

Functional Eye Pain and Migraines: Understanding the Link.

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Introduction

Functional eye pain (FEP) and migraines are two conditions that affect millions of people worldwide. Both can cause significant discomfort and reduce quality of life, yet their causes and manifestations are often misunderstood. While migraines are primarily neurological disorders, characterized by throbbing head pain and sensitivity to light and sound, functional eye pain is a form of neuropathic pain that involves the eyes without any visible structural damage. Interestingly, these two conditions can be interconnected, with one exacerbating the other. This article explores the link between functional eye pain and migraines, highlighting how they overlap, their shared pathways, and implications for treatment [1].

Functional eye pain refers to discomfort or pain in the eyes that cannot be attributed to any structural abnormalities upon examination. Unlike conditions like glaucoma or cataracts, where physical damage to the eye is evident, patients with functional eye pain often have no observable signs of injury. The pain is typically neuropathic, meaning it arises from abnormal pain processing in the nervous system. Patients may describe sensations like burning, aching, or pressure around the eyes. Because the condition is not tied to physical damage, diagnosing and managing functional eye pain can be challenging [2].

Migraines are a type of primary headache disorder characterized by recurrent episodes of moderate to severe pain, often localized to one side of the head. Migraine attacks can last from hours to days and are frequently accompanied by other symptoms like nausea, vomiting, and photophobia (sensitivity to light). Migraines are thought to result from complex interactions between the nervous system, blood vessels, and inflammatory processes. While the exact cause of migraines is not fully understood, factors like genetics, stress, hormonal changes, and environmental triggers can all play a role in triggering an attack [3].

One of the key connections between functional eye pain and migraines lies in their shared neurological basis. Both conditions involve abnormal pain processing in the brain and the trigeminal nerve system, which plays a crucial role in transmitting sensory information from the face and eyes to the brain. In migraines, activation of the trigeminal nerve leads to the characteristic headache pain, while in functional eye pain,

it may cause eye discomfort even in the absence of structural abnormalities. This shared pathway suggests that individuals with migraines may be more prone to experiencing functional eye pain and vice versa [4].

A specific type of migraine known as an ocular migraine directly affects vision and can lead to temporary visual disturbances like flashes of light, blind spots, or even vision loss in one eye. Although these symptoms typically resolve within an hour, they can be accompanied by eye discomfort or functional eye pain. Ocular migraines, while not causing permanent damage to the eye, can contribute to increased nerve sensitivity in the eye area, potentially triggering functional eye pain even after the migraine episode has subsided [5].

Central sensitization is a phenomenon where the nervous system becomes hypersensitive to stimuli, amplifying pain signals and leading to chronic pain conditions. Both migraines and functional eye pain are linked to central sensitization. In migraines, repeated pain episodes can cause the brain to become overly responsive to pain signals, making it easier for future migraine attacks to occur. Similarly, in functional eye pain, ongoing nerve irritation or dysfunction can lead to persistent eye discomfort, even in the absence of a trigger. Central sensitization helps explain why some patients with migraines also experience chronic functional eye pain [6].

Migraines and functional eye pain share common triggers, which may explain why they frequently co-occur. Stress, for instance, is a well-known trigger for migraines, but it can also heighten the perception of pain in functional eye pain. When stress leads to muscle tension around the eyes and forehead, it can exacerbate eye discomfort. Hormonal fluctuations, particularly in women, are another shared trigger. Many women report that migraines worsen around menstruation, pregnancy, or menopause and this hormonal sensitivity may also increase the likelihood of experiencing functional eye pain [7].

Photophobia—extreme sensitivity to light—is a hallmark symptom of migraines, and it is also common in individuals with functional eye pain. Patients with photophobia often report discomfort or pain when exposed to bright lights, even if their eyes are structurally normal. In migraines, photophobia is believed to result from abnormal activity in the brain's visual processing centers, which makes the eyes more sensitive to light. Similarly, in functional eye pain, light

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exposure can trigger pain because of hypersensitive nerve pathways. Managing photophobia is crucial for patients with both conditions, as it can significantly impact their quality of life [8].

One of the biggest challenges in treating patients with both migraines and functional eye pain is differentiating between the two conditions, as their symptoms can overlap. Both conditions may present with eye discomfort, sensitivity to light, and pressure around the eyes, making it difficult to determine the root cause of the pain. In many cases, neuroimaging, such as magnetic resonance imaging (MRI), may be used to rule out other neurological conditions and to identify any structural abnormalities. A detailed patient history and symptom diary can also help clinicians distinguish between migraine-related eye pain and functional eye pain [9].

Treating patients who experience both migraines and functional eye pain requires a multifaceted approach that addresses both the headache and the eye pain. For migraines, standard treatments include triptans, beta-blockers, and anticonvulsants, which can help reduce the frequency and intensity of attacks. For functional eye pain, treatments often focus on managing neuropathic pain with medications like gabapentin or pregabalin, which can help calm overactive nerves. In cases where central sensitization plays a role, therapies like cognitive-behavioral therapy (CBT) or biofeedback can help patients better manage pain triggers and reduce stress [10].

Conclusion

The relationship between functional eye pain and migraines underscores the complexity of pain disorders, particularly those involving the nervous system. Both conditions share similar mechanisms, triggers, and symptoms, making diagnosis and treatment challenging. However, understanding the overlap between the two can help healthcare providers create more effective treatment plans that address both the ocular and neurological components of pain. As research into

central sensitization and pain processing continues, patients with these coexisting conditions can expect better, more targeted therapies that offer relief from chronic pain.

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