loss of self-esteem, anger, shame, depression, and relationship challenges.

LIFE EXTENSION FOUNDATION RECOMMENDATIONS

The Life Extension Foundation's approach to fibromyalgia takes into account the many facets of the disease. The following supplements have been shown to reduce oxidative stress and inflammation, support healthy ATP levels in cells, aid in restful sleep and digestion, and support muscle function:

- **Life Extension Mix**—Follow label directions. Life Extension Mix provides a balanced mix of antioxidants and other nutrients.
- **Magnesium**—160 to 500 milligrams (mg) daily
- **Malic acid**—600 mg daily
- **Vitamin B6**—250 mg daily. High doses of vitamin B6 can cause neuropathy (nerve damage).
- **Vitamin C**—1000 to 2000 mg daily
- **Selenium**—200 micrograms (mcg) daily
- **SODzyme**—2000 mg daily. This special supplement enhances the levels of superoxide dismutase, an internal antioxidant.
- **D-Ribose**—3 grams (g) daily
- **Gamma E**—at least 200 mg daily
- **Omega-3 fatty acids**—1400 mg of eicosapentaenoic acid (EPA) and 1000 mg of docosahexaenoic acid (DHA)
- **Blueberry extract**—500 mg daily
- **Melatonin**—300 mcg to 6 mg daily
- **DHEA**—Starting dose of 15 to 75 mg daily. Have blood tested in 3 to 6 weeks to make sure optimal levels are maintained.

In addition to these supplements, hormonal testing is recommended. If levels are low, bioidentical hormonal replacement may be recommended. For more information about hormonal testing, call the Life Extension Foundation at 1-800-544-4440. Patients who are deficient in growth hormone should consult with a qualified physician.

Finally, patients who have been conventionally treated may have gastrointestinal problems from the many drugs that are often prescribed. These drugs may alter the levels of beneficial bacteria in the gut. For this reason, a person who has fibromyalgia should take probiotics, including the lactobacillus group of beneficial bacteria, to restore gastrointestinal function.

FIBROMYALGIA SAFETY CAVEATS

An aggressive program of dietary supplementation should not be launched without the supervision of a qualified physician. Several of the nutrients suggested in this protocol may have adverse effects. These include:

DHEA

- Do not take DHEA if you could be pregnant, are breastfeeding, or could have prostate, breast, uterine, or ovarian cancer.
- DHEA can cause androgenic effects in woman such as acne, deepening of the voice, facial hair growth and hair loss.

D-Ribose

- Do not take D-ribose if you have gout.
- Do not take D-ribose if you have elevated uric acid levels. D-ribose can elevate uric acid levels.
- Consult your doctor before taking D-ribose if you have diabetes or hypoglycemia. D-ribose can cause or exacerbate hypoglycemia. See your doctor and monitor your blood glucose level frequently if you take D-ribose and have hyperglycemia or diabetes.

EPA/DHA

- Consult your doctor before taking EPA/DHA if you take warfarin (Coumadin). Taking EPA/DHA with warfarin may increase the risk of bleeding.
- Discontinue using EPA/DHA 2 weeks before any surgical procedure.

Magnesium

- Do not take magnesium if you have kidney failure or myasthenia gravis.

Melatonin

- Do not take melatonin if you are depressed.
- Do not take high doses of melatonin if you are trying to conceive. High doses of melatonin have been shown to inhibit ovulation.
- Melatonin can cause morning grogginess, a feeling of having a hangover or a “heavy head,” or gastrointestinal symptoms such as nausea and diarrhea.

Vitamin B6

- Individuals who are being treated with levodopa without taking carbidopa at the same time should avoid doses of 5 milligrams or greater daily of vitamin B6.

Selenium

- High doses of selenium (1000 micrograms or more daily) for prolonged periods may cause adverse reactions.
- High doses of selenium taken for prolonged periods may cause chronic selenium poisoning. Symptoms include loss of hair and nails or brittle hair and nails.
- Selenium can cause rash, breath that smells like garlic, fatigue, irritability, and nausea and vomiting.

SODzymes

- Do not take SODzymes if you are allergic to soy, corn, or wheat.

Vitamin C

- Do not take vitamin C if you have a history of kidney stones or of kidney insufficiency (defined as having a serum creatine level greater than 2 milligrams per deciliter and/or a creatinine clearance less than 30 milliliters per minute).
- Consult your doctor before taking large amounts of vitamin C if you have hemochromatosis, thalassemia, sideroblastic anemia, sickle cell anemia, or erythrocyte glucose-6-phosphate dehydrogenase (G6PD) deficiency. You can experience iron overload if you have one of these conditions and use large amounts of vitamin C.

Vitamin E

- Consult your doctor before taking vitamin E if you take warfarin (Coumadin).
- Consult your doctor before taking high doses of vitamin E if you have a vitamin K deficiency or a history of liver failure.
- Consult your doctor before taking vitamin E if you have a history of any bleeding disorder such as peptic ulcers, hemorrhagic stroke, or hemophilia.
- Discontinue using vitamin E 1 month before any surgical procedure.

For more information see the Safety Appendix

All Contents Copyright © 1995-2009 Life Extension Foundation All rights reserved.

LifeExtension[®]

These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure or prevent any disease. The information provided on this site is for informational purposes only and is not intended as a substitute for advice from your physician or other health care professional or any information contained on or in any product label or packaging. You should not use the information on this site for diagnosis or treatment of any health problem or for prescription of any medication or other treatment. You should consult with a healthcare professional before starting any diet, exercise or supplementation program, before taking any medication, or if you have or suspect you might have a health problem. You should not stop taking any medication without first consulting your physician.