

PATIENT EDUCATION AND SELF-ADVOCACY: QUESTIONS AND RESPONSES ON PAIN MANAGEMENT

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Benign Fasciculation Syndrome

Thomas Robert Walter

ABSTRACT

Questions from patients about pain conditions, analgesic pharmacotherapy, and responses from authors are presented to help educate patients and make them more effective self-advocates. In reply to a question about benign fasciculation syndrome, the presentation, causes, treatment, and chances of developing amyotrophic lateral sclerosis will be discussed.

KEYWORDS benign fasciculation syndrome, cramp fasciculation syndrome, muscle twitch, amyotrophic lateral sclerosis

QUESTION FROM A PATIENT

One year ago, I developed constant muscle twitching in my calves and hands, and around my eyes and nose. My doctor recently diagnosed me with benign fasciculation syndrome. He told me, there is a possibility I could develop a disease called amyotrophic lateral sclerosis (ALS) but he said the risk is very low. This still makes me very concerned. What is benign fasciculation syndrome, what are the causes, how is it treated, and what are my chances of developing ALS?

RESPONSE

The fast muscle twitching you are experiencing and see under your skin at rest is what we call fasciculations. Often, these muscle twitches go unnoticed. Hence, they are usually not painful and are of not enough force to move a joint. Many healthy people get occasional fasciculations, particularly in muscles of the calves, hands, and around the eyes and nose.

They can be almost constant for days or weeks on end, or even for years in some individuals without weakness or wasting of muscle.¹ The presence of fasciculations that have a constant location with mild cramps but no weakness usually represents a benign condition, hence the name benign fasciculation syndrome. When the muscle cramps are more disabling, the condition is called cramp-fasciculation syndrome. Benign fasciculations are common, affecting greater than 1% of the healthy population.²

There is a large range of conditions that can present with fasciculations. The causes can be grouped into several categories to include neurologic disorders (e.g., ALS, early stages of polio, irritation of a nerve), metabolic diseases (e.g., overactive thyroid gland), drug use or exposure (e.g., steroids, cigarettes, alcohol and caffeinated beverages, insecticides, pesticides), infectious diseases (e.g., HIV, syphilis), psychiatric conditions (e.g., stress, anxiety), dehydration and electrolyte abnormalities (e.g., low calcium), and hypothermia (abnormally low body temperature). Interestingly, intense and lengthy daily exercising may also cause or worsen fasciculations through the release of a higher than normal amount of free radicals during prolonged exercise. Free radicals are a waste product of the body's energy production and the longer the activity and the more intense the exercise, the more free radicals are formed. This results in free radical accumulation inside nerve

Thomas Robert Walter, DO, is an Anesthesiology Resident, Department of Anesthesiology and Pain Medicine, University of California Davis Medical Center, Sacramento, CA.

Address correspondence to: Dr. Thomas R. Walter, Department of Anesthesiology and Pain Medicine, UC Davis Medical Center, Lawrence J. Ellison Ambulatory Care Center, 4860 Y Street, Suite 3020, Sacramento, CA 95817. (E-mail: PainFellowship@ucdmc.ucdavis.edu)

endings, causing prolonged muscle excitability and muscle twitching.³

A thorough examination by your physician will be necessary to help find the cause of these muscle twitches. This usually involves a neurological examination, an evaluation of your nervous system to look for any muscle weakness and muscle wasting. In addition, appropriate blood tests, imaging, nerve conduction studies, and electromyography are usually performed as well. An electromyogram (EMG) measures the electrical activity of muscles at rest and during contraction of a body part and nerve conduction studies measure how well and how fast the nerves can send electrical signals. The diagnosis of benign fasciculation syndrome is supported by the findings of normal electrical activity on EMG, labs, imaging, and neurological examination.

Without question, fasciculations are of concern due to their relationship with Amyotrophic Lateral Sclerosis (ALS). It is often called Lou Gehrig's disease, named after the famous baseball player who was diagnosed with this condition in 1939. ALS causes motor nerve cells, the cells that control voluntary muscle activity such as speaking, walking, breathing, and swallowing, to gradually break down and die, resulting in muscle weakness. The first symptoms in many patients with ALS may be cramps and fasciculations. It is exceptionally rare for patients later diagnosed with ALS to present with fasciculations alone. When these symptoms occur without weakness or wasting and when the EMG is normal, a diagnosis of ALS is considered ruled out. This conclusion is supported by a follow-up study of 121 patients diagnosed with benign fasciculations. None developed ALS during 2 to 32 years of follow-up evaluation.⁴ However, in 2004, Carvalho and Swash published an interesting research paper on a patient with cramps and fasciculations, which persisted for 1 year without abnormal electrical activity on EMG. Sadly, he eventually developed progressive weakness, muscle wasting, and EMG abnormalities and was diagnosed with ALS.² Furthermore, in 2011, Singh et al. at the Walton Centre for Neurology and Neurosurgery in Liverpool, UK, also published an article of four patients with benign fasciculations and cramping that eventually developed ALS.⁵

The studies mentioned above raise the possibility that increased activity of motor nerve cells, the nerve cells that control voluntary muscle activity such as moving a body part, causing fasciculations may precede motor nerve cell death in patients with ALS. As a result, it is recommended that patients be followed by a physician for a minimum of 4 to 5 years before a decision can be made about the benign nature of fasciculations or cramps.⁵ Although no one has determined

the percentage of patients who could potentially develop ALS after having fasciculations, it is important to remember that most patients with benign fasciculations do not progress to ALS.⁵

The treatment of both fasciculations and mild muscle cramps is challenging and usually requires a trial of different medications. In 2010, the American Academy of Neurology assigned an expert panel to review the literature for the treatment of fasciculations and muscle cramps. This group of investigators recommended that although effective, quinine (a medicine isolated from the bark of the cinchona tree) and related drugs should be avoided on a routine basis due to their potential for numerous serious side effects. Of note, in selected patients these drugs can be considered for a trial once these side effects are taken into account. Vitamin B complex, Naftidrofuryl (a medication that relaxes blood vessels), and calcium channel blockers such as diltiazem are also possibly effective and may be considered, but the evidence is not as strong. In addition, many nonpharmacologic therapies are employed by patients prior to prescription treatment to include stretching and hydration, particularly for exercise-associated cramping, but there is little evidence to support their use. Lastly, given the scarcity of evidence for any convincing treatments for muscle cramps, more research is needed.⁶

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