Commonalities and Intersections between Fibromyalgia and Myasthenia Gravis: An In-Depth Review of Symptoms

Dr Majda Samih[1], Pr Ahmed Omar Touhami Ahami[2]

[1]*Temporary teacher at the Clinical and Cognitive Neurosciences Unit, Biology and Health Laboratory, Department of Biology, Faculty of Sciences, Ibn Tofail University, Kenitra, Morocco.*
[2]*Professor Head of the Clinical and Cognitive Neuroscience Unit, Biology and Health Laboratory, Department of Biology, Faculty of Science, Ibn Tofail University, Kenitra, Morocco*

ABSTRACT

Fibromyalgia and myasthenia gravis are two chronic diseases that cause considerable physical and functional problems for sufferers. Although the underlying mechanisms of these diseases are distinct and different in many respects, there is a common symptom pathway. On the one hand, this study seeks to highlight the commonalities between fibromyalgia and myasthenia gravis, to shed light on their shared symptomatologies and to reveal how these conditions intersect. On the other hand, it gently draws attention to the importance of accurate diagnosis and disease-specific management strategies to ensure optimal care for sufferers of either condition.

Key words: *Fibromyalgia, Myasthenia, Shared symptoms*.

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Introduction:

Fibromyalgia is a complex disease characterized by increased sensitivity to pain, fatigue, sleep disturbances and impaired neurophysiological functions [1]. Its prevalence is estimated between 0.5% and 5.0% [2] of the world population, with a higher incidence in women, about 7 times more often than in men [3]. Its exact cause remains unclear, but some studies have implicated abnormal pain processing in the central nervous system, imbalances in neurotransmitters, and genetic factors.

Myasthenia gravis is an autoimmune neuromuscular disease that causes muscle weakness and fatigue. It affects the neuromuscular junction, where nerve impulses communicate with muscles [4], leading to impaired muscle function. The prevalence of myasthenia gravis is approximately 20 cases per 100,000 people, with women being twice as likely to be affected compared to men [5].

These two chronic diseases cause considerable physical and functional difficulties for those who suffer from them. Although they have different underlying mechanisms and distinct diagnostic criteria, they share some common symptoms, including fatigue and muscle problems. However, it is important to recognize that the similarities go beyond these last two symptoms. The table below shows a wide range of additional similarities, which may vary from person to another.

Table

Similar symptoms	Fibromyalgia	Myasthenia	Remarks
Fatigue	x	x	
Weakness	x	x	
Pain	x	x	
Sleep disorders	x	x	
Cognitive dysfunction	x	x	
Increased sensitivity to various stimuli	x	x	
Overlap of pain and discomfort	x	x	
Impact on daily life	x	x	
Predominantly female	x	x	
Multifactorial disease	x	x	
Anxiety disorders	x	x	
Depressive symptoms	x	x	
Social isolation	x	x	

Shared symptoms

1- Fatigue: Fatigue is a common symptom in people with fibromyalgia and myasthenia gravis. It can be debilitating and affect daily functioning by reducing the quality of life.

Fatigue is one of the most common and significant symptoms experienced by people with fibromyalgia [6, 7]. It can vary from mild to severe and is often not relieved by rest or sleep.

The fatigue experienced in myasthenia gravis is different from the general fatigue seen in fibromyalgia. It is more specific to muscular tasks and is often described as a profound weakness that limits physical activities [8, 9] and can even affect simple gestures such as swallowing or breathing.

2- Weakness: Muscle weakness is one of the main features of myasthenia gravis [10]. On the other hand, it can also be observed in some people with fibromyalgia [11]. However, in the first case, the weakness mainly affects the muscles responsible for eye movements, facial expressions, swallowing and limb movements [4]. In the second case,

instead of true weakness caused by muscle dysfunction, the perception of weakness may be related to general fatigue and pain experienced by the individual. Apparently, both conditions are characterized by muscle weakness, but they are separate disorders with different diagnostic criteria, treatments, and outcomes.

3- Pain: Fibromyalgia and myasthenia gravis can both cause pain, but the nature and source of this pain differs between the two conditions. The hallmark symptom of fibromyalgia is widespread musculoskeletal pain that affects multiple parts of the body [12]. This pain is chronic and often described as a deep pain or a burning sensation. It tends to be more diffuse and can move around the body, affecting different areas at different times. Fibromyalgia pain is not limited to specific muscles, but involves a wider area of tender points and generalized tenderness. For myasthenia gravis: although pain is not the main symptom of this disease, some sufferers may experience pain in the affected muscles [13]. This pain is usually secondary to muscle weakness and fatigue. When muscles get tired and weak with activity, they can become sore. The pain in myasthenia gravis is usually localized to the specific muscles that are affected. Pain is common to fibromyalgia and myasthenia gravis. Fibromyalgia pain is generalized and often described as a burning sensation, while myasthenia gravis pain is usually associated with muscle weakness and fatigue, localized to the affected muscles.

4- Sleep problems: Both conditions can lead to a variety of sleep problems, affecting the quality of life of sufferers. In the case of fibromyalgia, the exact cause of sleep disturbance is not fully understood, but is thought to be related to chronic pain and other symptoms associated with the condition. Pain can prevent people from finding a comfortable sleeping position, making it difficult for them to fall asleep, stay asleep and wake up without feeling rested [14].

In myasthenia gravis, muscle weakness and breathing difficulties can have a direct impact on sleep quality. In addition, the need to wake frequently at night, which is common in myasthenia gravis, can further disrupt sleep [15]. The combination of chronic pain, muscle weakness and other symptoms in both conditions can create a cycle of sleep disturbance and exacerbate the general symptoms of fibromyalgia and myasthenia gravis.

5- Cognitive symptoms: Both diseases can affect cognitive function. Patients with fibromyalgia may suffer from a condition often referred to as "fibro fog" or "brain fog", which includes problems with memory, concentration and attention [16, 17]. On the other hand, myasthenia gravis, a neuromuscular disease that weakens voluntary muscles, can lead to cognitive problems mainly related to difficulties in controlling facial expressions and speech due to muscle weakness in the facial and bulbar muscles [18-20].

6- Sensory sensitivity: People with fibromyalgia or myasthenia gravis may also have increased sensitivity to a variety of stimuli. In fibromyalgia, patients typically have increased sensitivity to pain, touch, light and sound, a condition often referred to as hypersensitivity [21]. This increased sensitivity can exacerbate pain and discomfort, making daily activities more difficult.

In myasthenia gravis, individuals may also have increased sensitivity, particularly to environmental factors. Sensitivity to light and heat, as well as other environmental stimuli, can be observed in some patients with myasthenia gravis [22]. Taken together, these sensitivities can have an impact on well-being and complicate the quality of life of people with either disease.

7- Overlapping pain and discomfort: Although both fibromyalgia and myasthenia gravis can cause discomfort, it is important to differentiate the nature of the discomfort they cause. In fibromyalgia, the main source of discomfort is widespread pain and tenderness in the muscles and soft tissues [23]. In the case of myasthenia, the discomfort comes mainly from muscle weakness and fatigue [24].

8- Impact on daily life: Myasthenia gravis (MG) and fibromyalgia are chronic conditions that can profoundly affect a person's daily life and overall quality of life. Both conditions have symptoms that can fluctuate and be unpredictable, leading to significant limitations in various aspects of daily functioning, including physical activities, work and social interactions [25, 26]. These impacts on daily life can be quite challenging for people living with these conditions.

9- Predominantly female: Although myasthenia gravis (MG) and fibromyalgia can affect both sexes, they are more common in women. It is estimated that MG affects more than twice as many women as men, with peak incidence in women between the ages of 20 and 30 [4]. Fibromyalgia is also more common in women, with estimates suggesting that around 80-90% of people diagnosed with fibromyalgia are women [27].

Although the exact reasons for the higher prevalence of these conditions in women are not fully understood, researchers have suggested that hormonal, genetic and environmental factors may contribute to these gender differences.

10- Multifactorial: Fibromyalgia and myasthenia are generally considered to be multifactorial diseases [28, 29]. In both cases, the interaction between genetic predisposition, environmental triggers and various lifestyle factors makes the causes and management complex. This complexity underlines the importance of a multidisciplinary approach to treatment and management, as mentioned above.

11- Anxiety disorders: Myasthenia gravis and fibromyalgia can have a profound impact on the psychological well-being of sufferers. The former is characterized by unpredictable muscle weakness, which often leads to anxiety and worry due to the sudden onset of symptoms [30]. The second is accompanied by chronic pain and fatigue, which can increase anxiety levels, particularly when the course of the disease is uncertain [31]. Recognizing and treating the psychological effects of these illnesses with appropriate support and interventions is crucial to improving the overall quality of life of people with any of these conditions.

12- Depressive symptoms: Due to the chronic nature of these two illnesses and the difficulties *they* impose on daily activities and social interactions. Fibromyalgia and myasthenia gravis can also lead to feelings of hopelessness, sadness and depression [32, 33]. Given the potential impact of these conditions on mental health, it is essential that sufferers take a holistic approach to managing their condition. As well as medical treatment, they need psychological support to deal with the emotional challenges they face.

13- Social isolation: Both myasthenia gravis and fibromyalgia can lead to social isolation and withdrawal.MG can limit physical activity, causing individuals to avoid social events for fear of fatigue or symptom exacerbation, leading to feelings of isolation and loneliness [34]. Similarly, the chronic nature of fibromyalgia can lead individuals to withdraw from social interactions due to pain or fatigue, resulting in feelings of isolation and loneliness [35].

Conclusion

Although they may share common symptoms, fibromyalgia and myasthenia gravis are in fact distinct conditions with different underlying causes. However, it is important to note that these similarities in symptoms should not obscure the fundamental differences between the two conditions: Fibromyalgia involves abnormalities of the central nervous system, whereas myasthenia is an autoimmune disease that affects the neuromuscular junction.

To avoid any confusion, correct diagnosis and management strategies tailored to each condition are essential to optimize care and improve the quality of life of people suffering from fibromyalgia or myasthenia.

Conflicts of Interest

The authors declare no conflict of interest.

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