

Relief of Fibromyalgia Symptoms Following Discontinuation of Dietary Excitotoxins

**The Annals of Pharmacotherapy: Vol. 35, No. 6, pp. 702–706.
June 2001**

Jerry D Smith, Chris M Terpening, Siegfried OF Schmidt and John G Gums

FROM ABSTRACT:

BACKGROUND:

Fibromyalgia is a common rheumatologic disorder that is often difficult to treat effectively.

CASE SUMMARY:

Four patients diagnosed with fibromyalgia syndrome for two to 17 years are described. All had undergone multiple treatment modalities with limited success.

All had complete, or nearly complete, resolution of their symptoms within months after eliminating monosodium glutamate (MSG) or MSG plus aspartame from their diet.

All patients were women with multiple comorbidities prior to elimination of MSG.

All have had recurrence of symptoms whenever MSG is ingested.

DISCUSSION:

Excitotoxins are molecules, such as MSG and aspartate that act as excitatory neurotransmitters, and can lead to neurotoxicity when used in excess.

We propose that these four patients may represent a subset of fibromyalgia syndrome that is induced or exacerbated by excitotoxins or, alternatively, may comprise an excitotoxin syndrome that is similar to fibromyalgia.

CONCLUSIONS:

The elimination of MSG and other excitotoxins from the diets of patients with fibromyalgia offers a benign treatment option that has the potential for dramatic results in a subset of patients.

THESE AUTHORS ALSO NOTE:

"Fibromyalgia syndrome occurs in 3–6 million patients in the US."

"It is the third most commonly diagnosed rheumatologic disorder (after osteoarthritis and rheumatoid arthritis)."

"Most patients are women, with a median age of onset of 29–37 years; the median age of formal diagnosis is 34–53 years."

"This disabling disorder is characterized by widespread pain and tenderness, fatigue, morning stiffness, and sleep disturbance."

The cause of fibromyalgia syndrome is unknown.

Theories have included:

- 1) alterations in neurotransmitter regulation (especially serotonin)
- 2) hormonal control problems (especially of the hypothalamic–pituitary–adrenal and growth hormone axes)
- 3) immune system dysfunction
- 4) problems in sleep physiology
- 5) abnormal perception of bodily sensations
- 6) stress
- 7) viral pathologies
- 8) local hypoxia
- 9) disturbances in muscle microcirculation, adenosine monophosphate, and creatine concentrations.

"We describe four patients who experienced a dramatic recovery from fibromyalgia syndrome by eliminating certain preservatives and food additives, mainly monosodium glutamate (MSG), from their diet."

"All four patients had fibromyalgia syndrome characterized by tenderness and pain at all tender points, fatigue, sleep disorders, and irritable bowel syndrome."

CASE 1

A 40-year-old white woman was diagnosed in 1987 with moderately aggressive fibromyalgia symptoms that had been very difficult to manage with traditional approaches. She also had chest pain and carpal tunnel syndrome.

When she went on an MSG-free diet, she and her physician noted complete resolution of fibromyalgia symptoms. The carpal tunnel symptoms disappeared, she began to sleep better, and believed that her memory improved as well.

When the patient retook MSG products, her symptoms returned.

She restricted her diet again, and the symptoms resolved.

CASE 2

A 37-year-old white woman had multiple medical problems including fibromyalgia syndrome, allergic rhinitis, irritable bowel syndrome, dysuria, stress reaction,

depressive disorder, temporomandibular joint (TMJ) disorder, facial pain, carpal tunnel syndrome, anxiety, mitral valve prolapse, and dyslexia.

She reported pains she had experienced since she was 15 years old, without a history of traumatic or emotional event prior to the onset of the pain.

"After several months of using a diet free of aspartame and MSG, she had no pain in any of the tender points, no further abdominal or facial pain, no carpal tunnel syndrome, and no further depression or anxiety; a reevaluation also showed no sign of dyslexia. The woman also reported improvement in her memory."

"Symptoms of fibromyalgia recur when she unknowingly eats foods that contain MSG or aspartame."

She had no further findings consistent with fibromyalgia, allergic rhinitis, irritable bowel syndrome, dysuria, stress reaction, chronic depressive disorder, TMJ disorder, or chronic fatigue issues.

CASE 3

A 57-year-old white woman had a past medical history of chronic musculoskeletal pain (very diffuse), chronic fatigue, migraine and tension headaches, irritable bowel syndrome, allergic rhinitis, gastroesophageal reflux disease, anxiety and depressive disorder, as well as a diagnosis in 1994 of fibromyalgia syndrome involving 16 of 18 tender points. Despite a major workup and extensive therapies, including physical therapy, electro-acupuncture, chiropractic treatment, injection treatment, counseling, medication, and lifestyle adjustment, her condition severely worsened, and she was placed on a diet to eliminate MSG and aspartame.

"Within two months, she improved partially with no further headaches, allergic symptoms, or irritable bowel syndrome symptoms. Within three months, she had no further diffuse musculoskeletal pain and only continued to have very localized lower back and bilateral shoulder pain attributed to osteoarthritis. By seven months, she experienced no pain, but had achieved marked improvement of the chronic fatigue, and reported feeling 'very good.' If she inadvertently uses MSG, the symptoms recur. The number of medications she takes was reduced from 15 to only estrogen for hormone replacement."

CASE 4

A 37-year-old African-American woman was diagnosed with fibromyalgia syndrome involving all 18 tender points in 1985. Furthermore, she had ongoing diffuse multiple symptoms including severe fatigue, epigastric pain, retrosternal pain, precordial pains, symptoms consistent with some reflux, major depressive episodes, chronic migraine and tension headaches, chronic musculoskeletal pain with costochondritis and myofascial pain component, chronic TMJ dysfunction,

emphysema, chronic postnasal drip, hypercholesterolemia, hypertriglyceridemia, and obesity.

At that time, she was receiving fluoxetine, triamterene/hydrochlorothiazide, nasal triamcinolone, fluticasone metered-dose inhaler (MDI), ipratropium bromide MDI, albuterol MDI as needed, ranitidine twice daily, isosorbide dinitrate, buspirone, lorazepam, simvastatin, and propoxyphene/acetaminophen, along with repeated trigger point injections of bupivacaine. **[13 different drugs, Wow!]**

"The patient was told to try to eliminate MSG from her diet. After two months, she stated that she had improved dramatically. The headaches, as well as shoulder, neck, and abdominal pain, decreased from 8 of 10 to 3 of 10 in severity. After another month of elimination of MSG, the woman experienced even further pain improvement and believed that she was at 70% of her normal health."

Whenever she uses foods that include MSG, she develops recurrent pain.

"MSG, the sodium salt of the amino acid glutamic acid or glutamate, is an additive used to enhance the flavor of certain foods."

"It does not have a flavor of its own, but is believed to enhance the taste of other foods by stimulating glutamate receptors on the tongue."

MSG was classified as a generally recognized as safe (GRAS) substance in 1959, after the 1958 Food Additives Amendment to the Federal Food, Drug, and Cosmetic Act required approval for new food additives.

This classification meant that MSG, like salt and baking powder, were grandfathered as harmless food substances due to their history of safe use, by the US Food and Drug Administration (FDA) in 1959. **[Interesting]**

Symptoms that include headache, weakness, muscle tightness, numbness or tingling, and flushing, after consuming foods containing MSG, are termed "the MSG symptom complex."

Importantly, asthma may worsen after eating foods containing MSG.

Aspartame was first marketed in 1981. It is a dipeptide of aspartate and phenylalanine used in foods, beverages, and drugs.

"In animal models, aspartame has been associated with an increased incidence of brain tumors."

"Anecdotally, aspartame use in humans has been linked with head aches, seizures, dizziness, movement disorders, urticaria, angioedema, and anaphylaxis."

"With the discovery of excitatory amino acid (EAA) transmitter systems and identification of EAA receptor subtypes (N-methyl-d-aspartate) [NMDA], it has become widely accepted that glutamate, aspartate, and other environmental substances have neurotoxic (excitotoxic) effects in the human nervous system." [Olney JW. Excitotoxins in foods. Neurotoxicology 1994;15:535-44.]

"Glutamate acts as a neurotransmitter in the brain, and abnormal function of glutamate receptors has been linked to neurologic disorders such as Alzheimer disease and Huntington's Chorea."

"Injections of glutamate in laboratory animals have resulted in damage to nerve cells in the brain."

"Aspartate is equipotent to glutamate in destroying hypothalamic neurons and has additive neurotoxic effects when the two are combined." **[WOW!]**

"Aspartate is derived from the gut hydrolyzation of aspartame. It is a much more potent flavoring agent than glutamate and is, therefore, used in smaller doses. However, even in small amounts, aspartate has additive effects to any glutamate."

Dietary glutamate is rapidly absorbed into the bloodstream.

"Glutamate freely enters brain regions that lack blood-brain barriers (circumventricular organs, e.g., the hypothalamus)."

"Glutamate can destroy circumventricular organ neurons [in the hypothalamus] by an excitotoxic mechanism (via the NMDA receptor) in all animal models appropriately tested (cats, chickens, guinea pigs, hamsters, mice, monkeys, rabbits)."

"In fact, much of the research performed proving that glutamate was safe for human consumption may have been flawed." **[WOW!]**

One theory is that dietary glutamate activates the NMDA receptors of the hypothalamus, stimulating the release of pituitary hormones, which can disturb hormonal biorhythms.

Also, glutamate has a role in chronic pain sensitization:

Prolonged firing of peripheral nociceptive neurons causes release of glutamate which acts on spinal cord NMDA receptors to produce chronic pain sensitization. [Bennett GJ, Update on the neurophysiology of pain transmission and modulation: focus on the NMDA-receptor. J Pain Symptom Manage 2000;19 (suppl 1):S.:2-6.]

"MSG is nearly ubiquitous in processed food, appearing under many names, including gelatin, hydrolyzed vegetable protein, textured protein, and yeast extract."

Aspartame is the dominant artificial sweetener on the market since 1981.

"We also do not believe that sensitivity to MSG is the cause of all cases of fibromyalgia syndrome, as many of our patients have not responded to our recommendations of elimination of the excitotoxins."

KEY POINTS FROM DAN MURPHY:

- 1) Fibromyalgia is common and difficult to treat.
- 2) Fibromyalgia can be caused by exposure to dietary excitotoxins in susceptible individuals.
- 3) Excitotoxins are molecules, such as MSG and aspartate, that act as excitatory neurotransmitters.
- 4) MSG is found in nearly all processed food and can have many names, including gelatin, hydrolyzed vegetable protein, textured protein, and yeast extract."
- 5) Aspartame is the dominant artificial sweetener on the market since 1981.
- 6) Glutamate and other dietary excitotoxins primarily enter the brain at the hypothalamus which is not well protected by the blood-brain barrier.
- 7) Glutamate is the neurotransmitter that causes dorsal horn spinal cord chronic pain sensitization.
- 8) Aspartate and glutamate taken together have additive neurotoxic effects.
- 9) Much of the research done to show that glutamate was safe for human consumption may have been flawed.
- 10) The elimination of MSG and other excitotoxins from the diets of patients with fibromyalgia offers a benign treatment option that has the potential for dramatic results in a subset of patients.