

Stress and Functional Eye Pain: How Mental Health Affects Eye Comfort.

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Introduction

Functional eye pain (FEP) is a condition where patients experience chronic eye discomfort without any visible structural abnormalities in the eye. This pain often presents as burning, aching, or sharp sensations, and is typically linked to neuropathic mechanisms—dysfunction in the nervous system that leads to pain perception without a physical cause. One of the lesser-known contributors to functional eye pain is stress, which can significantly impact eye comfort. Mental health and stress are increasingly being recognized as influencing factors in the development, intensity, and persistence of functional eye pain. This article explores the relationship between stress and functional eye pain and how mental health can affect eye comfort [1].

Functional eye pain occurs without any detectable physical abnormalities or diseases in the eye. Unlike pain that results from structural damage, such as corneal abrasions or glaucoma, functional eye pain is thought to arise from neuropathic sources. It involves hypersensitivity in the corneal nerves and other sensory pathways within the eye and surrounding areas. Stress can worsen this condition by activating pain pathways, increasing nerve sensitivity, and making the nervous system more reactive. Stress-related changes in the body's physiological responses can contribute to or amplify the pain signals in individuals with pre-existing neuropathic conditions [2].

Stress has a direct impact on how the body processes pain. The body's stress response, which involves the activation of the sympathetic nervous system, prepares it for a "fight or flight" reaction. This response leads to the release of hormones such as cortisol and adrenaline, which can increase inflammation and affect nerve function. In the case of functional eye pain, stress can cause heightened nerve sensitivity, making even mild irritation or dryness feel intensely painful. The brain's pain processing centers may become more responsive under stress, exacerbating symptoms of eye discomfort [3].

Chronic stress is known to have a significant impact on the experience of chronic pain. Research indicates that stress can lower pain thresholds, meaning that individuals experiencing ongoing stress may feel pain more acutely than those in a relaxed state. For people with functional eye pain, this means that emotional stress—whether from work, personal issues, or environmental factors—can turn an already sensitive nervous system into an overactive one. The presence of psychological

stress can create a vicious cycle: stress leads to pain, which in turn increases stress, amplifying the discomfort associated with functional eye pain [4].

Anxiety and depression are two common mental health conditions that often coexist with chronic pain. Individuals who suffer from both functional eye pain and anxiety or depression report experiencing more intense and frequent pain episodes. This may be due to changes in how the brain processes pain and emotional stimuli. Anxiety can increase the body's perception of threat, even when no physical danger exists, leading to an exaggerated response to discomfort. Depression can also alter pain perception by affecting the levels of neurotransmitters such as serotonin and dopamine, which regulate mood and pain tolerance. Together, these mental health conditions create a complicated relationship between the mind and the body, making the management of functional eye pain more difficult [5].

Stress can cause individuals to unconsciously clench their jaw, tighten their shoulders, or strain their eyes, all of which contribute to eye discomfort. Tension in the periorbital and ocular muscles surrounding the eyes can increase pressure, leading to discomfort and pain. When stressed, people are also more likely to engage in prolonged periods of visual concentration, such as staring at a screen, which can cause digital eye strain. This combination of muscle tension and visual fatigue may trigger or worsen functional eye pain, especially in those already predisposed to neuropathic conditions [6].

The hormonal changes that accompany stress may also play a role in exacerbating functional eye pain. Cortisol, the body's primary stress hormone, can cause inflammation and fluid retention, leading to changes in tear production and distribution across the eye's surface. Insufficient tear production can lead to dry eye symptoms, which are common in functional eye pain sufferers. Dryness increases the sensitivity of the cornea, making the eyes more susceptible to discomfort from environmental factors, like wind or light. Additionally, hormonal imbalances can affect the autonomic nervous system, which controls various bodily functions, including those that influence tear production and eye comfort [7].

Central sensitization is a phenomenon in which the central nervous system becomes increasingly sensitive to pain signals. Stress is one of the primary factors that can contribute

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to central sensitization, making the body more responsive to even minor stimuli. In functional eye pain, stress-induced central sensitization can lead to exaggerated pain perception, even when no structural damage is present in the eye. The heightened sensitivity means that normal visual tasks—such as reading or looking at a screen—can result in significant discomfort. Over time, this can lead to chronic pain that persists even when stress levels decrease [8].

Stress and mental health issues also affect sleep quality, which in turn can influence eye comfort. Poor sleep quality increases sensitivity to pain and stress, making it more difficult to manage functional eye pain. Stress-induced insomnia or fragmented sleep reduces the body's ability to heal and recover, including its ability to repair damaged nerves or calm overactive pain pathways. Sleep deprivation has been shown to lower pain tolerance, meaning that individuals with poor sleep are more likely to experience intense discomfort from functional eye pain. Improving sleep quality is therefore an important step in managing stress-related eye pain [9].

Effective management of functional eye pain requires addressing both the physical and psychological components of the condition. Stress management techniques, such as mindfulness meditation, deep breathing exercises, and progressive muscle relaxation, can help lower overall stress levels and reduce the impact on eye comfort. Regular physical activity, such as yoga or walking, can also help reduce muscle tension and improve emotional well-being. For individuals with anxiety or depression, cognitive-behavioral therapy (CBT) may be beneficial in altering negative thought patterns that contribute to pain perception. Pharmacological treatments, including antidepressants or anxiolytics, may be considered in more severe cases to help regulate the emotional responses associated with functional eye pain [10].

Conclusion

Stress plays a significant role in the exacerbation of functional eye pain by altering how the brain processes pain, increasing sensitivity to discomfort, and creating a cycle of emotional and physical strain. As mental health conditions such as anxiety and depression frequently accompany functional eye pain,

addressing both the psychological and physical aspects of the condition is crucial. Through stress management techniques, improving sleep quality, and integrating comprehensive eye care strategies, individuals can better manage their symptoms and improve their overall quality of life. By recognizing the link between stress and functional eye pain, patients and healthcare providers can develop more effective, holistic treatment plans.

References

1. Patel S, Mittal R, Sarantopoulos KD. Neuropathic ocular surface pain: emerging drug targets and therapeutic implications. *Expert Opin Ther Targets*. 2022;26(8):681-95.
2. Driscoll MA, Edwards RR, Becker WC. Psychological interventions for the treatment of chronic pain in adults. 2021;22(2):52-95.
3. Sharif NA. 9 Optic neuritis related to multiple sclerosis. *Transl Neurosci*. 2023;7:307.
4. Mailis A, Tepperman PS, Hapidou EG. Chronic pain: Evolution of clinical definitions and implications for practice. *Psychol Inj Law*. 2020;13(4):412-26.
5. Britten-Jones AC, Wang MT, Samuels I, et al. Epidemiology and Risk Factors of Dry Eye Disease: Considerations for Clinical Management. *Medicina*. 2024;60(9):1458.
6. Goh EL, Chidambaram S, Ma D. Complex regional pain syndrome: a recent update. *Burn Trauma*. 2017;5.
7. Scott W, McCracken LM. 54 Chronic Pain Management. 2019:246.
8. Yang TJ, Yu Y, Yang JY. Involvement of transient receptor potential channels in ocular diseases: a narrative review. *Ann Transl Med*. 2022;10(15).
9. Marroquín B, Tennen H, Stanton AL. Coping, emotion regulation, and well-being: Intrapersonal and interpersonal processes. 2017:253-74.
10. Jakubow P, Kosciuczuk U, Garkowski A. Possibility of Assessing Pain with Biomarkers in Psychiatric Disorders.